

SECTION 00745 - HOT MIXED ASPHALT CONCRETE (HMAC)

(Follow all instructions. If there are no instructions above a subsection, paragraph, sentence, or bullet, then include them in the project but make necessary modifications to only include project specific specifications. Delete specifications that do not apply to the project.)

Comply with Section 00745 of the Standard Specifications modified as follows:

(Use the following subsection .00 when lime treatment of aggregates is specified in the pavement design report.)

00745.00 Scope - Add the following paragraph to the end of this subsection:

Lime treatment of new aggregate is required on this Project.

00745.03 Reclaimed Asphalt Pavement (RAP) Material - In the paragraph that begins "The amount of...", replace the sentence that begins "The amount of..." with the following sentence:

The amount of asphalt cement in the RAP shall be established in the mixture design phase according to ODOT TM 319 and the ODOT Contractor Mix Design Guidelines for Asphalt Concrete or other method if approved by the Engineer.

00745.10 Aggregate - In the paragraph that begins "Provide and stockpile...", remove the words "and RAP aggregates".

00745.10(b-3) Grading - Replace the tolerance list with the following tolerance list:

Sieve Size	Separated Sizes			
	1 1/4" - 3/4"	3/4" - No. 4	3/4" - 1/2"	1/2" - No. 4
	Percent Passing (by Weight)			
	T	T	T	T
1 1/2"	- 1	-	-	-
1 1/4"	± 5	-	-	-
1"	± 10	- 1	- 1	-
3/4"	± 5	± 5	± 7	- 1
1/2"	-	± 8	± 8	± 5
3/8"	-	-	-	-
No. 4	± 3	± 8	± 8	± 8
No. 8	-	± 5	± 5	± 5
No. 16*	-	-	-	-
No. 30	± 1	± 3	± 3	± 3
No. 50*	-	-	-	-
No 100*	-	-	-	-
No 200	-	± 1.0	± 1.0	± 1.0

* Report percent passing sieve when no tolerance is listed

00745.10(c-3) Grading - Replace the tolerance list with the following tolerance list:

Sieve Size	Separated Sizes		
	No. 4 - 0	No. 4 - No. 8	No. 8 - 0
	Percent Passing (by Weight)		
	T	T	T
3/8"	- 1	- 1	-
No. 4	± 7	± 10	- 1
No. 8	± 7	± 7	± 10
No. 16*	-	-	-
No. 30	± 7	± 5	± 8
No. 50*	-	-	-
No. 100*	-	-	-
No. 200	± 3.0	± 2.0	± 4.0

* Report percent passing sieve when no tolerance is listed

00745.10(c-4) Combination of Fine Aggregate for Testing - Replace this subsection, except for the subsection number and title, with the following:

Blend together fine aggregate produced in two separate sizes at a 1:1 ratio when testing for sand equivalent.

(Use the following Option 1 subsection .11(d) when latex polymer treatment of aggregate is listed as an option in the pavement design report.)

[Begin Option 1 of .11(d)]

Add the following subsection:

00745.11(d) Aggregate Treatment - Latex Polymer - A latex polymer aggregate treatment material may be used to treat new crushed aggregates instead of lime if Tensile Strength Ratio test results on the mixture with the latex polymer treatment at the JMF meet the minimum criteria in 00745.13(b).

(1) General:

- a. Provide a system to automatically meter the latex emulsion at the proper rate and apply the emulsion uniformly to the aggregate prior to the addition of the asphalt cement. Follow manufacturer's recommendations to set up, adjust and calibrate the equipment.
- b. Demonstrate to the Engineer's satisfaction that the required application rate of latex solids is being met. If it is not, take corrective action. Document and notify the Engineer of the corrective action.

(2) Material - Use latex polymer emulsion concentrate meeting the following:

	Minimum	Maximum	Test Method
Solids Percent	66.0 <u>65.0</u>	71.0 <u>71.0</u>	ASTM D 1417
pH	9.75 <u>9.0</u>	11.25 <u>11.0</u>	ASTM D 1417
Brookfield Viscosity Spindle 23 <u>23</u> , 20 RPM, cPs	500 <u>500</u>	2000 <u>3000</u>	ASTM D 1417

Provide a quality compliance certificate for the polymer latex emulsion concentrate to the Engineer according to 00165.35.

(3) Application Rate - Apply the latex emulsion to achieve a minimum of 0.75 pounds of latex solids per ton of new aggregate (0.0375%) for dense graded mixtures and a minimum of 0.50 pounds of latex solids per ton of aggregate (0.025%) for open-graded mixtures. Higher application rates may be required to meet minimum TSR limits. Determine application rate during mix design testing.

(4) Treatment During HMAC Production:

- a. Adjust aggregate moisture content to meet manufacturer’s recommendation for emulsion application. Apply the latex emulsion at the minimum rate specified above or at a higher rate if TSR testing indicates a higher rate is required.
- b. Apply the latex emulsion to the aggregate just prior to entry into dryer drum. Mix aggregate with the emulsion in a pugmill or in the dryer drum prior to application of asphalt cement. Heat aggregates to at least 250 °F after treatment and prior to addition of asphalt cement.

[End Option 1 of .11(d)]

(Use the following Option 2 subsection .11(d) when fibers in open-graded HMAC are specified in the pavement design report.)

[Begin Option 2 of .11(d)]

Add the following subsection:

00745.11(d) Fiber Stabilizing Additive - Add one of the following fiber types to the open-graded HMAC:

(1) Mineral Fibers - Mineral fiber shall be made from virgin basalt, diabase, or slag. The fiber shall be added at a rate of 0.3% to 0.4% by weight of the total mix. Mineral fibers shall meet the following:

Size Analysis:

- Average Fiber Length ¹ 1/4 inch maximum
- Maximum Fiber Thickness ² 0.0002 inch
- Minimum Fiber Thickness 0.00002 inch

Shot Content (ASTM C612 and ASTM C1335) ³:

- Retained on No. 60 sieve 15% maximum by weight
- Retained on No. 230 sieve 35% maximum by weight

- ¹ The fiber length is determined according to the Bauer McNett fractionation.
- ² The fiber diameter is determined by measuring at least 200 fibers in a phase contrast microscope.
- ³ Shot content is a measure of non-fibrous material. Shot is material that cannot be brushed or mechanically shaken through the specified sieves. Test according to ASTM C 1335 using the sieves specified above.

(2) Cellulose Fibers - Cellulose fibers shall be added at a rate of 0.3% to 0.4% by weight of the total mix. Cellulose fibers shall meet the following properties:

Sieve Analysis:

Method A - Alpine Sieve ¹ Analysis:

- Fiber Length 1/4 inch maximum
- Passing No. 100 sieve 60 - 80%

Method B - Mesh Screen ² Analysis:

- Fiber Length 1/4 inch maximum
- Passing No. 20 sieve 80 - 95%
- Passing No. 40 sieve 55 - 75%
- Passing No. 140 sieve 20 - 40%

Ash Content ³ 13 - 23% non-volatiles

pH ⁴ 6.5 - 8.5

Oil Absorption ⁵ 4.0 - 6.0 times fiber weight

Moisture Content ⁶ 5.0% maximum

¹ This test is performed using an Alpine Air Jet Sieve (Type 200LS). A representative five gram sample of fiber is sieved for 14 minutes at a controlled vacuum of 75 Pa of water. The portion remaining on the screen is weighed.

² This test is performed using standard No. 20, No. 40, No. 60, No. 80, No. 00, No 40 sieves, nylon brushes and a shaker. A representative 10 gram sample of fiber is sieved, using a shaker and two nylon brushes on each screen. The amount retained on each sieve is weighed and the percentage passing calculated.

³ A representative 2 - 3 gram sample is placed in a tared crucible and heated between 1,100 °F and 1,200 °F for not less than two hours. The crucible and ash are cooled in a desiccator and weighed.

⁴ Five grams of fiber is added to 100 ml of distilled water, stirred and let sit for 30 minutes. The pH is determined with a probe calibrated with pH 7.0 buffer.

⁵ Five grams of fiber is accurately weighed and suspended in an excess of mineral spirits for not less than five minutes to ensure total saturation. It is then placed in a screen mesh strainer (approximately 0.5 square millimeter hole size) and shaken on a wrist action shaker for ten minutes (approximately 1 1/4 inch motion at 240 shakes per minute). The shaken mass is then transferred without touching, to a tared container and weighed. Results reported as the amount (number of times its own weight) the fibers are able to absorb.

⁶ Ten grams of fiber is weighed and placed in a 250 °F forced air oven for two hours. The sample is then reweighed upon removal from the oven.

[End Option 2 of .11(d)]

00745.14 Tolerances and Limits - Replace the tolerance list with the following tolerance list:

Gradation Constituent	Dense-Graded HMAC Type				Open-Graded HMAC TYPE		
	1"	3/4"	1/2"	3/8"	3/4"	1/2"	ATPB
1 1/2"	JMF ± 5%*						
1"	90 - 100%	JMF ± 5%*			99 - 100%		99 - 100%
3/4"	JMF ± 5%	90 - 100%	JMF ± 5%*		85 - 96%	99 - 100%	85 - 95%
1/2"	JMF ± 5%	JMF ± 5%	90 - 100%	JMF ± 5%*	55 - 71%	90 - 98%	35 - 68%
3/8"***	-	-	-	90 - 100%	-	-	-
No. 4	JMF ± 5%	JMF ± 5%	JMF ± 5%	JMF ± 5%	JMF ± 5%	JMF ± 5%	JMF ± 5%
No. 8	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%
No. 16**	-	-	-	-	-	-	-
No. 30	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%	JMF ± 4%	-
No. 50**	-	-	-	-	-	-	-
No. 100**	-	-	-	-	-	-	-
No. 200	JMF ± 2.0%	JMF ± 2.0%	JMF ± 2.0%	JMF ± 2.0%	JMF ± 2.0%	JMF ± 2.0%	JMF ± 2.0%

* Maximum not to exceed 100%

** Report percent passing sieve when no tolerance is listed

00745.16(a-1) Personnel Requirements - Add the following bullet to the end of the bullet list:

- Providing at least one CAT-1 full-time at each plant site when producing mixture for the Project.

00745.16(a-4) Testing Frequency - Delete the paragraph that begins "After the Mix Design...".

Add the following subsection:

00745.16(a-5) Plant Calibration - Calibrate all meters and belt scales at the HMAC mixing plant according to ODOT TM 322 prior to beginning production.

00745.16(b-1) MDV Quality Control - Replace this subsection with the following subsection:

(1) MDV Quality Control:

a. General - Perform MDV testing on projects with Level 2, Level 3, or Level 4 dense graded HMAC. Perform MDV tests on every subplot and as required at start up according to 00745.16(b-1-c) and the MFTP. Perform gradation and asphalt content testing with each MDV test. Calculate the following values for each MDV test.

- Air Voids
- Voids in Mineral Aggregate (VMA)
- Voids Filled with Asphalt (VFA)
- P No. 200/Effective AC (Pbe) Ratio

The running averages of four MDV results shall be within the limits given below:

	Average of	Limit
Air Voids	4 samples	JMF Target \pm 1.0%
VMA	4 samples	11.5 - 17.0 (1" Mix)
		12.5 - 17.0 (3/4" Mix)
		13.5 - 17.0 (1/2" Mix)
		14.5 - 17.0 (3/8" Mix)
VFA	4 samples	65 - 75 (3/4" and 1/2" Mix in Level 2, 3 and 4)
		65 - 78 (3/8" Mix in Level 2, 3 and 4)
		70 - 80 (1/2" and 3/8" Mix in Level 1)
Passing No. 200/Pbe	4 samples	0.8 - 1.6

The CDT shall provide the results from the initial control strip to the CAT II for evaluation and comparison with the MDV results. If the MDV and density test results are contradictory, initiate an investigation. The CAT II shall recommend a plan to the Engineer for resolving the discrepancy based on the results of the investigation.

Take corrective action when required by the MDV start-up process of 00745.16(b-1-c). After the requirements of 00745.16(b-1-c) have been met, take corrective action if the MDV test results show that two consecutive running average of four samples are outside the above limits for air voids, VMA, VFA, or P No. 200/Pbe ratio. Document the corrective action and notify the Engineer. If test results continue to be outside the tolerance, stop production and make adjustments. Restart production only after the Engineer has approved the proposed adjustments. If the MDV test results are outside tolerance, but the mixture meets the current requirements for gradation and asphalt content, an adjustment to the JMF targets is required. Do not start a new lot as a result of the adjustment.

A request for an adjustment to the JMF targets may be made to the Engineer by the Contractor's CAT-II. The requested change will be reviewed and documented by the Engineer. If acceptable, a revised JMF will be allowed. Clearly document the subplot test for which the adjusted targets are in effect. Adjustments for gradation shall not exceed the tolerances specified for the original JMF limits. Adjustments for AC content shall be within 0.5% of the original JMF. The JMF asphalt content may only be reduced if the production VMA meets or exceeds the above requirements. Adjustments for RAP content shall be within 5% of the original JMF, but shall not exceed the requirements of 00745.03. Regardless of these tolerances, the adjusted JMF shall be within the mixture specification control points of 00745.12. If a redesign of the mixture becomes necessary, submit a new JMF according to the requirements of these specifications.

Perform a Tensile Strength Ratio (TSR) test (AASHTO T 283) on a sample obtained during the first two days of production after QC test results verify that HMAC constituents with a weighting factor greater than one according to 00745.95 are in tolerance. Provide test results to the Engineer within four working days of obtaining the sample. Stop production and make adjustments if the TSR is less than 70. Restart production only after the Engineer has approved the proposed adjustments.

b. Laboratory Compactor Selection - Use a Gyratory compactor for MDV when a Gyratory compactor is used to develop the JMF. For all other cases, use a Gyratory compactor or Marshall compactor, as selected by the Contractor.

c. MDV Requirements at Start-Up - Perform MDV testing at the start-up of the JMF production according to the following process:

1. Obtain a sample during the first 100 tons of production and immediately perform MDV testing.
2. If air voids and VMA are within tolerance, then continue remaining MDV testing at the established random QC subplot interval. If not, then go to step "3".
3. If air voids and/or VMA are out of tolerance according to 00745.16(b-1-a), then make adjustments and immediately obtain another sample and perform MDV testing. Go to step "4".
4. If air voids and VMA from the MDV testing in step "3" are within tolerance, then continue remaining MDV testing at the established random QC subplot interval. If not, go to step "5".
5. If air voids from step "3" are more than $\pm 1.5\%$ from the target, then stop production immediately and make adjustments. If they are not, then go to step "6". Obtain approval of the Engineer before restarting production. Begin MDV testing again at step "1".
6. If air voids from step "3" are out of tolerance and 1.5% or less from the target, or the VMA from step "3" is out of tolerance, then make adjustments and immediately obtain another sample and perform MDV testing. Go to step "4".

The initial MDV sample shall be used as the first random QC subplot test. Subsequent MDV samples required due to failure of start-up criteria will be used for a subplot QC test if the sample is taken within 100 tons of the scheduled random QC sample location. If not, the MDV testing shall be performed separate from, and not included in, the random QC testing program. Any required MDV testing will be completed at the Contractor's expense.

Add the following subsection:

00745.16(b-3) MDV for Open Graded HMAC - Adjust asphalt content and gradation targets for open graded HMAC during production as directed. The Engineer will document the subplot test for which the adjusted targets are in effect.

00745.24(a) Steel-Wheeled Rollers - Replace this subsection with the following subsection:

(a) Steel-Wheeled Rollers - Provide steel-wheeled rollers with a minimum gross static weight as follows:

	Level 1 and Level 2	Level 3	Level 4
Breakdown and Intermediate	8 ton	10 ton	12 ton
Finish	6 ton	8 ton	10 ton

00745.40 Season and Temperature Limitations In the table, for Surface Temperature of Dense Graded Mixes 2 inches to 2 1/2 inches, replace "50 °F" with 40 °F".

(Use the following subsection .46 on all projects except "inlay only" projects. Delete the words in parentheses if there is Contractor Surveying.)

00745.46 Control of Line and Grade - Add the following paragraphs to the end of this subsection:

(The Engineer will) Establish references at reasonable intervals for line and grade control of placement operations for the following:

- Before placing each leveling lift.
- Before placing the top base course for new construction.

Line and grade for the top base course of new construction and top leveling lift shall be within 1/2 inch of design line and grade.

(Use the following subsection .48(b) when required by the pavement design report.)

00745.48(b) Depositing - Replace the paragraph that begins "Deposit HMAC from..." with the following paragraph:

Deposit HMAC from the hauling vehicles so segregation is prevented. Do not deliver the HMAC directly into the paving machine for wearing courses where the continuous length of

the panel is greater than 500 feet. Deliver the HMAC to the paving machine by either a windrow pick-up machine or an end-dump transfer machine.

00745.49(b-1) General - In the paragraph that begins "Compliance with the density...", replace the sentence that begins "Use the MAMD method..." with the following sentence:

Use the MAMD method of compaction measurement.

Replace the paragraph that begins "For Level 3 and Level 4..." with the following two paragraphs:

For Level 2, Level 3, and Level 4 mixes, construct a control strip at the beginning of work on each JMF on the project according to ODOT TM 306. The purpose of the control strip is to determine the maximum density that can be achieved for the JMF, paving conditions, and equipment on the project. Additional control strips are necessary when there is a change in compaction equipment or when JMF targets are adjusted according to 00745.16(b-1-a). The Engineer may waive the control strip for irregular areas or areas too small to establish a reasonable roller pattern.

Stop paving if three consecutive control strips fail to achieve the specified density. Take all actions necessary to resolve compaction problems. Do not resume paving until allowed by the Engineer.

00745.49(b-3) Moving Average Maximum Density (MAMD) Method - Replace the MAMD list with the following list:

Course of Construction	HMAC
First HMAC lift less than 3 inches placed on aggregate base	91.0
All other	92.0

00745.49(b-4) Control Strip Method - Delete this subsection.

00745.49(b-5) Test Results - Renumber this subsection to b-4.

(Use the following subsections 00745.70, .72, .73, and .75 when pavement smoothness specifications are required by the pavement design report.)

[Begin subsections .70, .72, .73, and .75.]

00745.70 Pavement Smoothness - Replace this subsection with the following subsection:

00745.70 Pavement Smoothness - Construct the pavement wearing surface of travel lanes to a profile that does not deviate from longitudinal and transverse smoothness more than the specified limits of 00745.73.

Perform smoothness testing under the supervision of the Engineer with equipment furnished and operated by the Contractor at the Contractor's expense. Complete all required smoothness testing no later than seven calendar days following final completion of all travel lane paving on the Project. The Contractor accepts the risk that the smoothness may be affected by exposure to traffic between the date the travel lanes are paved and the

date the smoothness testing is completed. If the Contractor elects to perform smoothness measurements on a day other than the day the pavement is placed, additional traffic control required for smoothness measurement, and not required for other work, will be at the Contractor's expense.

Add the following subsection:

00745.72 Smoothness Testing Equipment - Furnish all equipment and supplies for determining smoothness.

(a) Straightedge - Provide one 12 foot straightedge.

(b) Profilometer - Provide a profiling device that employs an accelerometer established inertial profiling reference and a laser height sensing instrument to produce a true profile of the pavement surface. The device shall be capable of reporting elevations with a resolution of 0.004 inch or finer at an interval of 6 inches or less. The unit must also be able to generate the equivalent California-type profilograph plot and values according to ODOT TM 770 as well as the locations and heights of bumps and dips as required in this specification. The profilometer shall be calibrated, in good working condition, and ready for operation prior to performing smoothness measurements.

Provide competent and experienced operator(s) for the equipment. The profilometer operator shall meet with the Engineer at a mutually agreed upon time prior to beginning smoothness measurements to discuss all aspects of smoothness measurement on the project.

Add the following subsection:

00745.73 Smoothness Testing and Surface Tolerances - Test according to the following:

(a) General - Test the base course with a 12 foot straightedge as directed. Test the wearing course with the selected profilometer and provide a profilogram trace according to ODOT TM 770. Price adjustment for smoothness will be made according to 00745.96.

Before performing smoothness measurements on the Project, verify horizontal and vertical calibration of the profilometer according to the manufacturer's recommendations and run the machine twice over a 0.1 mile section of pavement with repeating results. The calibration shall be considered acceptable when the difference in Profile Index between consecutive test runs is 0.3 inches per mile or less. Provide documentation to the Engineer verifying that the calibration and test runs have been successfully completed. After starting paving, perform horizontal and vertical calibration checks at the frequency recommended by the manufacturer.

(b) Base Course Surface Test:

(1) Transverse - Test with the 12 foot straightedge perpendicular to the centerline, as directed. The pavement surface shall not vary by more than 1/4 inch.

(2) Longitudinal - Test with the 12 foot straightedge parallel to the centerline, as directed. The pavement surface shall not vary by more than 1/4 inch.

(c) Wearing Course Surface Test:

(1) Transverse - Test with the 12 foot straightedge perpendicular to the centerline, as directed. The pavement surface shall not vary by more than 1/4 inch.

(2) Longitudinal - Run the profiling device over traffic lanes for the full length of the Project and 50 feet beyond the Project ends to provide a complete graphic profile.

Obtain profiles on the pavement surface in the right-hand wheelpath of the travel lane along a line parallel to centerline. Take the profile on transition areas of entrance and exit ramps, as close to the right hand wheelpath of the through travel lane as practical.

Profiles shall initially be analyzed by the Contractor according to 00745.73(d), and the profiles and results given to the Engineer no later than eight calendar days following final completion of all travel lane paving on the Project. Individual deviations exceeding 0.36 inches shall be addressed according to 00745.75(c).

Provide an electronic copy of all raw profile data files for the Project to the Engineer at the conclusion of the Project. Also provide an electronic copy of International Roughness Index (IRI) data in ERD format (as defined by Engineering Research Division, University of Michigan Transportation Research Institute) to the Engineer for the same pavement sections tested for Profile Index. Provide the data on floppy disk or CD at the conclusion of the Project. This data will be used for smoothness specification research purposes.

(3) Transverse Joints - Test with the 12 foot straightedge parallel to the centerline, as directed. The pavement surface shall not vary by more than 1/4 inch.

(d) Determination of the Profile Index:

(1) General - Determine the profile index in 0.1 mile segments and partial segments. Segments shall begin 13 feet into the Project and run consecutively in either the direction of travel or the direction of HMAC placement, as determined by the Engineer. A segment will end as a partial segment and a new segment will begin when the segment sequence is interrupted by stage construction or by profiled areas excluded from the smoothness requirements.

The following profiled areas of pavement are excluded from smoothness requirements:

- Profiles extending beyond the Project ends.
- Bridge decks and bridge panels.
- First and last 13 feet at the Project ends and bridge end panels.
- Pavement on horizontal curves with radii less than 950 feet.
- Ramps and auxiliary lanes.
- Utility appurtenances adjusted by others.

- Continuous portions of travel lanes with less than 0.05 mile between excluded areas.
- Portions of the Project with posted speed limits less than 45 mph.

The party responsible for Project surveying shall locate excluded areas prior to smoothness measurement. Areas excluded from longitudinal profile measurement shall meet the straightedge requirements of 00745.73(b-2).

(2) Method of Analysis - Determine the profile index and individual deviations exceeding 0.36 inches by analyzing the profile charts according to ODOT TM 770 and provide the profile charts and results to the Engineer for review.

Partial segments less than 0.05 mile in length shall be combined with the immediately preceding full segment for profile index determination. Partial segments 0.05 mile in length or greater shall be analyzed separately.

(e) Utility Appurtenances - If the Contractor is required to construct or adjust utility appurtenances, such as manhole covers and valve boxes, the tolerances stated in 00745.73(c-3) apply.

(f) Shoulders and Paved Medians - Test the base and wearing course with the 12 foot straightedge parallel to and perpendicular to the centerline for shoulders and paved medians. The pavement surface shall not vary by more than 1/4 inch.

00745.75 Correction of Pavement Roughness - Replace this subsection with the following subsection:

00745.75 Correction of Pavement Roughness - Should testing described in 00745.73 show the pavement does not conform to the prescribed limits of deviation, the following shall apply:

(a) General - The Contractor is responsible for locating areas that require corrective work.

(b) Base Course - If the requirements of 00745.73(b) are not met, correct according to one of the following and retest.

(1) Cold Plane Removal - Profile with equipment meeting the requirements of Section 00620.20 to a maximum depth of 0.4 inch.

(2) Grinder - Profile with abrasive grinder(s), equipped with a cutting head comprised of multiple diamond blades to a maximum depth of 0.4 inch.

(c) Wearing Course - After the Contractor has located and staked all individual deviations exceeding 0.36 inches, the Engineer and the Contractor shall meet at a mutually agreed upon time and drive the Project together. Each deviation will be evaluated during the drive-through to determine if corrective work will be required. Disagreements will be resolved by the Engineer.

Correct all individual deviations identified for corrective work during the drive-through and any transverse joint that exceeds the requirements of 00745.73(c-3) by one of the methods listed below to the specified limits.

(1) Remove and Replace - Remove and replace the wearing surface lift. Removal and replacement is required when the Profile Index is greater than or equal to 25 inches per mile.

(2) Grind - Profile with abrasive grinder(s) equipped with a cutting head comprised of multiple diamond blades to a maximum depth of 0.3 inch and apply an emulsion fog seal as directed.

Under the observation of the Engineer, retest each location requiring corrective work according to 00745.73 with a profiling device to verify that the deviation has been corrected to within the 0.36 inch tolerance. The Contractor may retest according to 00745.73 the entire length of all segments requiring corrective work, under the observation of the Engineer. Perform all corrective work and profiling at the Contractor's expense, including traffic control.

(d) Time Limit - Complete correction of all surface roughness within 14 calendar days following notification, unless otherwise directed.

[End subsections .70, .72, .73, and .75]

(Obtain the specific gravity for the project from the Designer.)

00745.80 Measurement - The quantities of HMAC shown in the Contract Schedule of Items were computed on the basis of aggregates having a Specific Gravity of _____ .

(Use the following two paragraphs when no separate measurement will be made for the liquid asphalt. Do NOT use on NHS projects or on projects that have more than 150 tons of liquid asphalt.)

[Begin "two paragraphs"]

Replace the paragraph that begins "The quantities of HMAC..." with the following paragraph:

The quantities of HMAC will be measured on the weight basis. No separate measurement will be made for asphalt cement used in the mixture. No deduction will be made for lime or any other additive used in the mixture.

[End "two paragraphs"]

Add the following sentence to the end of the paragraph that begins "When RAP materials are used...":

For non-RAP mixtures, measurement of the total asphalt quantity will be based on quality control tests averaged to the nearest 0.01% when the Engineer determines that payment by invoice and tank sticking is impractical.

partial segments where one or more individual deviations are selected for corrective work according to 00745.75(c) will not be eligible for price adjustment. Segments or partial segments where no individual deviations are selected for corrective work according to 00745.75(c) will be eligible for price adjustment.

[End subsection .96]