

SECTION 32 11 26

**ASPHALT STABILIZED BASE**

*(Sentences and/or paragraphs that are double underlined indicate revisions that were made from the 2008 specification.)*

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This item shall consist of a base course composed of a compacted mixture of a mineral aggregate and asphaltic material. The mixture when designed and tested in accordance with these Specifications shall meet the following requirements:
  - 1. Laboratory Density (THD BULLETIN C-14) (Unless otherwise shown on plans)
    - Minimum 92 percent
    - Optimum 96 percent
    - Maximum 99 percent
  - 2. Stability (THD BULLETIN C-14)
    - Shall not be less than 30 percent except when otherwise shown on plans. The base course shall be constructed on previously completed and approved sub-grade or sub-base, as herein provided, and in accordance with the details shown on the plans.

**1.2 MEASUREMENT AND PAYMENT**

- A. Asphalt concrete base shall be measured by the square yard for the thickness indicated in the Proposal.
- B. Tack coat will not be measured as a separate item. The cost of tack shall be included in the price bid for asphaltic concrete base.
- C. Prime coat will not be measured as a separate item. The cost of prime coat shall be included in the price bid for asphaltic concrete base.
- D. The work performed and materials furnished as prescribed by this item, and measured as provided under "Measurement", will be paid for at the unit price bid for "Hot Mix Asphaltic Base", of the type specified, which price shall be full compensation for quarrying, furnishing all materials, freight involved, for all heating, mixing, hauling, cleaning the existing base course or pavement, placing asphalt stabilized base, rolling and finishing, and for all manipulations, labor, tools, equipment and incidentals necessary to complete the work including tack coat and prime coat when required.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

A. The mineral aggregate shall be composed of a coarse aggregate and a fine aggregate. Samples of coarse aggregate and fine aggregate shall be submitted in accordance with the methods prescribed in the Special Provisions. Approval of both material and source must be obtained from the Engineer prior to delivery. Sources of material specified on the plans as being available for use will not require prior approval. The mineral aggregate shall contain not more than 2 percent by weight of organic matter, clays, loam or pebbles coated therewith, as determined by Test Method Tex-217-F. Mineral aggregates from each source shall meet the quality tests specified herein.

1. Coarse Aggregates: The coarse aggregates shall be that part of the aggregate retained on a No. 10 sieve; shall consist of clean, tough, durable fragments of stone, crushed gravel, iron ore, slag, or combinations thereof, and be of uniform quality throughout. Coarse aggregate will be tested in accordance with Test Method Tex-406-A for decantation. Material removal will not be more than 3 percent by weight. The coarse aggregate, when subjected to the Los Angeles Abrasion Test (Test Method Tex-410-A), shall have an abrasion not exceeding 45.
2. Fine Aggregate: The fine aggregate shall be that of the aggregate passing the No. 10 sieve and shall consist of sand or screening or a combination of sand and screening. The plasticity index of that part of the fine aggregate passing the No. 40 sieve shall be not more than 6 when tested by Test Method Tex-106-E. Sand shall be composed of durable stone particles free from injurious foreign matter. Screening shall be material produced during the production of the coarse aggregate.
3. Asphaltic Material Mixture: Asphalt for the mixture shall be of the types of oil asphalt as determined by the Engineer and shall meet the requirements of Section 32 05 17 - Asphalts, Oils and Emulsions. The grade of asphalt shall be designated by the Engineer. The Contractor shall notify the Engineer of the sources of his asphalt material prior to production of the asphaltic mixture and prior to any change desired during the course of the project.
4. Tack Coat: The asphaltic material for tack coat shall meet the requirements for Cut-Back Asphalt RC-2 and may, upon instructions from the Engineer, be diluted by the approved grade of gasoline and/or kerosene, not to exceed 15 percent by volume. Asphaltic materials shall meet the requirements of Section 32 05 17 - Asphalts, Oils and Emulsions.

**2.2 MIXTURES**

A. The mixtures shall consist of a uniform mixture of coarse aggregate, fine aggregate, and asphaltic material. The grading of each constituent of the mineral aggregate shall be such as to produce, when properly proportioned, a mixture which will conform to the limitations for master grading.

Retained on 1 1/2" sieve ..... 0 to 3%  
 Retained on no. 10 sieve ..... 50 to 65%

Soil contents to be as follows:

Liquid limit shall not exceed 35  
 Plasticity Index shall not exceed 12

The asphaltic material shall form from 3.5 to 7 percent of the mixture by weight.

- B. The Engineer will designate the grading of the aggregate and asphalt content to be used in the mixture. The mixture produced shall not vary from the designated grading for any sieve size plus or minus 4 percent by weight, and the asphaltic material shall not vary in content by more than 0.5 percent by weight.
- C. Samples of the mixture when tested by the THD Extraction Test, Tex-210-F, shall not vary from the grading proportions of the aggregate and the asphalt content designated by the Engineer by more than the respective tolerances specified above, and shall be within the limits specified for master grading.

### **PART 3 – EXECUTION**

#### **3.1 GENERAL**

- A. The base is to be placed in one course with a spreading and finishing machine of the type approved by the Engineer, equipped with an automatic grade control device capable of producing a surface that will meet the requirements or the specification surface test. The machine also shall have adequate paves to propel the delivery vehicles in a satisfactory manner when the mixture is dumped into the finishing machine. The finishing machine shall be equipped with a flexible spring and/or hydraulic type hitch sufficient in design and capacity to maintain contact between the rear wheels of the hauling equipment and the pusher rollers of the finishing machine while the mixture is being unloaded. Any vehicle the finishing machine cannot push or propel in such a manner as to obtain the desired line and grade without resorting to hand finishing will not be allowed to dump directly into the finishing machine. The mixture shall not be placed when the air temperature is below 50° F and is falling, but it may be placed when the air temperature is above 40° F and is rising. The air temperature shall be taken in the shade away from artificial heat. It is further provided that the prime coat, tack coat or asphaltic mixture shall be placed only when the humidity, general weather conditions and the moisture and temperature of the base, in the opinion of the Engineer, are suitable.
- B. If a prime coat is required, it will be applied but not paid for as a separate item. The tack coat of asphaltic mixture shall not be applied on a previously primed flexible base until the primed base has completely cured to the satisfaction of the Engineer.
- C. Before the asphaltic mixture is laid, the surface upon which the tack coat is to be placed shall be cleaned thoroughly to the satisfaction of the Engineer. The surface shall be given a uniform application of tack coat when directed by the Engineer. This tack coat shall be applied, as directed by the Engineer, with an approved sprayer at a rate not to exceed .05 gallon per square yard of surface. Where the mixture will adhere to the surface on which it is to be placed without the use of a tack coat, the tack coat may be eliminated by the Engineer. All contact surfaces of curbs and structures and all joints shall be painted with a thin uniform coat of the asphaltic material used for the tack coat. The tack coat shall be rolled with a pneumatic tire roller as directed by the Engineer.
- D. The mixture, prepared as specified above, shall be hauled to the work in tight vehicles previously cleaned of all foreign material. The dispatching of the vehicles shall be arranged so that all material delivered may be placed, and all rolling shall be completed during the daylight hours. In cool weather or for long hauls, canvas covers and insulating or the truck bodies may be required. The inside of the truck body may be given a light coating of oil, if necessary, to prevent mixture from adhering to the body.

- E. Generally, the mixtures shall be dumped and spread on the approved prepared surface with the specified spreading and finishing machine in such manner that when properly compacted, the finished pavement will be smooth, of uniform density, and will conform with the typical sections shown on the plans and to the lines and grades as established by the Engineer. During the application of asphaltic material, care shall be taken to prevent splattering of adjacent pavement, curb and gutter, and structures.
- F. The mixture will be spread and compacted in layers so specified on the plans or as directed by the Engineer.
- G. When the mixture is placed in a narrow strip along the edge of an existing pavement, or used to level up small areas of an existing pavement or placed in small irregular areas where the use of a finishing machine is not practical, the finishing machine may be eliminated when authorized by the Engineer, provided a satisfactory surface can be obtained by other approved methods.
- H. As directed by the Engineer, the pavement shall be compressed thoroughly and uniformly with the specified rollers.
- I. Rolling with the three wheel and tandem rollers shall start longitudinally at the sides and proceed toward the center of the pavement, overlapping on successive trips by at least half the width of the rear wheels. Alternate trips of the roller shall be slightly different in length. On super-elevated curves, rolling shall begin at the low side and progress toward the high side. Rolling with pneumatic roller shall be done as directed by the Engineer. Rolling shall be continued until no further compression can be obtained and all roller marks are eliminated. Additional rollers shall be provided if needed. The motion of the roller shall be slow enough at all times to avoid displacement of the mixture. If any displacement occurs, it shall be corrected at once by the use of rakes and of fresh mixture where required. The roller shall not be allowed to stand on pavement which has not been fully compacted. To prevent adhesion of the surface mixture to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water will not be permitted. All rollers must be in good mechanical condition. necessary precautions shall be taken to prevent the dropping of gasoline, oil, grease or other foreign matter on the pavement, either when the rollers are in operation or when standing.
- J. The edges of the mixture along curbs, headers and similar structures, and all places not accessible to the roller, or in such positions as will not allow thorough compaction with the roller, shall be thoroughly compacted with lightly oiled tamps.
- K. The surface of the pavement, after compaction, shall be smooth and true to established line, grade and cross section, and acceptable to the Engineer. Unacceptable finished surface may be corrected by the addition of mixture, placed and finished at the entire expense of the contractor.
- L. Sections of the newly finished base course shall be cleaned prior to laying the surface course or additional base courses. No construction traffic will be allowed on the asphalt stabilized base unless authorized in writing by the Engineer.

### **3.2 MIXING**

- A. Screening and Proportioning: The screening capacity and size of the bins shall be sufficient to screen and store the amount of aggregate required to properly operate the plant and keep the plant in continuous operation at full capacity. Provisions shall be made to enable inspection forces to have easy and safe access to the proper location on the mixing plant where representative samples may be taken from the hot bins for testing.

- B. Asphaltic material heating equipment shall be adequate to heat the amount of asphaltic material required to the desired temperature. Asphaltic material may be heated by steam coils which shall be absolutely tight. Direct fire heating of asphaltic materials will be permitted, provided the heater used is manufactured by a reputable concern and there is a positive circulation of the asphalt throughout the heater. Agitation with steam or air will not be permitted. The heating apparatus shall be equipped with a recording thermometer with a 24-hour chart that will record the temperature of the asphaltic material where it is at the highest temperature.
- C. The spreading and finishing machine shall be of a type approved by the Engineer and shall be capable of producing a surface that will meet the requirements of the typical cross section as shown on the plans.
- D. All equipment shall be maintained in good repair and operating condition and shall be approved by the Engineer.

### 3.3 STOCKPILING, STORAGE, PROPORTIONS AND MIXING

- A. Prior to stockpiling of aggregates the area shall be cleaned of trash, weeds and grass and be relatively smooth. Aggregates shall be stockpiled in such a manner as to prevent segregation and mixing of aggregates from one source with another. Suitable equipment of acceptable size shall be furnished by the Contractor to work the stockpiles and prevent segregation of the aggregates. The material shall be placed in layers not exceeding 2' in depth and the minimum height of each stockpile shall be 10'. No separate grading of aggregate will be required prior to delivery to the cold aggregate bin.
- B. The asphaltic material storage shall be ample to meet the requirements of the plant. Asphalt shall not be heated to a temperature in excess of 350° F. All equipment used in the storage and handling of asphaltic material shall be kept in a clean condition at all times and shall be operated in such manner that there will be no contamination with foreign matter.
- C. The feeding of various sizes of aggregate to the dryer shall be done through the cold aggregate bin and proportioning device in such a manner that a uniform and constant flow of materials in the required proportions will be maintained. The aggregate shall be dried and heated to the temperature necessary to produce mixture having the specified temperature. In no case shall the aggregate be introduced into the mixing unit at a temperature more than 375° F.
- D. The proportioning of the various materials entering into the asphaltic mixture shall be as directed by the Engineer and in accordance with these Specifications. Aggregate shall be proportioned by weight using the weight box and batching scales herein specified when the weight-batch type of plant is used and by volume using the hot aggregate proportioning device when the continuous mixer type of plant is used. The asphaltic material shall be proportioned by weight or by volume based on weight using the specified equipment.
- E. In the charging of the weight box and mixer, such methods or devices shall be used as are necessary to secure a uniform asphaltic mixture. In introducing the batch into the mixer, all mineral aggregate shall be introduced first; shall be mixed thoroughly for a period of 5 to 20 seconds, as directed to uniformly distribute the various sizes throughout the batch before the asphaltic material is added; the asphaltic material shall then be added and the mixing continued for a total mixing period of not less than 30 seconds. This mixing period may be increased, if in the opinion of the Engineer, the mixture is not uniform.

- F. The amount of aggregate and asphaltic material entering the mixer and the rate of travel through the mixer shall be so coordinated that a uniform mixture of the specified grading and asphalt content will be produced. The mixture produced from each type of mixer shall not vary from the specified mixture by more than the tolerances herein specified. The mixture shall be at a temperature designated by the Engineer but not to exceed 325° F when dumped from the mixer. The Engineer will determine the temperature and the mixture when dumped from the mixer and when dumped from the mixer shall not vary from this selected temperature more than 25° F.

**END OF SECTION**