



Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JOSÉ ABREU
SECRETARY

December 20, 2004

Mr. Donald Davis
Program Operations Engineer
Federal Highway Administration
545 John Knox Road
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section 234
Proposed Specification: 2340000.D01

Dear Mr. Davis:

We are submitting, for your approval, two copies of a proposed Supplemental Specification for Superpave Asphalt Base.

This change was proposed by Jim Musselman of the State Materials Office to clean up this Section due to the major reorganization of Section 334.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965DB or duane.brautigam@dot.state.fl.us.

If you have any questions relating to this specification change, please call Duane F. Brautigam, State Specifications Engineer at 414-4110.

Sincerely,

Signature on file

Duane F. Brautigam, P.E.
State Specifications Engineer

DFB/jho
Attachment

cc: General Counsel
Florida Transportation Builders' Assoc.
State Construction Engineer

ASPHALT SUPERPAVE ASPHALT BASE.
(REV ~~10-27-04~~12-20-04)

SECTION 234 (Pages 205-208) is deleted and the following substituted:

SECTION 234
SUPERPAVE ASPHALT BASE

234-1 Description.

Construct a *Superpave Asphalt Concrete* base course ~~composed of Superpave Asphalt Concrete designated as Type B-12.5, using the QC 2000 acceptance system~~ as defined in these Specifications. *Base course mixes are designated as B-12.5.* The Contractor may use a Type SP-12.5 mixture, (Traffic Level B or C) in lieu of a Type B-12.5.

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 or Recycling Agent.....916-1, 916-2
~~Mineral Filler 917-1 and 917-2~~
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 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.~~

~~**234-3.1 Restricted Zone:** Design the mix such that the gradation passes above the restricted zone specified in 334 2.3 for Type SP-12.5.~~

~~**234-3.2 Aggregate Consensus Properties:** Meet the aggregate consensus properties at design as specified in 334-2.4. Meet the criteria specified for a depth of top of pavement layer from surface of greater than 4 inches [100 mm].~~

~~**234-3.3 Reclaimed Asphalt Pavement (RAP):** RAP may be used as a component material of the asphalt mixture provided the requirements of 334-2.5 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 [100 mm].*

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

234-4 Revision of Mix Design.

~~Meet the requirements of 334-3.3.~~

234-54 Contractor's ~~Quality Control~~ Process Control.

Meet the requirements of 330-2 and 334-64.

234-65 Acceptance of the Mixture.

234-65.1 Acceptance at the Plant: ~~Meet the requirements of 334-4 and 334-7~~ **General:** *Meet the requirements of 334-5 with the following modifications:*

234-65.2 Acceptance at the Roadway Testing Exceptions: ~~Meet the requirements of 334-5, with the following exceptions:~~ Density determinations will not be required on base widening strips 5 feet [1.5 m] or less in width, nor on the initial layer of base placed on a soil subgrade. In these situations compact the base in accordance with the rolling procedure (equipment and pattern) *submitted as part of the Quality Control Plan and as* approved by the Engineer. Use the permissible variations from longitudinal and transverse grades as specified in 200-7. The pay factor for LOTs where there are areas not requiring density testing will be prorated based on a pay factor of 1.00 for the tonnage of material in areas not requiring density testing and the actual pay factor for the tonnage of material in areas requiring density.

234-76 Plant, Methods and Equipment.

Meet requirements of Section 320, with the following modifications:

234-76.1 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 [1.8 m] in width.

234-76.2 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.

234-87 Construction Requirements.

234-87.1 General: Meet the General Construction Requirements of Section 330, with the following modifications:

234-87.1.1 Temperature Limitations: Spread the mixture only when the air temperature is at least 40°F [4°C] and rising. Do not place the material on frozen subgrade.

234-87.1.2 Tack Coat: Unless otherwise authorized by the Engineer, apply a tack coat between successive layers of base material.

234-87.1.3 Thickness of Layers: Construct each course in layers not to exceed 3 inches [75 mm] compacted thickness.

234-98 Thickness Requirements.

234-98.1 General: When the Department pays for the pavement on a square yard [square meter] basis, the Engineer will determine the thickness of the asphalt base based upon the spread

rate of the material. The minimum spread rate for the total thickness shall be established from the plan thickness in the following manner: 43.053 lbs/sy multiplied by the maximum specific gravity of the mix (as indicated on the mix design) for every one inch [9.28 kg/m² multiplied by the specific gravity for every 10 mm] of desired thickness, or as determined by the Engineer. The weight of the mixture shall be determined as provided in 320-2.2 (including the provisions for automatic recordation system).

The spread rate for each individual layer shall be established by the Engineer. The minimum layer spread rate shall be 43.053 lbs/sy multiplied by the maximum specific gravity (G_{mm}) of the mix (as indicated on the mix design) for every one inch [9.28 kg/m² multiplied by the specific gravity for every 10 mm] of desired thickness.

234-98.2 Spread Rate Tolerance: Control the average spread rate on a daily basis to within $\pm 5\%$ of the target spread rate for the individual layer(s) 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.

234-98.3 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 [60 mm] or more:
50 lbs/sy.
2. For pavement of a specified thickness of less than 2 1/2 inches [60 mm]:
25 lbs/sy.

234-98.4 Pavement Exceeding Allowable Deficiency in Spread Rate: Where the deficiency in spread rate for the total thickness is: (1) in excess of 50 lbs/sy for pavements with a specified thickness of 2 1/2 inches [60 mm] or more, or (2) in excess of 25 lbs/sy for pavements with a specified thickness of less than 2 1/2 inches [60 mm], the Engineer may require removal and replacement at no cost or may require a correction as specified in 234-98.5. 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.

234-98.5 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 to the same density as the adjacent surface. 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.

234-10-9 Method of Measurement.

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

Pay Area = Surface Area (Project Average Spread Rate/Specified Spread rate for the Total Thickness).

Where: The project average spread rate is calculated by totaling the arithmetic mean of the average daily spread rate values for each layer, and the specified spread rate for the total thickness is based upon the plan thickness converted to spread rate as defined in 234-98.1.

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

Prepare a Certification of Quantities, using the Department's current approved form, for the certified Superpave asphalt base pay item. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the estimate cut-off or as directed by the Engineer, based on the quantity of asphalt produced and accepted on the Contract. The certification must include the Contract Number, FPID Number, Certification Number, Certification Date, period represented by Certification, and the tons [metric tons] produced for each asphalt pay item.

234-110 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.
- Item No. 2285- 7- Optional Base – per square meter.

**SUPERPAVE ASPHALT BASE.
(REV 12-20-04)**

SECTION 234 (Pages 205-208) is deleted and the following substituted:

**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 B-12.5. The Contractor may use a Type SP-12.5 mixture, (Traffic Level B or C) in lieu of a Type B-12.5.

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 or Recycling Agent.....916-1, 916-2
Coarse Aggregate, Stone, Slag or Crushed GravelSection 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 [100 mm].

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

234-4 Contractor's Process Control.

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

234-5 Acceptance of the Mixture.

234-5.1 General: Meet the requirements of 334-5 with the following modifications:

234-5.2 Acceptance Testing Exceptions: Density determinations will not be required on base widening strips 5 feet [1.5 m] or less in width, nor on the initial layer of base placed on a soil subgrade. In these situations compact the base in accordance with the rolling procedure (equipment and pattern) submitted as part of the Quality Control Plan and as approved by the

Engineer. Use the permissible variations from longitudinal and transverse grades as specified in 200-7. The pay factor for LOTs where there are areas not requiring density testing will be prorated based on a pay factor of 1.00 for the tonnage of material in areas not requiring density testing and the actual pay factor for the tonnage of material in areas requiring density.

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 [1.8 m] in width.

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 40°F [4°C] and rising. 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 [75 mm] compacted thickness.

234-8 Thickness Requirements.

234-8.1 General: When the Department pays for the pavement on a square yard [square meter] basis, the Engineer will determine the thickness of the asphalt base based upon the spread rate of the material. The minimum spread rate for the total thickness shall be established from the plan thickness in the following manner: 43.3 lbs/sy multiplied by the maximum specific gravity of the mix (as indicated on the mix design) for every one inch [9.28 kg/m² multiplied by the specific gravity for every 10 mm] of desired thickness, or as determined by the Engineer. The weight of the mixture shall be determined as provided in 320-2.2 (including the provisions for automatic recordation system).

The spread rate for each individual layer shall be established by the Engineer. The minimum layer spread rate shall be 43.3 lbs/sy multiplied by the maximum specific gravity (G_{mm}) of the mix (as indicated on the mix design) for every one inch [9.28 kg/m² multiplied by the specific gravity for every 10 mm] of desired thickness.

234-8.2 Spread Rate Tolerance: Control the average spread rate on a daily basis to within $\pm 5\%$ of the target spread rate for the individual layer(s) 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 [60 mm] or more:
50 lbs/sy.

2. For pavement of a specified thickness of less than 2 1/2 inches [60 mm]:
25 lbs/sy.

234-8.4 Pavement Exceeding Allowable Deficiency in Spread Rate: Where the deficiency in spread rate for the total thickness is: (1) in excess of 50 lbs/sy for pavements with a specified thickness of 2 1/2 inches [60 mm] or more, or (2) in excess of 25 lbs/sy for pavements with a specified thickness of less than 2 1/2 inches [60 mm], 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 to the same density as the adjacent surface. 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. The pay area will be adjusted based upon the following formula:

Pay Area = Surface Area (Project Average Spread Rate/Specified Spread rate for the Total Thickness).

Where: The project average spread rate is calculated by totaling the arithmetic mean of the average daily spread rate values for each layer, and the specified spread rate for the total thickness is based upon the plan thickness converted to spread rate as defined in 234-8.1.

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

Prepare a Certification of Quantities, using the Department's current approved form, for the certified Superpave asphalt base pay item. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the estimate cut-off or as directed by the Engineer, based on the quantity of asphalt produced and accepted on the Contract. The certification must include the Contract Number, FPID Number, Certification Number, Certification Date, period represented by Certification, and the tons [metric tons] produced for each asphalt pay item.

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.

Item No. 2285- 7- Optional Base – per square meter.

