



New Mexico Department of Transportation

DETERMINATION OF BINDER IGNITION OVEN CALIBRATION FACTORS

1. GENERAL

- 1.1** Both the asphalt calibration factor and the aggregate calibration factor must be checked in order to ensure that variations in oven operation and efficiency, possible differences in weighing accuracy, and the breakdown of aggregate during the ignition process are properly accounted for. These calibration factors may be affected by oven setup and efficiency; by the type, source and gradation of the aggregate used; by the type or grade of asphalt binder used; and by the addition of hydrated lime (or Anhydrite Material). Therefore, to optimize accuracy calibration factors must be established for each individual oven and for each mix design tested.
- 1.2** The Contractor shall be responsible for obtaining the materials, fabricating the required sets of calibration specimens for each oven that will be involved in ignition testing for a given project, and for delivering the calibration specimens and specimen fabrication information to the appropriate laboratories for testing. This includes all laboratories used for process control testing, Quality Assurance Testing, Referee Sample Testing and Independent Assurance Testing.
- 1.3** All oven calibration specimens for a specific Job Mix Formula (JMF) shall be prepared by, and within the same laboratory facility at the same time.
- 1.4** The latest version of the Binder Ignition Calibration Excel Spreadsheet provided by the Department shall be used to build and document all binder ignition samples for use on NMDOT projects.
- 1.5** Each set of oven calibration specimens shall consist of four (4) ignition specimens.
- 1.6** A minimum of four (4) complete sets and one (1) referee set shall be created. Samples shall be delivered in wax lined sample boxes.
- 1.7** All oven calibration specimens sent to the project and project related laboratories should be tested prior to paving operations. The referee samples shall be provided to and be retained by the District Laboratory. The additional samples built for contingency purposes shall be retained by the laboratory that prepared the samples.

2. SAMPLING

- 21** Aggregate samples shall be obtained in accordance with AASHTO T-2, as modified by the Department and described in the Technician Training and Certification Program (TTCP) Manual, and shall be representative of the material to be used in producing asphalt mixture.
- 22** Asphalt binder samples shall be obtained in accordance with AASHTO T-40 and shall be representative of the material to be used in producing asphalt mixture.
- 23** Mineral admixture samples shall be obtained in accordance with AASHTO T-218, and shall be representative of the material to be used in producing asphalt mixture.

3. SAMPLE BUILD INSTRUCTIONS

31 Enter the following data on the INFORMATION tab in the appropriate place:

- a. Project & Control Numbers
- b. Asphaltic Binder Supplier
- c. Asphalt Binder Grade
- d. Asphaltic Concrete Supplier
- e. Lab preparing the samples
- f. Type of mix
- g. SML Mix Design Number
- h. Design Total Asphalt Percentage
- i. #200 Target Value
- j. Aggregate Name, Size and Combination
- k. Select appropriate Aggregate Pit either Agg. Pit #1 or Agg. Pit #2.
- l. Enter the aggregate gradations for each aggregate.
- m. Enter the RAP asphalt content.
- n. Target composite gradation of the build samples shall be within JMF acceptance limits.

32 Enter the following information on the BATCH SHEET tab:

- a. Sample Batch Date
- b. Total Sample Build Weight
- c. Recommended Ignition Oven Temperature, which will be determined by the lab building the specimens.

- d. Dry sieve enough crusher fines to obtain enough -#200 material to build all the sets.
- e. Wash, dry, sieve and separate the remaining virgin aggregates.
- f. RAP, if required, shall be fractioned so that it passes the 1" sieve.
- g. RAP, if required shall be broken down, sieved and separated on the ¾", ½", ⅜" and #4 sieves. No further sieving is required on RAP material passing the #4 sieve.
- h. Build the required samples per AASHTO T-308 instructions using the batch weights calculated on this tab.

3.3 Enter the following information on the District Lab, Project Lab, Contractor Lab, Referee Lab and Group Lab tabs:

- a. Date Sample Batched
- b. Sample ID
- c. Cumulative batch weights for that each sample set

3.4 Print the individual group tab batch weight sheets to include with each Sample

3.5 Email the excel file to the NMDOT Project Manager, NMDOT District Lab Supervisor (DLS), and Contractor.

4. SAMPLE BURN/GRADATION INSTRUCTIONS

- 41** Obtain a copy of the excel file used during the sample build procedure.
- 42** Find the tab that corresponds to the set that is being tested.
- 43** Scroll down to the "Correction Factor Sample Burn Information".
- 44** Enter the Testing Technician Name and TTCP Certification Number.
- 45** Test all four (4) samples in accordance with AASHTO T-308/T-30 as modified by TTCP for asphalt content and gradation.
- 46** Enter the sample weights before testing at 300°F, asphalt contents, and gradations.
- 47** Results can be reviewed on the SUMMARY Tab.
- 48** Send the completed excel file to the DLS to review.
- 49** The DLS will combine all the sample data from each lab participating into one file to determine the correction factors that will be applied.

- 410** If, in the opinion of the District Laboratory Supervisor, the difference between all the aggregate and asphalt correction factors from each of the ovens being calibrated are not adequately consistent, new samples shall be prepared and burned. Results from the original calibrations samples shall be discarded.
- 411** If there are any discrepancies or problems with any set of burn specimens, all results for the calibration set in question must be discarded and a complete new set burned. If a contingency set of specimens (fabricated from the same materials as the original burn specimens) is not available, then all specimen results from all ovens must be discarded and new specimens built for each oven to be calibrated.

5. SUMMARY RESULTS

- 51** It is important that all the data from each lab be incorporated into the same file.
- 52** The summary sheet will calculate each laboratory's individual aggregate/asphalt corrections and the corrections to be used for the project.

6. CONTINGENCY SAMPLES

- 61** Contingency samples may need to be tested if any of the following conditions occur:
 - 6.1.1** The oven location or venting set-up has changed.
 - 6.1.2** If there are any discrepancies or problems with any set of burn specimens.

7. RECALIBRATION

- 71** New calibration factor samples shall be created if any of the following conditions occur:
 - 7.1.1** The source or grade of asphalt binder or mineral admixture has changed,
 - 7.1.2** The Project Manager or the District Laboratory Supervisor has reason to suspect a material change has occurred that may affect the calibration factors.