

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 subplot 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 subplot 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

Attachments C & D: BAL001003 & BAF003001

Density Cores

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

2 Templates are:

BAF002002 Asphaltic Concrete Core Sample Submission-Field

BAL006001 Asphaltic Concrete Core Testing-Central Lab

Attachments E & F: BAF002002 & BAL006001

All samples shall be marked as Complete (if all results correlate), or Fail (if any test results do not correlate), and authorized upon completion of tests in Site Manager or AASHTOWare Project. This will be completed by the verification testing lab staff.

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

Attachments G & H: BAF004001 & BAL004001

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 subplot 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 subplot 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 subplot 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.

Verification – 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 subplot 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 subplot 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 subplot tonnage may be greater than normal subplot 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

Quality Assurance Support

Robert Rea, P.E.

Flexible Pavements and Quality Assurance Engineer – Headquarters

Robert.Rea@nebraska.gov

402-479-3839

Jody Paul

Bituminous Aggregate Laboratory – Lincoln

Jody.Paul@nebraska.gov

402-479-3851

Calvin Splattstoesser

Grand Island Branch Laboratory

Cal.Splattstoesser@nebraska.gov

308-379-8596

Mike Reynolds

Norfolk Branch Laboratory

Mike.Reynolds@nebraska.gov

402-649-9312

Asad Sahak

Bituminous Rheology Laboratory – Lincoln

Asadullah.sahak@nebraska.gov

402-479-3742

Terry Becker

Omaha Branch Laboratory

Terry.Becker@nebraska.gov

402-805-7236

Jerry Isom

North Platte Branch Laboratory

Jerry.Isom@nebraska.gov

308-530-4010

James Smith

District 1 Quality Assurance

James.d.Smith@nebraska.gov

402-499-1638