SP00745 (2018 Specifications: 12-01-17) ***(This Section requires SP00730. Requires SP00738 when Safety Edge is required.)***

SECTION 00745 - ASPHALT CONCRETE PAVEMENT - STATISTICAL ACCEPTANCE

(Follow all instructions. If there are no instructions above a subsection, paragraph, sentence, or bullet, then include it in the project. The specifications may be modified to include project specific specifications, but all additions, deletions, or modifications must be sent to the ODOT Technical Resource and Senior Specifications Engineer for review and approval.)

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

(Use the following subsection .02 when IRI pavement smoothness specifications are required by the pavement design report.)

00745.02 Definitions - Add the following definition:

Localized Roughness - An area that exceeds 140.0 inches per mile in a continuous International Roughness Index (IRI) evaluation over a 25.0-foot base length.

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

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(a).

(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	65.0	–	ASTM D 1417
pH	9.0	11.0	ASTM D 1417

Brookfield Viscosity Spindle 3, 20 RPM, cPs	500	3000	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 ACP Production:

a. Adjust aggregate moisture content to meet the 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.

(Use the following subsection .46(b) when required by the pavement design report.)

00745.46(b) Depositing - Replace the paragraph that begins "Deposit ACP from..." with the following paragraph:

Deposit ACP from the hauling vehicles so segregation is prevented. Do not deliver the ACP directly into the paving machine for wearing Courses where the continuous length of the Panel is greater than 500 feet. Deliver the ACP to the paving machine by either a windrow pick-up machine or an end-dump transfer machine.

(Use the following subsection .49(b)(2)(b) when core correlation specifications are required by the pavement design report.)

00745.49(b)(2)(b) Core Correlation of Nuclear Gauge Readings - Replace this subsection, except for the subsection number and title, with the following:

For each lift on the Project that contains more than 2,500 tons of ACP, correlate each nuclear gauge that will be used on that lift. Perform core correlations and determine core correlation factors according to AASHTO T 355 and ODOT TM 327. Provide bulk specific gravity values to the Engineer within 24 hours of coring. If an Aggregate source or the asphalt cement source changes, new core correlations are required.

Apply correlation factors to all nuclear gauge readings for the Lift on which the core correlation was performed.

Both the Engineer and the Contractor may request additional core correlation of nuclear gauge readings. Core correlations requested by the Contractor or that are required due to a change in Aggregate or asphalt cement source will be at no additional cost to the Agency.

(Use the following subsection .49(c) when required by the pavement design report.)

00745.49(c) Thin Pavement - Replace the paragraph that begins "Perform breakdown and intermediate rolling…" with the following paragraph:

Use ODOT TM 301 “Establishing Roller Patterns for Thin Lifts of ACP" to establish the rolling pattern for compaction. Use the roller pattern from ODOT TM 301 or four Coverages, whichever is greater. Complete additional Coverages as directed.

(Use the following lead-in paragraph and one of the following two options when traffic restrictions are required. Obtain information from the pavement designer. Delete the option that does not apply.)

Add the following subsection:

[Option 1 - Use this .51 when paving through the top base course is required.]

00745.51 Opening Sections to Traffic - Schedule work so that, during the same shift, the surfaces being paved are paved full width and length through the top Base Course before opening to traffic. Traffic will be allowed on the top Base Course up to ____ Calendar Days.

Before beginning wearing Course paving operations, make repairs to the existing surface as directed. Payment for the repairs will be made according to 00195.20.

[Option 2 Use this .51 when paving through the wearing course is required.]

00745.51 Opening Sections to Traffic - Schedule work so that, during the same shift, the surfaces being paved are paved full width and length through the wearing Course before opening to traffic.

(Use the following subsection .70 when IRI pavement smoothness specifications are required by the pavement design report.)

00745.70 Pavement Smoothness - Replace this subsection, except for the subsection number and title, with the following:

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

Perform profiling and straightedge testing under the supervision of the Engineer with equipment furnished and operated by the Contractor at no additional cost to the Agency, according to ODOT TM 772. Complete all required smoothness testing no later than 7 Calendar Days following final completion of all traffic lane paving on the Project. The Contractor accepts the risk that the smoothness may be affected by exposure to traffic between the date the traffic 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 no additional cost to the Agency.

(Use the following lead-in and subsection .72 when IRI pavement smoothness specifications are required by the pavement design report.)

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) Profiler - Provide a profiling device meeting the requirements of ODOT TM 772 and certified according to ODOT TM 769.

Provide competent and experienced operator(s) for the equipment. The profiler 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.

(Use the following lead-in and subsection .73 when IRI pavement smoothness specifications are required by the pavement design report.)

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 profiler meeting the requirements of 00745.72(b). Compute the IRI from the profile data according to the procedures described in ODOT TM 772. Price adjustment for smoothness will be made according to 00745.96.

Before performing any smoothness measurements on the Project, verify calibration of the profiler according to the manufacturer's recommendations and ODOT TM 772.

(b) Surface Test:

(1) Transverse - Test the base course 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 all base or wearing course sections of pavement that are not required to be profiled according to 00745.73(c) with the 12-foot straightedge parallel to the centerline and lane dividers, 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 - Perform testing as follows:

a. Quality Control - Run the profiling device over each traffic lane for the full length of the Project.

In the presence of the Engineer and according to ODOT TM 772, obtain profiles on the pavement surface in the right and left wheel path of the traffic lane along a line parallel to lane dividers, at 3-foot and 9-foot offsets from the left edge of the traffic lane. Take the profile on transition areas of entrance and exit ramps, as close to the right and left wheel path of the through traffic lane as practical. Submit data files to the Engineer at the completion of each shift in which profiling has taken place. For the pavement sections tested, provide the raw data files and provide electronic copies of the profile data in ERD, PPF, and Manufacturer Proprietary formats, as required by the Engineer.

Analyze profiles according to 00745.73(d), and give the results to the Engineer no later than 8 Calendar Days following final completion of all traffic lane paving on the Project, or for multi-year projects, at the completion of the paving for the season. The results will consist of a table showing the left wheel path IRI, right wheel path IRI, and mean IRI (average of left and right wheel path IRI) at 0.10 mile intervals.

b. Quality Assurance - At the discretion of the Engineer, the Agency may perform Quality Assurance of Profiles on projects according to ODOT TM 772.

(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 International Roughness Index:

(1) General - Determine the IRI in 0.10 mile segments and partial segments of the wearing course. Segments shall begin 50 feet into the Project and run consecutively in the direction of travel. 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. Minimize the number of partial segments.

The following areas of pavement are excluded from IRI smoothness requirements and will not be profiled:

- Profiles extending beyond the Project ends.
- Bridge decks, bridge end panels, and pavement within 50 feet of bridge end panels.
- First and last 50 feet of the Project.
- Ramps and auxiliary lanes, with a posted speed of less than 45 mph.
- Ramps and auxiliary lanes that are less than 2500 feet in length.

- First 800 feet of entry ramps and the last 800 feet of exit ramps.
- The 25 feet before and after utility appurtenances in the traffic lane.
- Continuous portions of traffic lanes with less than 0.05 mile between excluded areas.
- Portions of the Project with posted speed limits less than 45 mph.

The Contractor 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 IRI for each wheel path and areas of Localized Roughness for each wheel path according to ODOT TM 772. Submit the results to the Engineer for review.

(e) 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, as directed by the Engineer. The pavement surface shall not vary by more than 1/4 inch.

(Use the following subsection .75 when IRI pavement smoothness specifications are required by the pavement design report.)

00745.75 Correction of Pavement Roughness - Replace this subsection, except for the subsection number and title, with the following:

If testing described in 00745.73 shows that the pavement does not conform to the prescribed limits, the following applies:

(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 grind with equipment meeting the requirements of 00620.20 to a maximum depth of 0.4 inch.

(2) Grinder - Profile grind 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 locating each area of Localized Roughness and the 0.10 mile segments that have an IRI value greater than 95.0 inches per mile, meet with the Engineer at a mutually agreed upon time and drive the Project together. During the drive-through, evaluate each area of Localized Roughness and each 0.10 mile segment and partial segment with an IRI value greater than 95.0 inches per mile to determine if corrective work is required. Disagreements will be resolved by the Engineer.

Correct all areas of Localized Roughness, segments identified for corrective work, and any transverse joint and excluded areas that exceed the requirements of 00745.73, by one of the methods listed below and to the specified limits:

(1) Remove and Replace - Remove and replace the wearing surface lift.

(2) Grind - Profile grind 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 according to Section 00705, or as directed.

Retest the entire length of each preceding segment and each segment containing locations of corrective work according to 00745.73 to evaluate conformance to specification. Perform all corrective work and retesting, including traffic control, at no additional cost to the Agency.

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

(Obtain the specific gravity for the project from the Designer and fill in the blank.)

00745.80 Measurement - Add the following paragraph to the beginning of this subsection:

The quantities of ACP 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. When used, be sure to also include the boilerplate language under subsection .90.)

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

The quantities of ACP 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.

(Use the following two paragraphs when core correlation specifications are required by the pavement design report.)

Add the following paragraph to the end of this subsection:

The quantities of core correlation of nuclear gauge readings will be measured on the unit basis for each core correlation test that is completed and accepted according to ODOT TM 327. Core correlations that are requested by the Contractor or that are required due to a change in aggregate or asphalt cement source will not be measured.

(Use the following subsection .90 when either of the following apply:

- ***Latex polymer treatment of aggregate is listed as an option in the pavement design report.***
- ***No separate payment will be made for the liquid asphalt.***
- ***Core correlation specifications are required by the pavement design report.)***

00745.90 Payment -

(Use the following paragraph and pay item when core correlation specifications are required by the pavement design report. The pavement designer will estimate the quantity of core correlations on the basis of one core correlation for each paving lift over 2,500 tons. If the project is a multi-year project, add correlations for each lift to be paved each subsequent year.)

Add the following pay item to the pay item list:

(c) Core Correlation of Nuclear Gauge Readings……..Each

(Use the following two paragraphs when core correlation specifications are required by the pavement design report.)

Add the following paragraph after the paragraph that begins "In item (b)…":

Item (c) includes developing core correlation factors for all gauges to be correlated for the lift on which the core correlation was performed, according to the procedure in ODOT TM 327.

(Use the following paragraph and bullet when latex polymer treatment of aggregate is listed as an option in the pavement design report.)

In the paragraph that begins "No separate or additional payment…", add the following bullet to the end of the bullet list:

- aggregate treatment - latex polymer

(Use the following two paragraphs when no separate payment 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. When used, be sure to also include the boilerplate language under subsection .80.)

Add the following paragraph to the end of this subsection:

No separate or additional payment will be made for asphalt cement used in the mixture.

(Use the following lead-in and subsection .96 when IRI pavement smoothness specifications are required by the pavement design report.)

Add the following subsection:

00745.96 Smoothness Price Adjustment - No separate or additional payment will be made for smoothness testing.

(a) General - A price adjustment based on the results of the IRI will be made for each 0.10 mile segment or partial segment of HMAC requiring IRI measurement according to 00745.73. The price adjustment will be based on the IRI values determined according to ODOT TM 772 for each 0.10 mile segment and partial segment. Partial segments less than 0.10 mile in length shall be evaluated with the IRI price adjustment value multiplied by the ratio of the partial segment length to 0.10 mile.

A smoothness price adjustment will be made for all segments, or partial segments based on the average IRI value and the following equations:

(Use one of the following options as required by the pavement design report. Only use one option and delete the one that does not apply.)

[Option 1 - Schedule 1 IRI smoothness price adjustment.]

Schedule 1

Averaged IRI (inches/mile)	Equation
≤ 35.00	Y = $500.00
35.01 - 60.00	Y = (– $20.00 × X) + $1,200.00
60.01 - 65.00	Y = $0.00
65.01 - 95.00	Y = (– $20.00 × X) + $1,300.00
> 95.00	Corrective Action
Y = The price adjustment for the segment or partial segment X = The averaged IRI value for the segment or partial segment	

[End Option 1]

[Option 2 - Schedule 2 IRI smoothness price adjustment.]

Schedule 2

Averaged IRI (inches/mile)	Equation
≤ 50.00	Y = $300.00
50.01 – 65.0	Y = (– $20.00 × X) + $1,300.00
65.01 – 80.00	Y = $0.00
80.01 – 95.00	Y = (– $20.00 × X) + $1,600.00
> 95.00	Corrective Action
Y = The price adjustment for the segment or partial segment X = The averaged IRI value for the segment or partial segment	

[End Option 2]

All segments or partial segments with an IRI value more than 95.0 inches per mile are subject to corrective action and retesting according to 00745.75(c).

For each paving season, the smoothness price adjustment will be made on the next monthly progress estimate following the satisfactory completion of all corrective work and the submission of all test data for all traffic lane paving on the Project.

00745.96(b) applies when corrective action is taken by the Contractor and the corrected areas are re-measured according to 00745.75.

(b) Adjustments for Sections Requiring Corrective Work - Segments or partial segments corrected and retested according to 00745.75(c) will be subject to the price adjustments described in 00745.96(a) except that no positive price adjustment (bonus) will be due to the Contractor for any retested segments or partial segments with an IRI value of 65.0 inches per mile or less. Corrected and retested segments or partial segments with an IRI value of greater than 75.0 inches are subject to the negative price adjustments (reduction) described in 00745.96(a).

Corrected and retested segments or partial segments with an IRI value of more than 95.0 inches per mile are subject to additional corrective action and retesting according to 00745.75(c), unless waived by the Engineer with the application of the maximum smoothness price adjustment based on a maximum IRI value of 95.0 inches per mile.