

## SECTION 303 S RESERVED

### SECTION 304 ASPHALT STABILIZED BASE COURSE

**304.01 Description.** This work consists of scarifying, stabilizing with asphalt, compacting, and shaping the base course.

**304.02 Materials.**

- a. Asphalt for stabilization shall be a high-float, medium-setting emulsion conforming to the requirements of [Section 809](#). Other types of mixing grade emulsions may be submitted for laboratory evaluation and approval.

Prior to approval of any emulsion type or source of supply, the Contractor shall submit to the Department's Materials and Research Section a 1 gal (4 L) emulsion sample for laboratory analysis and mixing evaluation. A laboratory analysis report prepared by the supplier shall accompany the sample.

Laboratory evaluation shall include a determination of mixing qualities of the emulsion and water with silicious sandy soils representative of the soil types found within the Project location and conforming to [Subsection 209.04](#), Borrow Type E. Fast breaking emulsion yielding globules of unmixed asphalt or emulsions which fail to thoroughly and homogeneously blend throughout the emulsion-water-soil mixture will be judged unsatisfactory for use. The moisture content of the soil-emulsion mixed in the laboratory shall range from 5 to 9% with optimum moisture and maximum density determined in accordance with AASHTO T 180 Method A, Modified. Molded soil-emulsion specimens will also be evaluated by air curing, water immersion, absorption, and compression testing.

All testing will be performed at the Department's Materials and Research Laboratory. Upon completion of all laboratory testing and review of the data, the decision of the Department as to emulsion acceptability will be final. Approval of the material will also be contingent on satisfactory performance under field mixing conditions.

- b. *Water.* Water to be used in the stabilizing process shall conform to the requirements of [Section 803](#).
- c. *Soils.* All materials to be stabilized shall consist of local soils or borrow soils or a mixture of both. These materials shall be free from roots and leaves and any other types of organic matter. Local soils to be stabilized shall be granular in nature and approved prior to use. All borrow shall conform to the requirements of [Subsection 209.04](#), Borrow Type E.

**304.03 Equipment.** The type, condition, and quantity of equipment furnished shall meet the qualifications necessary for the proper execution of the work within the specified working time. Equipment shall bear the manufacturer's name plate, on which shall be stamped the model number. All equipment shall be maintained in good condition and be subject to approval prior to and during its use in connection with the Project. Compaction equipment shall also conform to the requirements of [Subsection 202.05](#) (d).

**304.04 Construction Methods.** Before any stabilization is started, the roadway shall be widened and graded. Ditches and slopes shall be cut, borrow shall be placed, and the entire section shall be formed in accordance with the typical sections shown on the Plans. Where applicable, the requirements of [Section 202](#) shall apply.

After the prepared roadway has been approved and prior to the addition of asphalt, the base course shall be scarified to the full depth that will give, when mixed with asphalt, a compacted base having a thickness as shown on the Plans and within the specified tolerances. The scarified base course shall then be mixed, and water shall be added or aeration shall take place until the moisture content of the soil to be stabilized is between 90 and 110% of the optimum mixing moisture as determined by the Department. Mixing shall continue until clay lumps and other cohesive materials present are broken up and distributed evenly. The mixing operation shall be considered complete when the moisture content of the material to be stabilized is uniform and between 90 and 110% of the optimum mixing moisture and the soil lumps have been pulverized.

After the base course has been mixed as described in this Subsection, asphalt shall be applied at a temperature between 140 and 170 EF (60 and 77 EC). The quantity of asphalt shall range from 14 to 20 gal/yd; (70 to 100 L/m;) of compacted thickness of base shown on the Plans, depending on the properties of the soil. The number of gallons per cubic yard (liters per cubic meter) to be applied will be determined by the Department.

No asphalt shall be applied unless the mixing operation can be completed within two and one-half daylight hours following the application of the asphalt. Asphalt shall not be applied to a new section on any succeeding day until those portions which have been mixed previously are aerated and compacted to the specified requirements. If field conditions render the requirements of the preceding sentence impracticable, such as inclement weather, then the Engineer will have the option of waiving the requirements.

Immediately following the application of asphalt, the base course shall be thoroughly mixed with self-propelled mixers. There must be at least two self-propelled mixers of the multiple pass type or one of the single pass type used in this phase of the stabilization operation. During the mixing operation, care shall be taken to avoid cutting below the prepared soil layer and incorporating additional raw soil into the mix. The mixing operation shall be considered complete when the asphalt and soil have been thoroughly mixed to a uniform color free from fat spots, streaks, balls, and uncoated particles throughout the full length, width, and depth of the section.

Following the mixing of the asphalt and soil, a period of aeration shall take place until the moisture content of the mixture is between 75 and 100% of the optimum moisture content as determined by AASHTO T 180 Method A, Modified. Compaction shall then begin, starting at the edges and progressing toward the center of the base course. This compaction shall continue until the base course is shaped and rolled until approved. The thickness of the stabilized base and the surface of the base course will then be tested and shall conform to the tolerances as specified:

- a. *Thickness.* The thickness of the soil asphalt mixture shall be within 2" (13 mm) of the plan thickness and shall be determined from the average of a set of measurements taken through holes made through the finished soil asphalt mixture at intervals not to exceed 500' (150 m) per lane. A set of measurements consists of three holes spaced 5' (1.5 m) apart in a triangular pattern with the thickness measured to the nearest 3/16" (6 mm). Measurements will be made immediately following the finishing operation.

If the average thickness shown by a set of measurements is not within the tolerances specified, additional sets of measurements shall be made at 25' (7.5 m) intervals forward and backward until at least two consecutive sets of measurements in each direction are within the tolerance specified. Areas represented by averages exceeding the tolerances specified may be required to be reconstructed.

- b. *Surface.* The surface smoothness of the asphalt stabilized base course mixture during and after the compaction and finishing operations shall be tested with a 10' (3.048 m) straightedge furnished by the Contractor. The straightedge shall be laid parallel to the centerline. Any irregularities greater than 2" (51 mm) shall be satisfactorily corrected.

The base course shall then be opened to traffic, before sealing, for a period of time necessary to cure the stabilized mixture. This curing period shall not be more than 14 days unless otherwise approved. The stabilized base course shall be considered satisfactory for surfacing when the stabilized mixture has attained the following:

- a. a minimum density of 120 lb/ft<sup>3</sup>; (1925 kg/m<sup>3</sup>;) or a minimum of 95% of the maximum dry density as determined by AASHTO T 180 Method A, Modified;
- b. a moisture content that does not exceed 65% of the optimum moisture content as determined by AASHTO T 180 Method A, Modified; and

- c. base course that is properly shaped and has no soft, wet, or unstable areas.

No stabilization shall start on any project or portion thereof before April 1 of each year. All stabilization shall stop by September 30 of each year.

**304.05 Method of Measurement.** The quantity of asphalt stabilized base course will be measured as the number of miles (kilometers) measured along the centerline of the completed and accepted roadway. Seal material and asphalt for stabilization will be measured according to [Subsection 404.16](#).

**304.06 Basis of Payment.** The quantity of asphalt stabilized base course will be paid for at the Contract unit price per mile (kilometer). Price and payment will constitute full compensation for all mixing, shaping, removing, and disposing of excess and unsuitable materials and for all labor, equipment, tools, and incidentals required to complete the work. Seal coat material and asphalt for stabilization will be paid for separately.

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