

# CONSTRUCTION PROCEDURES HANDBOOK

SECTION VI	SUBSECTION F-14	DATE
CONSTRUCTION OPERATIONS	ASPHALT (HMA) CORING AND AIR VOID AND THICKNESS PAY ADJUSTMENTS	1-31-19

The Department tests cores taken from asphalt pavements to assess the quality of the pavement based on Air Voids and Thickness. The Specifications provide for positive and negative pay adjustments and for the removal and replacement of pavement that does not meet the required quality standard.

Coring of the pavement is to be discussed by the RE at the Prepaving Meeting (See CPH Section VI Subsection A-4 PREPAVING MEETING). The agenda for the meeting will include discussion regarding the timeliness of the coring, coring locations, the RE witnessing the Contractor's coring locations and delivery of the cores by the Contractor to the Bureau of Materials in Trenton. In addition to the invitees shown in CPH Section VI Subsection A-4 PREPAVING MEETING, also invite Pavement Design to this meeting.

The RE must ensure that a test strip is performed for the first 700 to 1200 SY placed for each job mix formula. The Contractor will take 5 cores and test them for the bulk specific gravity and maximum specific gravity in order to correlate the contractor's nuclear gauge. These cores are different from the air void and thickness cores. Upon completion of the test strip, the Contractor may be allowed to continue paving (see the specification for each HMA mix for the requirements). If the Contractor does not continue paving and the test strip is constructed on the project, the Department will accept the test strip as Lot 1 regardless of size.

The RE is to request the coring locations from the Bureau of Materials as soon as the paving operations are complete for a shift. Directions regarding the requests for coring locations are available in the RE Site Manager –LIMS HMA Core Request Manual available at the following link:

<http://njdotintranet.dot.state.nj.us/divbur/cpm/aashtoware/sitemanager/pdf/00recoringquickguide.pdf>

In the core request on SiteManager, the RE should indicate areas not to be cored. These areas include:

- Near loop detectors, furnish accurate field locations.
- Within 100 feet of a bridge.
- In a pavement transition area.
- Within 20 feet of an intersection or commercial driveway remaining open to traffic during construction.
- Areas agreed upon as being unstable.

The RE will receive the coring locations thru Site Manager. The RE will provide the Contractor with the coring locations in order to perform the coring.

For the first lot of a job mix, the RE must ensure the Contractor takes the core samples no sooner than 12 hours after paving and delivers them to the Bureau of Materials within 48 hours of completing the lot. The coring of additional lots must be delivered to the Bureau of Materials within 7 days of completing the lot and prior to placement of subsequent courses. Deviation from this requirement does not relieve the Contractor from the removal and replacement requirement should an underlying course not meet the specified requirements.

The RCE will monitor the time frames between paving and the request for coring locations, between paving and core sampling and between core sampling and delivery of the samples to Trenton by reviewing the Request for Coring and the Core Receiving Spreadsheet provided by the Bureau of Materials on a monthly basis.

The inspector must witness the coring and verify that the core samples were taken at locations provided by the Bureau of Materials. Construction staff must **not** permit Contractors to change core locations unless there is a valid reason. If a provided core location is within 5 feet of a transverse paving joint, manhole, inlet or other structure, the inspector can adjust the core location. The adjusted core location should be no more than 5 feet in the longitudinal direction from the original location. If a provided core location is within 1 foot of a longitudinal paving joint, the inspector can adjust the core location. The adjusted core location should be no more than 1 foot in the transverse direction (offset) from the original location. If a provided core location is in an inaccessible area or an area not paved in the Contract, the inspector can adjust the core location. The adjusted core location should be as close as practical to the original location. This change in location must be noted on the core sample printout including the reason for the location change in the remarks. If during the coring operation a core is damaged or cannot be removed because of the poor quality of the pavement, this information must be recorded and a new core taken within 2 feet of the original location.

The inspector must complete the top portion of the core sample printout with his/her full name, the name of the coring company, the full name of core drill operator, the date of coring, and the seal number. On the last 5 days of paving, write on the sample print out that it is the last 5 days of paving so as to expedite returning results back to the RE. Place the core sample printout in a plastic bag and place it in the core sample box then seal the core sample box with the NJDOT seals provided by the Bureau of Materials. The core sample box must be tamper proof and be able to ensure that the core samples do not get disturbed, damaged or both. The Contractor must deliver the box to the NJDOT Materials lab for testing. It is unacceptable for Construction staff to permit a Contractor to take cores samples without witnessing the cores. Inspectors who complete the core sample forms for core samples that they have not witnessed or indicate a core sample location that differs from its actual location are falsifying a public record and will be subject to disciplinary action.

**NOTE:** The RE must periodically verify that the core sample location records are correct, and document this quality assurance inspection in his diary.

Sample cores are not required on asphalt pavement shoulders that are less than 6 feet wide. However, if the RE has concerns about the quality of the paving on the shoulder, the RE may require cores to be taken, and assess the appropriate pay adjustment based upon the core results.

Under no circumstance is the Contractor permitted to take additional cores without the RE's permission. If permitted by the RE, the RE must witness the additional core sampling. The Contractor must be informed in advance that permission is contingent on the coring being witnessed by the RE.

### **Assessing Air Voids and Thickness Pay Adjustments**

The Bureau of Materials will provide the RE the individual lot pay adjustments by email. The RE will provide them to the Contractor.

The RE is to incorporate the pay adjustments into the Contract through a Change Order. New Work Items 401121M HOT MIX ASPHALT THICKNESS QUALITY ADJUSTMENT with a unit of DOLL, and/or 401115M HOT MIX ASPHALT AIR VOID QUALITY ADJUSTMENT with a unit of DOLL are to be used. They can be positive or negative in value. Their incorporation into the Contract is to be done as soon as the pay adjustment is received by the RE. Do not wait until the end of the Contract to create the Items.

### **Final Core Summary (FCS)**

When paving is completed, the RE will notify the Bureau of Materials' Coring Section. The FCS, including the applicable pay adjustments/pay factors per the specifications, will be compiled by the Coring Section and sent to the RE. Upon receipt of the FCS, the RE will have five days for review and comment prior to distribution by the Bureau of Materials.

### **NOTE**

The following information regarding asphalt Air Voids and Thickness is as specified in the Standard Specifications and the Standard Inputs as of the date of this procedure. The RE is directed to review the Contract Special Provisions to determine the requirements for the various asphalt courses that are being constructed.

### **Air Voids**

#### **Air Void Lots**

The size of Air Voids Lots are provided in the Specifications. They are as follows:

#### **Mainline Lots (not to include shoulders)**

- 1- A days paving up to 4000 Tons. If a day's paving exceeds 4000 Tons, the lot may be split into 2 equal lots.
- 2- If a days paving is less than 1000 Tons, the tonnage may be added to the previous or subsequent day's tonnage for a combined lot.

### Ramp Lots

1. Ramps Lots are defined as 10,000 Square Yards. The RE may combine multiple ramps into 1 Lot, but it is necessary to take at least one core in each ramp.

### Other Pavement Lots

1. Other Pavement Lots are defined as 10,000 Square Yards of paving in shoulders greater than 6' in width and paving in other undefined areas.

### **Air Voids Retest**

If the results from the initial series of 5 cores produce a percent defective that permits a retest, the Contractor may elect to take an additional set of 5 cores at random locations chosen by the ME. The RE must ensure that the Contractor take the retest cores within 15 days of receipt of the initial core results. If the additional cores are not taken within the 15 days, the ME will use the initial core results to determine the PPA. If the additional cores are taken, the ME will recalculate the PPA using the combined results from the 10 cores.

### **Air Voids Removal and Replacement.**

If the final lot PD  $\geq 75$  (based on the combined set of 10 cores or 5 cores if the Contractor does not take additional cores), remove and replace the lot and all overlying work. The replacement work is subject to the same requirements as the initial work.

### Thickness

#### **Thickness Lots**

Thickness Lots are required when full depth, uniform paving is being constructed. The size (tonnage or Square Yard) and Lot number for a thickness lot corresponds to the surface course air void lot. The coring performed for a Surface Course Air Void Lot will be done so that the core is evaluated for surface course air voids, surface course thickness and entire pavement thickness.

#### **Thickness Retest**

If the initial series of 5 cores produces a percent defective value of PD  $\geq 30$ , the Contractor may elect to take an additional set of 5 cores at random locations chosen by the ME. Take the additional cores within 15 days of receipt of the initial core results. If the additional cores are not taken within the 15 days, the ME will use the initial core results to determine the PPA. If the additional cores are taken, the ME will recalculate the PPA using the combined results from the 10 cores.

#### **Thickness Removal and Replacement**

If the final lot PD  $\geq 75$  (based on the combined set of 10 cores or 5 cores if the Contractor does not take additional cores), remove and replace, or mill and overlay, the lot. The replacement work is subject to the same requirements as the initial work.

#### **Surface Course Thickness Retest.**

If the initial series of 5 cores produces a percent defective value of PD  $> 10$ , the Contractor may take an additional 5 cores at random locations determined by the ME. Take the additional cores within 15 days of receipt of the initial core results. If the

additional cores are not taken within the 15 days, the ME will use the initial core results to determine the PD. When the additional cores are taken, the ME will recalculate the PD using the combined results from the 10 cores.

**Surface Course Thickness Removal and Replacement**

If the surface course fails to meet the acceptance requirement, the Department will require removal and replacement of the lot. The replacement work is subject to the same requirements as the initial work.