

HMA (Hot Mix Asphalt) Paving Inspector Duties and Checklist

Before Paving:

Pre-pave Meeting:

1. Paving foreman should attend. Use State Pre-Pave Meeting Form.
2. Does the Project have over 2500 tons of Hot Mix Asphalt (HMA)? If yes, a Quality Control Plan (QCP) is required. Review Special Provision Section 4.06, Subarticle 4.06.03-9. Discuss the Contractor's approved QC Plan at the meeting. The QCP shall be submitted to the Engineer for approval prior to production or placement.
3. Discuss the traffic control plan:
 - a. Is it appropriate for the operation and have adequate traffic control devices, signs and personnel?
 - b. It shall allow for the protection of all personnel including those performing quality control (QC) procedures and testing, acceptance core density testing and pavement markings.
 - c. It shall remain in place until the pavement has adequately cooled to support traffic with no harm to the newly placed HMA.
 - d. Special signs may be needed (i.e. notched wedge joint, uneven lanes).
4. Discuss Contractor's paving equipment listed below.

Inspecting Paving Equipment:

1. Paver
 - a. Hopper clean of all foreign (non-HMA) material
 - b. Screed vibration functional
 - c. Screed heaters functional
 - d. Equipped with automatic slope and grade control (contact ski or sonic)
 - e. Equipped with proper lighting if night paving
 - f. Only State approved release agents available for use in hopper, wings, and hand tools. The use of fuel oil, in any concentration (no mixing), is strictly prohibited.
2. Rollers
 - a. Sprinkler system in uniform working order
 - b. Drum scrapers in good condition
 - c. Vibratory roller equipped with indicators that display amplitude, frequency and speed settings/readouts to measure impacts per foot
 - d. Oscillatory roller equipped with frequency indicators
3. Haul trucks
 - a. No rips or tears in tarp
 - b. No mesh tarps allowed
 - c. Truck bed and tires clean of all foreign material (non-HMA)
 - d. Permitted for overweight loads?

4. Material Transfer Vehicle (MTV)
 - a. Review contract and Special Provision Section 4.06 for use of the MTV
 - b. If being used, subject to requirements in Article 1.07.05 Load Restrictions (for bridges)

Paving Operation:

Weather:

1. Are weather conditions (temperature, rain, surface moisture, etc.) suitable for paving? Will they remain that way throughout the paving operation?
2. Review Seasonal Requirements in Special Provision Section 4.06, Subarticle 4.06.03-4.
3. No HMA is to be placed when air or base temperatures are below 40°F.

Surface Conditions:

1. Are utility structures set properly?
2. If paving on subbase, is it uniformly compacted?
3. If paving on Portland/bituminous concrete or milled surface, is the surface clean, swept and have an application of tack coat if required (review specification)? If paving on a milled surface, see Milling Inspection section below.
4. Are temporary HMA transitions removed at limits of construction, around utility structures, etc.?

Milling (Cold Planing) Inspection:

1. Proper milling as per contract (Standard or Fine).
2. Milling machine shall be equipped with automatic grade and slope control.
3. Maximum speed of 45 ^{ft}/_{min}
4. Cutting teeth continually maintained to provide a uniform texture.
5. Milled surface shall be free from gouges, longitudinal grooves or ridges.
6. Test milled surface with a Contractor supplied 10 foot straightedge. Any variations in the milled surface that exceed the tolerances in the contract item shall be corrected immediately.
7. A vertical face (not rounded) for the full depth of the paving course is required at all limits of milling (longitudinally and transversely) and around all structures.
8. Protect structures to prevent millings from entering.
9. Sweeping operation to remove all millings from roadway.

Delivery tickets:

1. Verify that all information required by Subarticle 4.06.03-1 in the contract is on the ticket.
2. Inspector should add to the ticket:
 - a. Temperature of material (taken at initial break of material when unloading into paver hopper).
 - b. Time unloaded
 - c. Location of where material placed
 - i. Station or permanent reference (fixed object)
 - ii. Specific lane or direction
 - iii. Course or lift of material
 - iv. If material rejected, record reason on ticket

Paver Operation:

1. The Contractor is responsible for all quality control operations.
2. The Contractor is required to supply a 10 foot straightedge for the inspectors use (pavement smoothness and transverse construction joint transitions).
3. Verify only State approved release agents available for use on paver (Department's Central Testing Laboratory maintains the approved list).
4. The paver's screed should be placed on starting blocks, allowing for an additional $\frac{1}{4}$ inch per inch of desired compacted thickness. Adjust as necessary, use Contractor supplied 10 foot straightedge to check the joint.
5. Automatic slope and grade controls must be used.
6. Delivery trucks should have their tarps down and securely fastened, lifted just before unloading.
7. Verify trucks are within legal load limits, or have permit for overweight loads.
8. Check to verify that HMA material loaded in a manner to uniformly distribute into the truck bed.
9. Do not allow trucks to bump the paver when unloading
10. Lift truck bed such that the material moves as one mass into the hopper to prevent segregation.
11. Take initial temperature of material in each truck at time of unloading using a calibrated stick type thermometer or infrared gun. If using an infrared gun and temperature is outside of specification, the temperature must be verified using a stick type thermometer before rejection.
12. Keep paver hopper at least $\frac{1}{2}$ full at all times to prevent segregation.
13. Verify that the screed pre-heaters are used.
14. Verify that the screed vibration is being used throughout the paving operation.
15. Paver's augers should turn slow and consistently, not quick starts and stops. Keep a constant head of material in the auger chamber, only the top half of the auger flights should be exposed.
16. Match the paver's speed to material and truck supply to minimize or eliminate paver stops due to material supply.
17. Maximum paver speed 40 ft/min.
18. Keep the longitudinal joint straight.
19. Take frequent depth checks.
20. It is recommended that a minimum of 4 yield checks be made per Density Lot.
21. Longitudinal joints of the lift being placed should be offset 6-12 inches from the longitudinal joint directly below it.
22. When matching an existing lift or course of material longitudinally, overlap the joint approximately $\frac{1}{2}$ to 1 inch. Do not allow the lute person to broadcast material from the joint onto the newly placed mat. Luting should be kept to a minimum, if at all. Avoid excess or unnecessary hand spreading or luting.
23. When using the Notched Wedge Joint method for the longitudinal joint, the methods and equipment must first be approved by the Engineer. Review Subarticle 4.06.03-8 "Method 1".
24. Refueling of paving equipment in the paving area is not allowed.
25. The use of fuel oil, in any concentration, as a release agent or to clean equipment (including hand tools) is strictly prohibited. Only use release agents approved by the Department's Material Testing Laboratory.
26. Check mat consistently for fat spots (deposits of bitumen and fine aggregates from paving equipment), segregation, flushing (liquid bitumen rising to the surface during compaction), cracking or any other non-uniformity with corrections made when necessary.

27. Check the mat for pavement smoothness with the Contractor supplied 10 foot straightedge. The surface course shall not vary be more than $\frac{1}{4}$ inch. For all other courses it shall be $\frac{3}{8}$ inch.
28. Temporary transverse construction joint lengths shall be constructed as specified. When paving is to continue, the joint shall be formed by saw-cutting a sufficient distance back from the previous run exposing the full depth of the lift or course.

Rolling Operation and Compaction:

1. The Contractor is responsible for all quality control operations.
2. The Contractor shall use an adequate number and size of rollers to match the paving operation and achieve specified in-place density.
3. Immediately establish a rolling pattern that consistently achieves specified in-place density. The pattern may need to be adjusted during the operation due to changing temperatures and paving conditions.
4. Rollers should not roll too fast. Normally, a static roller's maximum speed is 5 m.p.h. (440 ft/min) and a vibratory roller's maximum speed is $2\frac{1}{2}$ m.p.h. (220 ft/min).
5. Rolling should begin at the side or low point, moving towards the center of the mat. If a longitudinal joint is formed, then roll the joint first.
6. For steep grades, it is recommended to vibrate uphill and static roll downhill.
7. Contractor shall use necessary hand tools for compaction around catch-basins, manholes and other structures.

Compaction Testing (QC/QA):

1. The Contractor is responsible for all quality control testing. In-place density testing shall be performed as specified.
2. In-place density testing shall be performed on the mat and longitudinal joints of Bridge and Non-Bridge Density Lots.
3. Base courses comprised of HMA S1 (or Class 4) are excluded from the longitudinal joint density requirement.
4. Lifts of $1\frac{1}{2}$ inches or greater shall be compacted to $94.5 \pm 2.5\%$ of the maximum theoretical gravity for the mat and $94 \pm 3\%$ for the longitudinal joint.

Density Acceptance Testing Utilizing Cores:

1. The Engineer shall divide the project into acceptance testing Density Lots as described in Subarticle 4.06.03-10.
2. Density testing shall be performed on each lift specified to $1\frac{1}{2}$ inches or greater in thickness.
3. The Contractor shall extract the cores (6 inch diameter, wet sawed) from sampling locations determined by the Engineer. The Contractor must not be given the core locations in advance of cutting (prior to the completion of finish rolling) to ensure the testing is truly random.
4. Form MAT-109 shall be completed and accompany the cores when delivered to the Lab.
5. The Contractor shall deliver the cores to the Department's Central Testing Laboratory in a State approved container.

Density Dispute Resolution Process:

1. The Contractor must perform quality control density testing and submit the results in the specified timeframe outlined in Subarticle 4.06.03-9. No request for dispute resolution will be allowed unless the Contractor provides quality control results supporting its position.
2. If the Contractor disputes the Engineer's test results, they must submit in writing a request to initiate the process within 10 calendar days of the notification of the test results.
3. If authorized, the Contractor must extract four core samples per disputed Density Lot no later than 30 calendar days from authorization using the stratified random sampling procedure.

Corrective Work Procedures:

1. If corrective work is required, the Contractor must follow the procedures as specified in Subarticle 4.06.03-12.