

SP744 (11-03-10)

(This Section requires SP730 and may require 00195.10.)

SECTION 00744 - MINOR HOT MIXED ASPHALT CONCRETE (MHMAC) PAVEMENT

(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.)

This specification is for use on Local Agency paving projects that have less than 10,000 tons of AC mix or an ADT of less than 5,000, regardless of AC tonnage. Also for use on Curbs/Sidewalks/Path/minor use projects.

Comply with Section 00744 of the Standard Specifications modified as follows:

00744.02 Definitions – Add the following:

Lot Size – A lot is the total quantity of material or work produced per JMF per project. The following circumstances will require a different lot:

- A new JMF is used.
- The method for measuring compaction is changed.
- A change from one test procedure for measuring asphalt content to another test procedure for measuring asphalt content occurs.

The Engineer may allow material for irregular areas not completed during the main paving operations, such as driveways or guardrail flares to be evaluated as a separate lot.

Sublot Size – A sublot is 1,000 tons of MHMAC, or the amount of MHMAC placed in a day if less than 1,000 tons is placed.

(Use the following subsection .11(a) on projects that are in Regions 4 and 5.)

00744.11(a) Asphalt Cement - Replace the sentence that begins "Use PG 64-22 or..." with the following sentence:

Use PG 64-28 or PG 70-28 asphalt on this Project.

Delete the paragraph that begins "Testing of the asphalt cement . . .".

Delete the paragraph that begins "Asphalt in RAP material, when blended . . .".

00744.13 Job Mix Formula (JMF) Requirements – Replace the paragraph that begins "Provide a JMF for the Project meeting the following..." with the following paragraph:

Do not begin production of MHMAC for use on the Project until the JMF is reviewed by the Engineer and written consent is provided to proceed. A new JMF is required if the asphalt cement grade, additives, or the source of the aggregate changes during production. Provide a JMF for the Project meeting the following criteria:

Add the following paragraph to the end of this subsection:

For dense graded Level 3 wearing course mixes, the mix design submittal shall include the results of the performance testing as outlined in the latest ODOT Contractor Mix Design Guidelines for Asphalt Concrete.

00744.14 Tolerances and Limits – Under **Constituent of Mixture** and **MHMAC All Types**, delete the following:

Asphalt Cement – ODOT TM 321 (Cold Feed/Meter) JMF \pm 0.20%

00744.16 MHMAC Acceptance - Replace this subsection with the following subsection:

00744.16 MHMAC Acceptance – For each 1,000 tons of placement, a CAT-1 shall perform a minimum of one of each of the following test methods as modified in the MFTP:

- Asphalt Content (AASHTO T 308 with ODOT TM 323 determined Calibration Factor),
- Gradation (AASHTO T 30)
- Mix Moisture (AASHTO T 329),
- Maximum Specific Gravity (AASHTO T 209)

When less than 1,000 tons of mix is placed in a day, perform a minimum of one series of tests per day. Provide test results to the Engineer by the middle of the following work shift.

Provide split samples for Verification and Independent Assurance testing to the Engineer when requested.

For each subplot, sample and submit to the Engineer the asphalt cement per AASHTO T 40 and Section 4(C) of the MFTP for compliance testing by ODOT Central Materials Laboratory.

Testing for irregular areas not completed during the main paving operations, such as driveways or guardrail flares may be waived upon written notice and accepted visually by the Engineer.

When three or more tests are performed on a project, a price adjustment will be calculated according to 00744.95.

Add the following subsection:

00744.17 Small Quantity Acceptance - When less than three test results are obtained on a project, the MHMAC will be accepted according to the following:

(a) Within Specification Limits - If all subplot sample test results are within specification limits for all constituents (including compaction), the material will be accepted and the full bid price will be paid for the material represented by that test.

(b) Outside Specification Limits - If a subplot sample test result for any constituent is outside the specification limit, the Engineer will have the backup sample tested.

(1) Backup Within Specifications - If the backup sample test results for all constituents are within specification, the material will be accepted and the full bid price will be paid for the material represented by that test.

(2) Backup Out of Specifications - If the backup sample test results are out of specification, the Contractor may choose to accept the price adjustment calculated according to 00744.95 or may choose to sample the in-place material for further testing. The price adjustments will be computed using all original test results as well as all backup test results. If there are less than three tests, average the two tests you have and use the average as the third test result. In no case will the composite pay factor (CPF) be greater than 1.0.

(3) In-Place Samples - If the in-place material is sampled, the Engineer will select and sample from three random locations from the area represented by the lot in question. Those samples will be tested and if found to be within specification, the material will be accepted and paid for at the full bid price. If the material proves to be outside of the specification limits, the material will be accepted and paid for at an adjusted price according to 00744.95. In no case will the CPF be above 1.0.

00744.44 Tack Coat - Add the following paragraph to the end of this subsection:

Treat all paved surfaces on and against which MHMAC is to be placed with an asphalt tack coat according to Section 00730. Immediately before applying the tack coat, clean and dry the surface to be tacked. Remove all material, loose or otherwise, that will reduce adhesion of the tack by brooming, flushing with water, or other approved methods.

Add the following subsection:

00744.48 Hauling, Depositing, and Placing - Haul, deposit, and place MHMAC as follows:

(a) Hauling - Cover MHMAC if rain or cold air temperatures are encountered any time between loading and placement.

MHMAC will be rejected before placing if one or more of the following is found:

- Below specified placing temperature limit
- Slumping or separating
- Solidifying or crusting
- Absorbing moisture

Dispose of rejected loads at no additional cost to the Agency.

Deliver the mixture to the paving machine at a rate that provides continuous operation of the paving machine, except for unavoidable delay or breakdown. If excessive stopping of the paving machine occurs during paving operations, the Engineer may suspend paving operations until the mixture delivery rate matches the paving machine operation.

(Use one of the following options for the lead-in paragraph and subsection .48(b) as instructed below. Delete the option that does not apply.)

[Option 1 - Use this lead-in paragraph and subsection .48(b) when required by the pavement design report]

(b) Depositing - Deposit MHMAC from the hauling vehicles so segregation is prevented.

Do not deliver the MHMAC directly into the paving machine for wearing courses where the continuous length of the panel is greater than 500 feet. Deliver the MHMAC to the paving machine by either a windrow pick-up machine or an end-dump transfer machine.

When MHMAC is windrowed, the pick-up equipment shall:

- Pick up substantially all of the MHMAC deposited on the roadway.
- Be self-supporting, not exerting any vertical load on the paving machine, or causing vibrations or other motions which could have a harmful effect on the riding quality of the completed pavement.

In irregular areas or areas with utility obstructions spaced less than 500 feet apart, the Engineer may waive the use of a windrow pick-up machine or an end-dump transfer machine.

[Option 2 - Use this lead-in paragraph and subsection .48(b) when Option 1 is not used]

(b) Depositing - Deposit MHMAC from the hauling vehicles so segregation is prevented.

When MHMAC is windrowed, the pick-up equipment shall:

- Pick up substantially all of the MHMAC deposited on the roadway.
- Be self-supporting, not exerting any vertical load on the paving machine, or causing vibrations or other motions which could have a harmful effect on the riding quality of the completed pavement.

(c) Placing - Alternative equipment and means may be allowed by the Engineer if the use of a paver is impractical.

Do not place MHMAC during rain or other adverse weather conditions, unless allowed by the Engineer. MHMAC in transit at the time adverse conditions occur may be placed if:

- It has been covered during transit.
- The MHMAC temperature is satisfactory.
- It is placed on a foundation free from pools or flow of water.
- All other requirements are met.

When leveling irregular surfaces and raising low areas, do not exceed 2 inches actual compacted thickness of any one lift, except the actual compacted thickness of intermittent areas of 1,000 square feet or less may exceed 2 inches, but not more than 4 inches. This may require portions of the mixture to be laid in two or more lifts.

Place the mixture in the number of lifts and courses, and to the compacted thickness for each lift and course, as shown. Place each course in one lift unless otherwise specified. Do not exceed a compacted thickness of 4 inches for any lift. Limit the minimum lift thickness to twice the maximum aggregate size in the mix.

Do not intermingle MHMAC produced from more than one JMF. Each base course panel placed during a working shift shall conform to a single JMF. The wearing course shall conform to a single JMF.

00744.49 Compaction - Replace this subsection with the following subsection:

00744.49 Compaction - Immediately after the MHMAC has been spread, struck off, and surface irregularities and other defects remedied, roll it uniformly with rollers meeting the requirements of 00744.24 until compacted to a minimum of 91% of MAMD. Perform finish rolling and continue until all roller marks are eliminated. Determine the density of each subplot by averaging five QC tests performed at random locations by a CDT with the nuclear gauge operated in the backscatter mode according to WAQTC TM 8. Calculate MAMD according to ODOT TM 305. When less than three subplot test results are obtained on a project, the MHMAC will be accepted according to 00744.17. Perform a minimum of one subplot density test per day.

Compaction to a specified density will not be required on temporary surfacing (see 00745.50), guardrail flares, mailbox turnouts, road approaches, pavement repair, and areas of restricted width (less than 8 feet wide) or limited length, regardless of thickness. Compact these surfaces according to 00749.45.

00744.80 Measurement - Delete the paragraph that begins "No separate measurement will be made...".

(Use the following subsection .90 when asphalt escalation is requested by the local agency. Asphalt escalation requires separate payment be made for the liquid asphalt and that projects have more than 150 tons of liquid asphalt.)

00744.90 Payment – Replace this subsection with the following subsection:

00744.90 Payment - The accepted quantities of MHMAC incorporated into the project, whether or not recycled materials are used, will be paid for at the Contract unit price, per ton, for the items

- (a) Level ____, ____ MHMAC
- (b) ____ Asphalt in ____ MHMAC

In item (a), the following will be inserted in the blanks:

- The level(s) of MHMAC (1, 2, 3) will be inserted in the first blank
- The type(s) of MHMAC (3/4 inch Dense, 1/2 inch Dense, 3/8 inch Dense), will be inserted in the second blank
- The words "in Leveling", "in Temporary", or "in Leveling and Temporary" will be inserted in the third blank when applicable

In item (b), the performance graded asphalt binder will be inserted in the first blank. The type(s) of MHMAC will be inserted in the second blank.

Payment will be payment in full for furnishing and placing all materials, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for the asphalt tack.

No separate or additional payment will be made for sawing, cleaning, and filling joints on bridge deck overlays.

(Use the following subsection .90 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.)

00744.90 Payment - 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.

Add the following subsection:

00744.95 MHMAC Price Adjustments:

(a)The Composite Pay Factor (CPF) – The Composite Pay Factor (CPF) calculated according to 00165.40 will be applied to the Contract unit price for the pay items of 00744.90 and to the applicable lot quantities. The Engineer will make the CPF available to the Contractor within 24 hours of receipt of the required quality control test results. If less than three samples are tested, the CPF will be computed as outlined in 00744.17. The maximum CPF for any case will be 1.0.

Use the following table to determine price adjustments in the CPF for constituents of MHMAC.

Gradation Constituents	Dense Graded MHMAC Type		
	Weighting Factor (f)		
All Aggregate Passing	3/4"	1/2"	3/8"
1"	1		
3/4"	1	1	
1/2"	1	1	1
3/8"	–	–	1
No. 4	5	5	5
No. 8	5	6	6
No. 30	3	3	3
No. 200	10	10	10
Other Constituents			
Asphalt Content	26	26	26
Moisture Content	8	8	8
Compaction	40	40	40

Those MHMAC constituents statistically evaluated will be eligible for a maximum PF of 1.00 (see 00165.50(b-1)), unless otherwise specified.

If these specifications do not require measurement of a constituent, its individual PF will be considered 1.00 in calculating the CPF according to 00165.40.

A price adjustment will be determined by the following formula:

$$(CPF - 1) \times \text{MHMAC Unit Price} \times (LQ) = \underline{\hspace{2cm}}$$

Where: LQ is the quantity of mixture in the lot

(b) Asphalt Quantity Calculation for Asphalt Cement Material Price Escalation/De-escalation – If there is no separate pay item for asphalt cement, the quantity of asphalt cement eligible for escalation/de-escalation will be the average of the values, as determined in 00744.16, used in the determination of pay factors under 744.95(a). Escalation/de-escalation payments will be made according to 00195.10 (d).

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