



BUREAU OF MATERIALS MATERIALS PROCEDURES

MP NUMBER: 15-25
EFFECTIVE DATE: 03/03/2025

APPROVAL: Edward Inman

SAMPLING AND TESTING CEMENT AT POINT OF MANUFACTURE

PURPOSE:

To establish a procedure to approve sources of Reclaimed Asphalt Pavement (RAP) for addition to the NJDOT Bureau of Material's Qualified Products List (QPL).

SUPERSEDES:

Materials Procedure Number 15 - Dated 07/01/2008

REFERENCES:

New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction sections 901.01 through 901.10 National Academies of Sciences, Engineering, and Medicine. 2011. National Highway Cooperative Research Program Report 673: A Manual for Design of Hot-Mix Asphalt with Commentary. Washington, DC: The National Academies Press. <https://doi.org/10.17226/14524>.

PROCEDURE:

I. Producer's Request for Approval

The producer shall request in writing for the approval of the product. Include the following information in the written request:

- A. The name, address, and contact information for the producer as well as a detailed aerial photo, layout or map accurately depicting the location of the RAP aggregate stockpile to be evaluated.
- B. The Materials Engineer (ME) will not consider unprocessed RAP aggregate in stockpiles for approval. RAP aggregate must be mechanically processed via screening, crushing or other

fractionation to ensure no RAP aggregate exceeding 1.5" in diameter is present. RAP aggregate stockpiles should be free of tar, solvents, and other contaminants. Stockpile approval requests cannot be for more than 25,000 tons in size.

- C. The producer shall submit test results for a minimum of five quality control samples per RAP stockpile. Testing data shall include gradation (AASHTO T30), asphalt content (AASHTO T164 or T308) and bulk specific gravity (AASHTO T209) for each sample. The producer shall also

include any records pertaining to the RAP (if available) and any quality control plans in use. The laboratory performing the quality control testing may be an independent testing laboratory or a laboratory maintained by the aggregate producer.

Mail the request for approval to the following:

Mailing Address (USPS):

Manager, Bureau of Materials (Thiokol Bldg. 4)
4) New Jersey Department of Transportation
P.O. Box 600
Trenton, NJ 08625-0600

Street Address (UPS, FedEx, etc.):

Manager, Bureau of Materials (Thiokol Bldg.
New Jersey Department of Transportation
930 Lower Ferry Road
West Trenton, NJ 08628

II. Bureau of Materials Review

The ME will review the quality control test results submitted by the producer for compliance with the applicable requirements. After reviewing the data, the Department will contact the producer to schedule an onsite inspection. The producer shall confirm the stockpile size and location. No inspection can take place prior to the stockpile being processed. If the test results comply, the ME will sample the source for Bureau of Materials testing.

III. Bureau of Materials Sampling and Laboratory Testing

The ME will visit the source to obtain a minimum of five samples per RAP stockpile, up to 10,000 tons in size. Sample rates will increase to one additional sample per 2,000 tons, up to a maximum of ten samples. Stockpiles are to be limited to a maximum of 25,000 tons in size for initial approval. The ME will characterize the RAP aggregate by testing stockpile samples for gradation and binder content. A statistical analysis of the testing data will be performed to determine the stockpile variability. The amount of stockpile variability will then be utilized to graphically determine a Maximum Allowable RAP content for the stockpile. The statistical analysis will be performed according to the methods described in NCHRP Report 673, Chapter 9. The Maximum Allowable RAP is determined by standard deviations of the data and are given below:

Maximum Allowable RAP and Binder Standard Deviations

RAP %	Binder Standard Deviation (maximum)
15%	0.5
20%	0.5
25%	0.5
30%	0.5
35%	0.5
40%	0.5
45%	0.5
50%	0.5

Maximum Allowable RAP and Binder Standard Deviations

RAP %	3/8" sieve Standard Deviation (maximum)	No. 4 sieve Standard Deviation (maximum)	No. 8/16 sieves Standard Deviation (maximum)	No. 30/50 sieves Standard Deviation (maximum)	No. 200 sieve Standard Deviation (maximum)
15%	9.5	8.2	7.0	5.6	3.5
20%	8.2	7.2	6.1	5.0	3.1
25%	7.2	6.4	5.5	4.5	2.8
30%	6.7	5.8	4.9	4.1	2.5
35%	6.1	5.3	4.5	3.8	2.4
40%	5.6	4.8	4.2	3.5	2.2
45%	5.2	4.5	3.9	3.2	2.0
50%	4.8	4.2	3.6	3.0	2.0

Qualification of a stockpile and addition to the QPL is based on the results of field sampling and statistical analysis by the ME of the qualification samples. The statistical analysis does not disqualify a RAP stockpile, but it establishes a Maximum Allowable RAP content of an approved stockpile that can be used on Department projects. For example, if the statistical analysis determines the Maximum Allowable RAP content to be 35%, then RAP from this stockpile can only be utilized in HMA that contain a maximum of 35% RAP or less.

PROJECT ACCEPTANCE REQUIREMENTS:

When a RAP aggregate stockpile is approved the producer will be issued an approval letter upon conclusion of the Materials Approval Procedure. The approval letter will contain a Stockpile Identification Number and a determined Maximum Allowable RAP content for the approved pile. Qualification of a stockpile and addition to the QPL does not constitute a blanket approval of the material. When RAP aggregates are utilized in percentages by weight above 15% on Department projects, the materials must be verified and approved in a mix design in order to be used.

As a condition of approval, the Department may at any time inspect and sample RAP stockpiles that have been approved and perform additional quality control tests to determine the consistency and quality of the material.

When an RAP stockpile has been granted approval, the stockpile shall be identified with posted signs identifying the approved stockpile number. The sign shall be weatherproof and posted so that it is highly visible.

REPLENISHMENT OF APPROVED STOCKPILES:

When an existing stockpile has been drawn down (or drawdown is anticipated) to a size of less than 5,000 tons the producer may request approval of a stockpile replenishment. All replenishment requests must be submitted in writing.

For stockpile replenishment, the producer must take samples of the RAP aggregate at a frequency of one sample per 2,000 tons of replenishment, or a total of five samples, whichever number is greater. The permitted volume of continuous stockpile replenishment is equal to one week's worth of production, not to exceed 25,000 tons. The producer shall test the replenishment samples for

gradation and binder content and report the sample results to the Department along with the replenishment request in writing. The request should not be submitted prior to replenishing the stockpile, and requests should not be submitted more than once a week.

The Department will perform statistical analysis of the submitted data to verify if the Maximum Allowable RAP content needs to be adjusted. The Department may base its findings on the producer test results, or the Department may elect to return to the RAP stockpile to collect additional replenishment samples. If the Maximum Allowable RAP does not meet the minimum requirements, the Supplier will be notified immediately and will be given the opportunity to make quality corrections.

The Contractor for each proposed project must submit the approved RAP Stockpile Identification Number and source on a Materials Questionnaire as specified in Section 106. The ME will approve the RAP stockpile on a project-to-project basis based on the specifications for the project. The ME will sample, test and accept the material according to the applicable Section of the *NJDOT Standard Specifications for Road and Bridge Construction*.

DEPLETION OF STOCKPILE AND DISQUALIFICATION:

When a stockpile has been fully depleted without any replenishment requests, the approved stockpile will be removed from the QPL. Additionally, any approved stockpile that has not been utilized for Department projects after 24 months from initial approval will be removed from the QPL.

The ME will periodically obtain and test samples from the source in an on-going quality assurance program. The ME may also visually inspect the RAP stockpiles to document the following: stockpile has been mechanically processed, stockpile has not changed location, stockpile is not touching other stockpiles, stockpile has consistent documented size, stockpile is not contaminated with deleterious materials, and the stockpile has appropriate signage. Following an inspection if the ME determines that the stockpile is not satisfactory, the producer will be notified and allowed a minimum of two weeks to correct the quality problems. After two weeks, the ME will return for a re-inspection and if the stockpile is still not satisfactory the ME will disqualify the RAP aggregate stockpile and remove the listing from the QPL.

Additionally, the Bureau of Materials must be notified in writing of any significant changes to the RAP stockpile. Stockpile drawdown is not considered a change, but stockpile replenishment or relocation is considered a change. Failure to notify the Bureau of Materials of changes will result in disqualification.

REQUALIFICATION:

The requalification process is identical to the approval process with the addition that any RAP aggregate stockpile which has been disqualified and removed from the QPL will be considered for reevaluation only after acceptable written evidence has been shown to the ME that the problem causing the disqualification has been resolved and material complying with NJDOT Standard Specifications is being produced.

Additionally, the Bureau of Materials may require the producer to requalify the product for any of the following reasons:

- A. If the Department's standard specifications change, the ME may require requalification to ensure that the product meets the new specification.

- B. If the producer plans to relocate the approved stockpile to a new location.
- C. If the producer mechanically reprocesses the app approved stockpile.

