Hot Mix Quick Reference Guide

I. Mix Design Submittal

Submitted to Bituminous Aggregate Lab by contractor thru the Consultant on NDOT Mix Design Submittal form – available on NDOT website.

Attachment A: Mix Design Submittal form

Approved Mix Design in OnBase by Bituminous Aggregate Lab - labeled as Approval Letter in NDOT Mat Material Acceptance Documentation – includes Job Mix Formula (JMF) number.

Attachment B: Approval Letter

Any mix design changes shall be submitted on the NDOT Mix Design Submittal form to the Bituminous Aggregate Lab thru the Consultant.

II. Emulsion and Binder Sampling

**Emulsion** – One 1 Quart sample per type of emulsion per project. Delivered to Bituminous Rheology Laboratory within 5 days of obtaining sample.

**Binder** – One 2 Quart sample per 200 tons binder or portion thereof, per binder grade for each project. Delivered to Bituminous Rheology Laboratory within 10 days of obtaining sample.

Both to be tested at the Bituminous Rheology Laboratory in Lincoln.

Sampler must be NDOT Certified.

Ship Binder and Emulsion sample to:

**Nebraska Department of Transportation**

**Attention: Bituminous Rheology Lab**

**Material and Research Division**

**1400 Highway 2**

**Lincoln, Ne 68502**

III. Production and Cold Feed Sampling/Testing, and Density

**Acceptance Testing** – contractor will sample and test all Control Strip samples, unless waived, and all sublot samples from mainline or shoulder paving (not drives or intersections). Sample size should be 75 lbs. – split into 2 representative portions and properly identified. Possession of the verification split sample shall be maintained in a clean, dry, and secure location.

**Sample Identification**

HMA Samples

One Unique Sample ID# for each verified sublot sample – Cold Feed samples do not have a separate ID#.

2 templates are:

- BAF001003 Asphaltic Concrete Sample Submission-Field
- BAL003001 Asphaltic Concrete Quality Assurance-Central Lab
Density Cores

One Unique Sample ID# for each verified sublot core or Joint Density core

2 Templates are:

BAF002002 Asphaltic Concrete Core Sample Submission-Field
BAL006001 Asphaltic Concrete Core Testing-Central Lab

Tensile Strength Ratio Specimens

One Unique Sample ID# for each set of 6 TSR’s

2 Templates are:

BAF004001 Asphaltic Concrete Tensile Strength Sample Submission
BAL004001 Asphaltic Concrete Tensile Strength Ratio

Documentation of TSR results to be entered on NDOT Lab Summary Software by Bituminous Aggregate Laboratory in OnBase.

Verification Testing - if contractor runs a Control Strip – all 3 Control Strip samples shall be verified – contractor chooses location within each of the three 200 ton sections. Control Strip must be accepted prior to full production.

If Control Strip is waived, Sublot 1-1 and all sublots identified with an “X” in the FAA/CAA Cold Feed column shall be verified at the indicated tonnage on the Random Sample Schedule (RSS).

Attachment I: Random Sample Schedule

Cold Feed Sampling

Shall be taken to represent the material taken for the HMA sample. Must be taken before the truck with the tonnage shown on the RSS is loaded.

Contractor must take minimum 1 Cold Feed for FAA/CAA testing per lot as identified on RSS.

Contractor may take Cold Feed for FAA/CAA on any other sublots they choose.

Verification Testing – test the same sublot Cold Feed for FAA/CAA as the HMA sample, as indicated on the RSS.

Density Testing

Contractor will choose cores or density gage.

Cores – contractor will test 1 for every sublot plus 1 Joint Density per lot at locations indicated on RSS. Cores shall be properly identified and maintain possession in a climate controlled, secure location after completion of contractor testing.

Verification – 1 per sublot as indicated on RSS, plus 1 Joint Density per lot.

Gage - contractor will cut minimum first 3 cores in first lot and lot 1 Joint Density core, and run gage in same location, as indicated on RSS, for correction factor determination (gage results before cutting cores).
Joint Density will have a separate correction factor. Correction factor verification cores will be cut for every 15th density and at the Joint Density in the same lot. Usually cores are cut at 1-1, 1-2, 1-3, 1JD, 4-1, 4JD, 7-1, 7JD, 10-1, 10JD, etc.

Gage results below 90% are inaccurate and a core must be cut in that location.
Core results below 90% shall not be used to establish or verify correction factor.

Ver**ification** – If using gage, every core cut shall be verified.

**IV. QA/QC Lab Verification Testing**

**Contractor Test Results**

Entered on correct version of NDOT Superpave Software and e-mailed to verification testing laboratory and project staff promptly upon completion of tests (Usually daily).

**Attachment J: Superpave Software**

**Verification Laboratory Test Results**

Entered on correct version of NDOT Lab Summary Software and e-mailed to contractor and project staff promptly upon completion of tests (Usually the day tests are complete). The NDOT Lab Summary Software is JMF specific and is provided by the NDOT Bituminous Aggregate Laboratory in OnBase in NDOT Mat Material Acceptance Documentation as Test Summary. This document should be filled out in OnBase and updated as a revision, as results are entered.

**Attachment K: Lab Summary Software**

**Test Results**

**HMA Sample and Cold Feed Correlating Results**

All results correlate – contractor’s results are used for pay factor determinations.

**Density Correlating Results**

Contractor’s results used for pay factor determination. Verify correction factors are calculated correctly.

**HMA Sample and Cold Feed Non-Correlating Results**

An Independent Assurance (IA) Review is required for those tests.
Notify contractor and project staff promptly via e-mail.

**Attachment L: IA E-mail example**

Check and record all contractor’s equipment and procedures used to obtain sample and test material.
Test a biased split sample of material to verify results.
Include contractor and verification lab’s IA Review results on NDOT Lab Summary Software.
Notify contractor and project staff of findings and test results via e-mail.

**Attachment M: Findings E-mail**

Upload all correspondence to OnBase.

Testing of additional sublots in that lot may be required.
If Air Voids or FAA test results do not correlate, the verification lab’s results must be used to calculate pay factors. These values will be required to be entered in the appropriate Red Box on the contractor’s NDOT Superpave Software.

All other non-correlating results will consider the findings of the IA Review and additional sublot test results to determine which results will be used for pay factors on a case by case basis.

**Density Non-Correlating Results**

- Notify contractor and project staff promptly via e-mail.
- The core shall be dried and an IA Review performed at the contractor’s lab with the core.
- Check and record all contractor’s equipment and procedures used to obtain sample and test material.
- If the contractor’s new results correlate with the verification results, those results shall be used for pay factor calculations. If not, the verification lab’s results shall be used for pay factor calculations.
- Include contractor and verification lab’s IA Review results on NDOT Lab Summary Software.
- Notify contractor and project staff of findings and test results via e-mail.
- Upload all correspondence to OnBase.

**Density Re-cuts**

- Contractor may request re-cuts on any lot or Joint Density with a pay factor less than 1.00.
- Re-cuts must be completed by the working day following completion of the lot testing or Joint Density testing.
- Lot density re-cuts are all 5 cores in the lot – **gage not allowed** – and must use all 5 re-cut cores to calculate pay factors. Must be in location as indicated on RSS – distance from edge does not change from original density location.
- Joint Density re-cuts must be a core – **gage not allowed** – and must use the re-cut to calculate pay factor. Must be in location as indicated on RSS – In or Out does not change from original joint density location.
- All re-cut cores are verified at verification testing laboratory.

**Referee Testing**

- The contractor may request Referee Testing on any non-correlating result.
- Will be performed at NDOT Central Lab if enough material remains in the verification lab’s split HMA sample or Cold Feed sample for the sublot with non-correlating results.

**V. Final Lot Details**

**Final Lot**

- HMA samples, Cold Feed Samples, and Joint Densities for mainline or shoulder paving shall be taken at the tonnage indicated on the RSS.
- If one or more HMA samples are taken, a minimum of 3 lot density samples are required to calculate lot average density.
- The final sublot tonnage may be greater than normal sublot size if the next sample isn’t acquired based on the RSS tonnage.
VI. Project Finals Submittal

Project Completion

Review contractor’s final NDOT Superpave Software to verify:

- Everything filled in correctly
- All pay factors are calculated correctly
- Red Boxes are filled in if necessary
- Reported tonnage is correct

Create a SiteManager or AASHTOWare Project Sample ID# and select the correct template for this sample. This is a field authorized sample.

BAF003001 Asphaltic Concrete Final Summary/Pay Factor-Field

Attachment N: BAF003001

Upload the Superpave Software Excel file to OnBase in NDOT Mat Material Acceptance Documentation with the correct Sample ID# as Superpave Software.

NDOT SiteManager/AASHTOWare Support

SiteManager/AASHTOWare Project Support
Ty Carlson
Bob Seger
Doug Wilson
Ndot.awprojectsupport@nebraska.gov
402-479-4760

Materials & Research Final Review
Andi Clark
Andi.Clark@nebraska.gov
402-479-4753