SECTION 234
SUPERPAVE ASPHALT BASE

234-1 Description.

Construct a Superpave asphalt concrete base course as defined in these Specifications. Base course mixes are designated as Type B-12.5. The Contractor may use a Type SP-12.5 mixture (Traffic Level B, C, D, or E), in lieu of a Type B-12.5.

Obtain Superpave asphalt base from a plant that is currently on the Department's Production Facility Listing. Producers seeking inclusion on the list shall meet the requirements of Section 105.

234-2 Materials.

234-2.1 General: Use materials that conform to the requirements of Division III. Specific references are as follows:

Superpave PG Asphalt Binder	Section 916
Coarse Aggregate, Stone, Slag or Crushed Gravel	Section 901
Fine Aggregate	Section 902

234-2.2 Reclaimed Asphalt Pavement (RAP): RAP may be used as a component material of the asphalt mixture provided the requirements of 334-2.3 are met.

234-3 General Composition of Mixture.

234-3.1 General: Compose the asphalt mixture using a combination of aggregate (coarse, fine or mixtures thereof), mineral filler if required, and asphalt binder material. Size, grade and combine the aggregate fractions to meet the grading and physical properties of the mix design. Aggregates from various sources may be combined.

234-3.2 Mix Design: Unless otherwise specified, design the mix such that all requirements for a Type SP-12.5, Traffic Level B or C mixture as specified in Section 334 are met.

234-3.2.1 Gradation Classification: Use a fine mix as defined in 334-3.2.2.1.

234-3.2.2 Aggregate Consensus Properties: Meet the aggregate consensus properties at design as specified in 334-3.2.3. Meet the criteria specified for a depth of top of pavement layer from surface of greater than 4 inches.

234-3.2.3 Mix Design Revisions: Meet the requirements of 334-3.3.

234-4 Contractor's Process Control.

Meet the requirements of 320-2, 330-2 and 334-4.

234-5 Acceptance of the Mixture.

The mixture will be accepted in accordance with the requirements of 334-5. When the total plan quantity of Type B-12.5 mix for the project is less than 2000 tons, the Engineer will accept the mix on the basis of visual inspection. Use the permissible variations from longitudinal and transverse grades as specified in 200-7.

234-6 Plant, Methods and Equipment.

Meet requirements of Section 320, with the following modifications:

234-6.1 Paving Equipment: A motor grader may be used to spread the first course of multiple course bases when the subgrade will not support the use of a mechanical spreader. The Engineer will not require mechanical spreading and finishing equipment for the construction of base widening strips less than 6 feet in width or where the shape or size of the area will not accommodate mechanical spreading and finishing equipment.

234-6.2 Compaction Equipment: In areas where standard rollers cannot be accommodated, vibratory rollers supplemented with trucks, motor graders, or other compaction equipment approved by the Engineer may be used.

234-7 Construction Requirements.

234-7.1 General: Meet the general construction requirements of Section 330, with the following modifications:

234-7.1.1 Temperature Limitations: Spread the mixture only when the air temperature is at least 40ºF. Do not place the material on frozen subgrade.

234-7.1.2 Tack Coat: Unless otherwise authorized by the Engineer, apply a tack coat between successive layers of base material.

234-7.1.3 Thickness of Layers: Construct each course in layers not to exceed 3 inches compacted thickness.

234-8 Thickness Requirements.

234-8.1 General: The total thickness of the Type B asphalt layers will be the plan thickness as shown in the Contract Documents. Before paving, propose a thickness for each individual layer meeting the requirements of this specification, which when combined with other layers (as applicable) will equal the plan thickness. For construction purposes, the plan thickness and individual layer thickness will be converted to spread rate based on the maximum specific gravity of the asphalt mix being used, as well as the minimum density level, as shown in the following equation:

Spread rate (lbs. per square yard) = $t \times G_{mm} \times 43.3$

Where: t = Thickness (in.) (Plan thickness or individual layer thickness)

G_{mm} = Maximum specific gravity from the verified mix design

The weight of the mixture shall be determined as provided in 320-3.2. For target purposes only, spread rate calculations should be rounded to the nearest whole number.

234-8.2 Spread Rate Tolerance: Control the average spread rate on a daily basis to within plus or minus 5% of the target spread rate for the individual layers established by the Engineer. When the average daily spread rate is outside this tolerance from the target, adjust the spread rate to the required value established by the Engineer. The Engineer will periodically verify the spread rate at the job site during the paving operation.

234-8.3 Allowable Deficiencies: The Engineer will allow a maximum deficiency from the specified spread rate for the total thickness as follows:

1. For pavement of a specified thickness of 2-1/2 inches or more: 50 pounds per square yard.

2. For pavement of a specified thickness of less than 2-1/2 inches: 25 pounds per square yard.

234-8.4 Pavement Exceeding Allowable Deficiency in Spread Rate: Where the deficiency in spread rate for the total thickness is in excess of 50 pounds per square yard for

pavements with a specified thickness of 2-1/2 inches or more, or in excess of 25 pounds per square yard for pavements with a specified thickness of less than 2-1/2 inches, the Engineer may require removal and replacement at no cost or may require a correction as specified in 234-8.5. The Engineer may require the Contractor to core the pavement for thickness in order to determine the area of pavement with deficient thickness.

As an exception to the above, the Contractor may leave pavement outside the main roadway in place without compensation when the Engineer allows, even though the deficiency exceeds the tolerance as specified above.

The Department will not compensate the Contractor for any pavement removed or for the work of removing such pavement.

234-8.5 Correcting Deficiency by Adding New Surface Material: In the event the total thickness as determined by the spread rate is excessively deficient as defined above and if approved by the Engineer for each particular location, correct the deficient thickness by adding new surface material and compacting it using a rolling pattern as approved by the Engineer. The Engineer will determine the area to be corrected and the thickness of new material added. Perform all overlaying and compacting at no expense to the Department.

234-9 Method of Measurement.

The quantity to be paid for will be the plan quantity. For each pay item, the pay area will be adjusted based upon the following formula:

Pay Area = Surface Area (actual tonnage placed/adjusted plan quantity tonnage).

Where: The adjusted plan quantity tonnage is calculated by multiplying the plan quantity square yards (including any Engineer approved quantity revisions) times the spread rate as defined in 234-8.1 and dividing by 2,000 pounds per ton, except the pay item's tonnage-weighted average G_{mm} is used instead of the design G_{mm} as defined in 234-8.1.

The pay area shall not exceed 105% of the designed surface area.

Prepare and submit a Certification of Quantities to the Engineer in accordance with 9-2.1.2.

234-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including the applicable requirements of Sections 320, 330 and 334. The bid price for the asphalt mix will include the cost of the liquid asphalt binder or the asphalt recycling agent and the tack coat application as directed in 300-8. For the calculation of unit price adjustments of bituminous material specified in 9-2.1.1, the average asphalt binder content of the base mixes to be used in these calculations is set at 6.25%.

Payment will be made under:

Item No. 285- 7- Optional Base - per square yard.