



INDIANA DEPARTMENT OF TRANSPORTATION Division of Materials and Tests

Directive 304

QC/QA Hot Mix Asphalt Procedures

GYRATORY SPECIMENS

One gyratory specimen is made from the original sample using the weight of mixture from the DMF. The remainder of the original sample is used to compact a second gyratory specimen.

When possible, the same gyratory will be used for the DMF for the entirety of the paving season.

Insufficient Plate Sample Size:

If the remainder of the original sample is insufficient to produce a second gyratory specimen to the target weight on the DMF, the specimen is discarded and the backup sample will be used to make one additional specimen. The two gyratory specimens will be used for subplot acceptance. The bulk specific gravity of the gyratory specimen results of any subplot with an insufficient plate sample size are not able to be disputed.

Incorrect DMF Gyratory Specimen Target Weight:

If the weight of mixture from the DMF produces a specimen height for one or both specimens that is less than 109.5 mm or greater than 120.4 mm, both specimens will be discarded. The Contractor will be notified of the height problem and will be given two working days to supply the Department with a revised weight of mixture from the DMF to produce a specimen height between 109.5 mm and 120.4 mm.

The revised weight of mixture from the DMF will be used to compact two additional specimens from the backup sample. The bulk specific gravity of the gyratory specimens results of any subplot with an incorrect DMF gyratory specimen target weight are not able to be disputed. The mixture is considered failing if the revised weight of mixture produces specimen heights for one or both specimens less than 109.5 mm or greater than 120.4 mm and will be submitted to the Failed Materials Committee for determination, following Directive 112.

If one or both samples contain insufficient material for one gyratory specimen each, the previous subplot is used for the acceptance test results for the subplot. If there is no previous subplot, the subsequent subplot is used for acceptance of the subplot. If the subplot is the first subplot for the year, the subsequent subplot will be used. If there is only one subplot for the mixture, the mixture is considered failing and is submitted to the Failed Materials Committee for determination, following Directive 112.

Gyratory Specimens with a difference of more than 0.020:

The Gmb values may be used for subsequent determination of the volumetric properties of the mixture; however, the procedures contained within Directive 303 should be reviewed prior to

compaction of additional specimens. If available, the A3 box may be used to make additional gyratory specimens and will replace the previous gyratory specimen values. However, use of the A3 box for aggregate Gsb testing and acceptance sample replacement take priority.

MAXIMUM SPECIFIC GRAVITY AND BINDER CONTENT SAMPLES

If the original sample is insufficient for the maximum specific gravity and the binder content tests, the maximum specific gravity test will be conducted. The backup sample is used for the binder content. The maximum specific gravity or binder content results of any subplot with an insufficient plate sample size are not able to be disputed.

If one or both samples contain insufficient material to determine the maximum specific gravity value, the previous subplot is used for the acceptance test results for the subplot. If there is no previous subplot, the subsequent subplot is used for acceptance of the subplot. If the subplot is the first subplot for the year, the subsequent subplot will be used. If there is only one subplot for the mixture, the mixture is considered failing and is submitted to the Failed Materials Committee for determination, following Directive 112.

Extraction Method:

When possible, the auto extractor will be used for a DMF for the entirety of the paving season. When possible, the centrifuge extractor will be used for a DMF for the entirety of the paving season.

DAMAGED ORIGINAL SAMPLE

If the Department damages or discards an original sample, the A3 sample may be used in lieu of the damaged or discarded original sample providing it is not needed for aggregate Gsb testing.

BACKUP SAMPLE FOR USE IN DISPUTED SUBLOT TEST RESULTS

If the backup sample from the disputed subplot(s) has been discarded or damaged by the Department, the A3 sample may be used in lieu of the discarded or damaged backup sample providing it was not used for aggregate Gsb testing.

If the backup sample from the disputed subplot(s) has been discarded or damaged and the A3 sample is not available, the QC data or the original QA data will be used, whichever is most favorable to the pay factor. If the original pay factor is greater than 1.00 the original value will be used. All disputed lots or sublots with missing backup samples will be submitted to Materials and Tests for evaluation.

If a subplot has multiple properties disputed per 401.20 and there is insufficient material to determine any one of the disputed properties, the subplot dispute is invalid and additional testing will not be performed.

If a subplot has multiple properties disputed per 401.20 and backup cores are required, the backup cores shall be taken per 401.20(d). If the backup cores are not obtained within 7 calendar days, the subplot dispute is invalid and additional testing will not be performed.

MISSING SAMPLES

If no acceptance sample is obtained for a subplot and all previous or subsequent subplot test results do not exist, all available information to include the Contractor test results will be submitted to Materials and Tests for evaluation.

If no acceptance sample is obtained for a subplot and the previous or subsequent subplot test results do exist, the tonnage from the subplot with the missing samples will be added to the previous subplot quantity (or the subsequent subplot quantity if the previous subplot is not available) provided the subplot quantity is less than or equal to 100 t. A subplot quantity greater than 100 t will constitute a full subplot and results from the previous subplot (or subsequent subplot if the previous subplot is not available) will be replicated and used to represent the subplot with the missing samples.

If cores are available, but plate samples are not, only the missing plate acceptance data will be replicated as noted above.

PWL or VOLUMETRIC ACCEPTANCE

Partial lots of four sublots or less will be added to the previous lot in PWL acceptance provided the previous lot exists. The previously disputed lot results will not change. Any partial lot that cannot be added to a previous lot will use volumetric acceptance.

A notification of a disputed lot or subplot shall be submitted within seven calendar days of receipt of the Department's written results for the lot accepted under 401.19(a) or the subplot accepted under 401.19(b). The conditions to dispute an extended lot are as follows:

1. One dispute will be allowed for the entire extended lot if the Contractor informs the Department of the anticipated extended lot condition within seven calendar days of receipt of the lot results, or;
2. One questioning will be allowed only for the extended sublots if the Contractor did not inform the Department of the anticipated extended lot condition within seven calendar days of receipt of the lot results.

Corelok offset:

Dense Graded HMA; when core BSG (Gmb) is determined by AASHTO T 331, a value of 0.020 will be added to the core BSG.

SMA; when core BSG (Gmb) is determined by AASHTO T 331, a value of 0.045 will be added to the core BSG.

Aggregate combined Gsb:

Per ITM 597, a new established aggregate Gsb will replace the previous established Gsb on subsequent sublots following the date of notification. The contractor may know that the aggregate Gsb is changing and does not want to knowingly produce mix with a different Gsb, waiting on Department determined Gsb values. The contractor can request in writing for a Department determined Gsb to take effect in arrears, back to the date the request was made. The request should be clear, indicating which sublots will be affected, and include any supporting QC data showing the Gsb change.

ESAL substitution:

A category 4 HMA mixture may be used when a category 3 HMA mixture is specified. When a DMF is submitted meeting the requirements of a category 4 HMA mixture, it is considered to meet the requirements of a category 3 HMA mixture. The producer may select the category 3 and category 4 box in DMF entry when submitting a category 4 HMA mixture.

Per 402.04, a Type D mixture may be used in lieu of a Type C or a Type B mixture. A Type C mixture may be used in lieu of a Type B mixture.

DMF/CLN 300T exemption:

Per 401.09, the first 300 tons of the first subplot of the first lot for each mixture pay item will not be sampled (plate samples).

- A mixture pay item is equivalent to a CLN.
- Within a calendar year, the first 300 tons of a CLN will not be sampled.
- If a CLN is used over multiple calendar years, then the first 300 tons of the CLN, per calendar year, will not be sampled.
- If the contractor chooses to switch DMFs for a CLN in the same calendar year, then there is no longer a 300 ton exemption for sampling.

Per 410, there is not a 300 ton exemption for SMA mixtures.

Low tonnage QC/QA HMA:

If the original CLN quantity is 300 tons or greater and the final CLN tonnage paved is between 300 tons and 350 tons, the mixture may be accepted by type D certification. It is often difficult and not logistically possible to obtain samples per 401.09 in the 50 tons (or less) subject to sampling.