

NCDOT
Policy for Natural Sand Source Change
In Asphalt Mix Designs/Job Mix Formulas

Once a mix design/job mix formula using a specified natural sand source has been approved, no other sand source shall be utilized in that mix design/job mix formula, unless approved by the Department. If the Contractor desires to use a different sand source, the mix may either be redesigned using the new sand source, or if the sands are deemed reasonably similar, he may request approval to substitute the new source in accordance with these procedures. In order to determine if the sands are reasonably similar, gradation, specific gravity, and applicable consensus property tests must be performed. For purposes of this policy, a new sand source is defined as any source other than the original property source specified on the approved mix design. The DENR mining permit number will determine the original property source.

If the Contractor elects to request approval to substitute a new sand source in an existing mix design/job mix formula, gradation and specific gravity tests must be performed on the individual source. Also, consensus property tests (Fine Aggregate Angularity (FAA) and Sand Equivalent) must be performed on the fine portion of the aggregate blend using the new sand source. The Contractor shall also perform a mix verification test on mix that contains the new natural sand in accordance with Article 609-4 of the Standard Specifications. The results will be recorded on Form QA/QC-1 and submitted to the NCDOT Asphalt Mix Design Engineer at the Materials and Test Lab, with copies to the applicable QA Lab. This mix verification will suffice for the initial mix verification on the new mix design/job mix formula, if approved. In addition to these test results, the following will be submitted to the Asphalt Mix Design Engineer for review and approval:

- 25 lb. sample of the new sand source.
- QMS-1 with the Original JMF Number listed and the "New Sand Source Request" note checked.
- Copy of original mix design Form M&T 601 (SP).
- New Form M&T 601 (SP) with new sand source gradations and specific gravities and blend gradations and gravities shown.
- New 0.45 power chart showing the new mix gradation.
- DENR mining permit cover letter showing name, location, mining permit number, and the NCDOT HiCAMS FA number, if available.
- Completed M&T Form 620, Consensus Property Worksheet, showing Fine Aggregate Angularity and Sand Equivalent test results.

The new sand properties and mix verification test results will be evaluated by the Asphalt Mix Design Engineer. At his discretion, the Asphalt Mix Design Engineer may require a new set of test specimens for verifying rutting susceptibility of the proposed mix design. These specimens will be tested using the Asphalt Pavement Analyzer and shall meet the minimum depth requirements for that mix type. Based on these test results, the Asphalt Mix Design Engineer will either approve or reject the substitution of the new source in the existing mix design. If the new sand source is approved for use by the Asphalt Mix Design Engineer, a new mix design and job mix formula (JMF) indicating the new sand source will be issued by the Department.

This policy will be used only for mix designs containing less than or equal to 25% natural sand. If the percent sand is greater than 25%, the mix shall be redesigned. This policy applies only to natural sand(s) and not manufactured sand(s).

An example of the required paperwork is included with this policy.

NOTE: When a sand source change is being made in several mixes of the same type and the verification on the initial mix design sand source change does not indicate significant differences in mix properties, the Engineer may, at his discretion, waive the mix verification requirement on subsequent mix designs of the same mix type at a given plant. However, a minimum of one mix verification must be performed for each mix type at each plant. Other documentation as listed above will be required for each mix design/job mix formula change.