

VTrans Bituminous Concrete Field Sampling and Dispute Resolution Supplement

The following are temporary modifications to established VTrans Bituminous Concrete policies as well as Sections 406 and 407 of the 2018 Standard Specifications for Construction.

6/15/23

Field Acceptance Sampling

VTrans Acceptance sampling will be performed during bituminous concrete production and placement. Should box samples (Field or Plant) be taken for central lab testing, the following supplements apply:

1. When field sampling occurs, it must be done or witnessed by qualified VTrans representatives, either staff or consultant. Contractor staff who are approved to sample shall be those listed in the QC plan. VTrans Staff shall be qualified through either Certification as a NETTCP HMA Paving Inspector, or qualification through the Qualified Technician Program. VTrans Consultant representatives shall be qualified through Certification as a NETTCP HMA Paving Inspector.
2. Any Field Box samples taken shall be done in accordance with the VTrans Field Sampling Policy.
3. Any Plant Box samples taken shall be done in accordance with AASHTO R97, subsection 5.6, *Sampling from Transport Units*.
4. Replicate sampling for Quality Control of any box sample (Plant or Field) may be performed by contractor staff. For dispute of QA field samples, only replicates will be eligible for inclusion.
5. Acceptance samples will be immediately possessed by VTrans representatives, and transported back to the VTrans Central Laboratory for testing.
6. For the purpose of determining Degree of Compaction in accordance with Subsection 406.14(b)(3), for materials that were subject to box sampling, VTrans will utilize the average Maximum Specific Gravity (Gmm) from acceptance and quality control testing, so long as the QC results are validated via F and T statistical testing. The following language would be applied to contracts to make this change:

SUBSECTION 406.14(b)(3):

Subsection 406.14(b)(3) is hereby modified by deleting the eighth paragraph in its entirety, and replacing it with the following:

Core samples 6-inches in diameter shall be taken to satisfy the provisions of this subsection. As necessary, the Contractor shall mark the cores for saw-cutting in the presence of the Engineer or designee for verification of cut locations. Agency personnel will process the core samples within 10 working days and will relay the test results to both the Engineer and the Contractor. Bulk specific gravity will be determined in accordance with AASHTO T 166, Method A, and maximum specific gravity will be determined in accordance with AASHTO T 209, from Agency acceptance tests conducted at the plant. For material subject to box sampling, the average of agency results, and validated quality control results will be used for maximum specific gravity.

For QC results to be included in the daily average for Maximum Specific Gravity, a Level of Significance $\alpha = 0.05$ will be used with a moving window including the 5 previous tests, to validate the newest test results of the same mix design. The first Air Void lot of a mix design on a project will be validated once it is complete. If successfully validated for both the F and T test, the acceptance and QC daily test results will be averaged to determine the Gmm for the core lot. If the results fail validation on both the F or T test, then only the Acceptance results will be used, unless otherwise directed by the Engineer. Failure to validate on the F test only will be cause for further investigation before the QC results are included. QC results shall be submitted to

SiteManager, or email to AOT.HMAQC@vermont.gov within 24 hours from the conclusion of the paving shift. QC results not provided in time, may be grounds for exclusion.

7. For the purpose of determining Degree of Compaction in accordance with Subsection 406.14(a), for materials that were subject to box sampling, VTrans will utilize the Maximum Specific Gravity (Gmm) from acceptance samples only. The Box Sample Dispute Resolution Policy shall be utilized to resolve dispute between the acceptance and QC Maximum Specific Gravity used for Core Density. As needed, cores may be used to produce the maximum specific gravity, should the loose mix test results be voided or unavailable. The following language would be applied to contracts to make this change:

SUBSECTION 406.14(b)(3):

Subsection 406.14(b)(3) is hereby modified by deleting the eighth paragraph in its entirety, and replacing it with the following:

Core samples 6-inches in diameter shall be taken to satisfy the provisions of this subsection. As necessary, the Contractor shall mark the cores for saw-cutting in the presence of the Engineer or designee for verification of cut locations. Agency personnel will process the core samples within 10 working days and will relay the test results to both the Engineer and the Contractor. Bulk specific gravity will be determined in accordance with AASHTO T 166, Method A, and maximum specific gravity will be determined in accordance with AASHTO T 209, from Agency acceptance tests.

8. When field sampling is to occur on a project utilizing Quality Assurance (QA) provisions, VTrans in consultation with the contractor may increase the mixture lot size to 6000 tons, with 1000 ton sublots. The following language would be applied to contracts to make this change:

SUBSECTION 406.03C(c).

Subsection 406.03C(c)(1) is hereby modified by replacing table 406.03H with the following:

Property	Point of Sampling	Lot Size	Sublot Size	Test Method
Air Voids ¹	Truck at plant, Paver or MTV Hopper on project	3000 tons ²	500 tons ²	AASHTO T 269, AASHTO T 166, AASHTO T 209

¹ For Marshall mixtures, air voids will be determined by the methods defined in Chapter 5 of the Asphalt Institute MS-2 Manual.

² For boxed samples, with agreement between the Contractor and Engineer, the lot and sublot sizes may be expanded to 6000 tons and 1000 tons respectively.

Subsection 406.03C(c)(2) is hereby modified by replacing the first sentence with the following sentences: For evaluating acceptance test properties, the representative tonnage of bituminous material within each lot will be as detailed in Tab 406.03H.

Subsection 406.03C(c)(3) is hereby modified by replacing the first sentence with the following: The representative tonnage of bituminous material within each sublot will be as detailed in Table 406.03H, except for the final sublot of a partial lot, which will consist of the quantity of material required to complete the partial lot.

9. When field sampling is to occur on a 407.15 Bonded Wearing Course, VTrans in consultation with the contractor may increase the maximum sampling frequency to 1/1000 ton.

Box Sample Dispute Resolution Policy

Applicability

This policy applies to air voids test results obtained from HMA materials that have been 'box sampled' at the project site as defined in Section 406.03C (g) of the 2018 VTrans Standard Specifications for Construction, or samples taken from the plant that are then tested at the VTrans Central Laboratory. The principles outlined in this section are intended to complement the executed contract or approved permit. If a conflict arises, the requirements specific to the contract govern. **Only Replicate QC samples taken alongside QA acceptance samples will be considered for dispute. Small Quantity Special Provision and Method Samples will consider any QC Plant test taken that shift to dispute Box Results.**

Roles and Responsibilities

Contractor: If the Contractor decides to contest the Owner air voids acceptance test results for box sampled HMA testing, the Contractor shall have submitted any and all relevant QC air voids test results including those developed by their Subcontractors or Producers, into the SiteManager portal or by email (AOT.HMAQC@vermont.gov) before the acceptance test results are posted to DocExpress. Failure to do so results in forfeiture of the Contractors right to contest the results of the production lot in question under this policy.

Owner: The Owner will provide results of HMA box sample acceptance sampling and testing activities to the Contractor in a timely manner. The Owner testing protocols and results will conform to the current test methods as identified in the Owner specifications, unless otherwise noted. The Owner will not examine any Contractor opinion unless there are corroborating QC air voids test results that have been posted to SiteManager or received via email (AOT.HMAQC@vermont.gov) before the acceptance results are posted to DocExpress. Test results and other Contractor supplied information will be analyzed with the purpose of establishing the most accurate and objective determination of the disputed air voids test result.

Process

When the air voids acceptance test results required in Subsection 406.03C(e) have been relayed to both parties (the Engineer and Contractor), any individual subplot sample result may be contested and enter the air voids test result verification process as defined herein. This process will consider only those box samples processed by the Agency as an acceptance test and does not preclude the provisions of Subsection 406.03(f).

The box sample air voids test result verification process is as follows:

Step 1. The Contractor will alert the Owner of their intent to dispute a box sampled air voids acceptance test result, and provide the relevant subplot or sample identification.

Step 2. The Owner will compare the box sample air voids acceptance test result for the subplot or sample identified in Step 1 to the corresponding QC replicate sample air voids test result from the subplot or sample in question to determine the difference between the two results.

If the difference between the two test results is less than .8% for Air Voids, 0.03 for Gmb and 0.02 for Gmm, and no other substantiating evidence is presented, the entire lot of box sample air voids test results as reported under Subsection 406.03C(e) will be used in Percent Within Limits (PWL) calculations, or sample test results as reported under Subsection 406.03C(b).

If the difference between the two test results exceeds .8% for Air Voids, 0.03 for Gmb or 0.02 for Gmm, or other substantiating evidence is presented, the box sample acceptance test result identified in Step 1 will advance to Step 3.

Step 3. The Max and Bulk Specific Gravities, as applicable, from the remaining mix from the acceptance sample will be retested. The results of the retested sample will be compared to the original QC and Acceptance results,

and will replace the acceptance result if it is closer or equidistant to the QC result than it is to the acceptance result. If the retest results are used, it will replace the Acceptance Result and a new Air Void result will be determined. If the acceptance sample does not have enough mix to retest for dispute, the subplot will be excluded from the lot PWL determination, or result voided for single test samples. This may cause a consolidation of the lots, should it result in a lot with less than 3 sublots.

Results of this process will be shared with the Resident Engineer and Contractor, and kept on file for future reference.

If aggrieved by the result of the dispute resolution process described herein, the Owner and the Contractor will defer to the procedures specified in the VTrans Quality Assurance Program, Section 7.