

Volume II

Section 3.5

Asphalt Binder

3.5.1 PURPOSE

This procedure provides instructions for material approval, as well as guidance for the development and implementation of the Quality Control (QC) Program for the manufacture, testing, storage, and transportation of asphalt binder.

3.5.2 AUTHORITY

Code of Federal Regulations (CFR), Federal-Aid Policy Guide (FAPG), Construction Inspection and Approval, Subpart B – Quality Assurance Procedures for Construction

334.044(2), 334.044(10) (a), and 334.048 Florida Statutes

3.5.3 REFERENCES

Standard Specifications for Road and Bridge Construction, Florida Department of Transportation

American Society for Testing and Materials (ASTM) Standard Test Methods and Specifications, Philadelphia, Pennsylvania

American Association of State Highway and Transportation Officials (AASHTO), Part I Specifications, and Part II Tests, Washington, D.C

Approved Products List (APL), Florida Department of Transportation

Florida Sampling and Testing Methods (FSTM), Florida Department of Transportation

3.5.4 SCOPE

This procedure is to be used by asphalt binder Suppliers. These requirements and activities pertain to material approval for addition to the Department's **Approved Product List (APL)**, QC Plan approval, required testing procedures and frequencies, and the Department's on-site inspections.

3.5.5 GENERAL INFORMATION

Companies that supply asphalt binder are referred to in this document as "Suppliers." The supply locations from which the material is sold are referred to as "Terminals." Suppliers are responsible for the production, sampling, testing, storage, and maintenance of records of sales of asphalt binder at each of their Terminals. The Supplier's operations and materials must meet the requirements of the **Specifications** and the Supplier's approved QC Plan. The Supplier shall have an approved QC Plan for each Terminal.

3.5.6 MATERIAL APPROVAL PROCESS

3.5.6.1 General

For any Performance Graded (PG) asphalt binder material supplied to a Department project, a sample must be submitted for APL approval from each Terminal it is supplied from. Submit laboratory test results for the material and the APL application form to the Product Evaluation Office (PEO). Send a sample of the material to the State Materials Office (SMO) for testing. Submit a QC Plan for the Terminal to the SMO. These steps are described in detail below.

3.5.6.2 Laboratory Testing

Submit Specification Compliance (SC) test results from the Supplier's lab or an independent lab indicating the sample has passed all specification criteria established in **Specifications Article 916-2**. In addition to these requirements, if Re-refined Engine Oil Bottoms (REOB)/Vacuum Tower

Asphalt Extenders (VTAE) are used, indicate they do not exceed the Specification requirements.

3.5.6.3 APL Application

Submit the Certificate of Analysis (COA) from the laboratory testing along with the APL application found on the Department's PEO website via email: product.evaluation@dot.state.fl.us.

3.5.6.4 SMO Testing

Submit a 1-quart sample representative of the material to the SMO for SC testing according to **Specifications Subarticle 916-2.3**.

3.5.6.5 Submission of QC Plan

Submit a QC Plan that includes quality control procedures for the grade of asphalt binder. The QC Plan must meet the requirements of **3.5.7.1** as defined below.

3.5.6.6 Material Approval

Upon the satisfactory testing of the material by the SMO, and a satisfactory review of the proposed QC Plan, the Producer's QC Plan will be approved and the SMO will recommend that the material be added to the APL by the PEO. After the PEO adds the material to the APL website, the material is considered to be approved at that supply location for use on Department projects.

The Department reserves the right to remove a material from the APL or Terminal from the Department's **Production Facility Listing** due to inadequate quality; a failure to comply with the **Specifications** or **Materials Manual Section 3.5**; a failure to follow the Supplier's QC Plan, or disregard to State or Federal Law.

3.5.7 QC Program

3.5.7.1 QC Program requirements

The most recently approved QC plan shall be available to the Terminal personnel at all times. Each Supplier will be responsible for maintaining a current and updated profile within the Department's database. The information shall include:

- (A) Contact information for each supply location, including its technical and Terminal personnel.
- (B) An updated list of materials being supplied at each supply location with their APL number.
- (C) A current list of tests and qualifications (if applicable) performed by each location's laboratory.

Each Supplier shall ensure that the **FHWA-1022 Form** will be posted in the offices where the records will be kept, as well as in the laboratories where any material is tested.

3.5.7.2 QC Plan

The QC Plan shall describe the procedures used to produce asphalt binder in conformance with the **Specifications**. Submit a QC Plan to the SMO for review. The QC Plan shall include, but is not limited to, the following:

- (A) Indicate which materials (if any) are rack blended. If rack blended materials are supplied, indicate the sampling and process control measures implemented to ensure quality of materials.
- (B) Indicate if the Terminal has silicone available for the clients. If silicone is available, indicate the rate that the silicone will be added to the binder when requested.
- (C) Indicate if the testing will be performed on-site or at another location. List an alternate testing laboratory for situations where the primary lab is not operational.
- (D) The tank identification numbers with the corresponding volumes (in gallons).
- (E) The sampling and testing procedures for QC and SC testing.
- (F) Indicate the course of action to be taken in the event material not meeting **Specification** requirements is shipped.
- (G) Outline the procedure to be followed for checking transport vehicles before loading to prevent contamination of shipments. The outline shall include a statement that the transport vehicle inspection report,

signed by the responsible inspector, shall be maintained in the Supplier's records and will be made available to the department upon request.

- (H) Indicate all items that will be furnished on the Bill of Lading (BOL) as required in **3.5.8.4.1**.

The Department's database shall be updated each time a material is added to a Terminal. Any changes to existing materials at a supply location in the Department database must also be approved by the Department and may require the re-approval of the QC Plan.

3.5.8 FUNCTIONS AND RESPONSIBILITIES OF SUPPLIERS

3.5.8.1 General

The Supplier is responsible for the quality of the asphalt binder. Provide terminals and QC personnel with the tools necessary to perform specified tests and maintain an acceptable QC program and produce a material that conforms to the requirements of ***Specifications Sections 336 and 916***. Maintain proper documentation of required paperwork.

3.5.8.2 Quality Control of Certified Materials

Ensure that the materials comply with all requirements as specified in the ***Specifications***.

3.5.8.3 Asphalt Binder Production and Storage

Ensure that the Terminal is equipped to properly proportion and blend the components into a uniform material. Ensure that the storage tanks can accurately maintain the appropriate temperatures and circulate material if necessary. Ensure that the materials are sampled and tested per the Terminal's approved QC Plan. Retain a 1-quart split sample of each material for SC or QC testing. Ensure that all equipment used to perform testing is properly maintained and calibrated.

3.5.8.3.1 Sampling and Testing

A new LOT will occur if the SC tests are no longer representative of the material in the tank. This may be due to an incoming bulk shipment of material, change in refinery run, the manufacture of a new material, a

blend of new materials in a tank, or other change in material or process.

Sample the material for SC testing at least once a month so as to not exceed 35 calendar days between any two SC tests. Perform SC testing in accordance with **Specification Section 916**. SC testing shall be conducted by a testing laboratory that participates at least annually in the **AASHTO Materials Reference Laboratory (AMRL)** Proficiency Sample Program for PG asphalt binder. Acceptable performance in the AMRL Proficiency Sample Program shall be a minimum score of 3 for each test. A rating of less than 3 shall require identification of appropriate action on the part of the Supplier and be acceptable to the SMO.

Perform QC testing in accordance with **Specifications Section 336 or 916**, as applicable, for each calendar week that the material is shipped. For rack blended material, a 1-quart sample of material must also be obtained each day the material is shipped; however, if multiple samples are obtained over the period of a week, only one of the samples is required to be tested for QC each week.

In the event that a specification compliance test is outside specification requirements or a QC test is outside limits established by the supplier as part of their QC Plan, shipments of that product to Department projects will cease immediately and the Contractor and the SMO will be notified and the product retested for specification compliance (re-sampling as appropriate). Resume shipment of the product when the retest for specification compliance meets all requirements and with the approval of the SMO.

The Department may sample and test PG asphalt binder from the supplier's storage tank, the delivery vehicle, and/or Contractor's storage tank to verify and determine specification compliance. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that PG asphalt binder product. Further shipment of that PG asphalt binder product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the Director of Materials or designee.

3.5.8.3.2 Handling and Storage

Obtain a 1-quart split sample of each material sampled for SC or QC testing. Retain the split samples and the rack blended samples at the supply location for at least 60 days from the date of sampling. Ensure that the tank number, Supplier's LOT number, material grade, and sample date is clearly labeled on the containers. Store the samples in a location such that the materials and labels will not be damaged by weathering.

3.5.8.3.3 Calibration of Equipment

Ensure that all testing equipment is calibrated and maintained in accordance with the appropriate **ASTM**, **AASHTO**, or **FSTM** test method(s). Maintain calibration records that include the date, time, and the technician that performed the calibration.

3.5.8.4 Shipments and Record Keeping

Issue a Bill of Lading (BOL) for each sale of asphalt binder. Maintain a monthly sales log of all shipments from to Department approved asphalt plants, and retain all required documentation.

3.5.8.4.1 Bill of Ladings

Furnish a BOL for each outgoing shipment of asphalt binder. The BOL shall include all of the following items, as applicable:

- (A) Material grade and APL number
- (B) Quantity of material (in Gallons)
- (C) Anti-strip name, amount (in Percentage), and APL number
- (D) Date and time of shipment
- (E) BOL number
- (F) Supplier's LOT number
- (G) Customer Name, including the asphalt plant number.

- (H) If the material is a **PG76-22 (ARB)** binder, the BOL must include a certified statement that the material has a minimum of 7.0% Ground Tire Rubber (GTR).
- (I) Certified statement verifying that the material meets **Specification Section 336 or 916** (as applicable) and the Producer's QC Plan
- (J) Signed statement from the driver of the delivery vehicle that verifies the previous material that was hauled and further stating that the delivery vehicle is clear of contaminants.

3.5.8.4.2 Sales Log

The monthly sales log shall indicate the material grade, outgoing gallons, Supplier's LOT number, tank number, BOL number, date, time, customer, and asphalt plant number. The sales log must be readily available at the Terminal location.

3.5.8.4.3 Documentation

Maintain all documentation for no less than three years from the date of issue. The documentation shall at a minimum include the following items:

- (A) A copy of each QC Plan approved by the SMO.
- (B) Sales log of all outgoing shipments.
- (C) Bill of Ladings for all outgoing shipments.
- (D) Signed COAs for all SC Reports.
- (E) Machine printouts of all QC testing.
- (F) Raw data for all testing performed.
- (G) Equipment calibration records.
- (H) Producer COAs for GTR, if applicable.
- (I) QC Program Inspection Reports from previous Department inspections and all correspondence relating to material deficiencies.

3.5.9 Terminal Inspections

3.5.9.1 General

The Department will perform announced initial and unannounced Quality Assurance Reviews (QARs) at each Terminal location.

3.5.9.2 Terminal Review

The Department will perform a scheduled, initial QAR at every Terminal after the first QC Plan has been approved. A QAR may also be performed, but not limited to, the following reasons: 1) a Terminal begins to supply material after a period of inactivity 2) a Terminal has undergone new management, or 3) deficiencies have been noted during previous inspections.

The Supplier shall allow the Department to inspect the facility and the Supplier shall provide answers to questions relating to production, handling, storage, and testing of materials. Provide all requested documentation to the Department and make copies of any documentation upon request. Collect a 1-gallon sample as directed. The sample shall be split into three 1-quart containers. One sample shall be retained on-site, another sample shall be tested for Specification Compliance by the Supplier, and one sample shall be tested by the SMO. Enter the results into the Department database. Within 20 days of the inspection, the Department will issue a QC Program Inspection Report and send it to the Supplier. Any issues that require responses will be identified in the report. Provide responses to issues found in the report within 20 days from the receipt of report.

The Department may perform unannounced QAR inspections at any Terminal that has materials listed on the APL.

3.5.10 TRAINING

No training required.

3.5.11 FORMS

No forms required.