



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

January 18, 2012

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section **334**
Proposed Specification: **3340104 Superpave Asphalt Concrete.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Greg Sholar of the State Materials Office to update the language for consistency with current Department and industry practices.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965RP or rudy.powell@dot.state.fl.us.

If you have any questions relating to this specification change, please call Rudy Powell, State Specifications Engineer at 414-4280.

Sincerely,

Signature on file

Rudy Powell, Jr., P.E.
State Specifications Engineer

RP/dt

Attachment

cc: Calvin Johnson, Chief Civil Litigation
Florida Transportation Builders' Assoc.
State Construction Engineer

SUPERPAVE ASPHALT CONCRETE.**(REV ~~12-2-11~~-17-12)**

SUBARTICLE 334-1.4.3 (of the Supplemental Specifications) is deleted and the following is substituted:

334-1.4.3 Additional Requirements: The following requirements also apply to coarse and fine Type SP Asphalt Concrete mixtures:

1. A minimum 1--1/2 inch initial lift is required over an Asphalt Rubber Membrane Interlayer (ARMI).
2. When construction includes the paving of adjacent shoulders (*≤less than or equal to* 5 feet wide), the layer thickness for the upper pavement layer and shoulder must be the same and paved in a single pass, unless called for differently in the Contract Documents.
3. All overbuild layers must be fine Type SP Asphalt Concrete designed at the traffic level as stated in the Contract. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the Contract Documents. On variable thickness overbuild layers, the minimum *and maximum* allowable thicknesses *will be as specified below* ~~may be reduced by 1/2 inch, and the maximum allowable thickness may be increased 1/2 inch,~~ unless called for differently in the Contract Documents.

Type SP-9.5..... 3/8 to 2 inches

Type SP-12.5..... 3/4 to 3 inches

Type SP-19.0..... 1-1/2 to 3-1/2 inches

SUBARTICLE 334-3.2.1 (of the Supplemental Specifications) is deleted and the following substituted:

334-3.2 Mix Design:

334-3.2.1 General: Design the asphalt mixture in accordance with AASHTO R35-~~04~~09, except as noted herein. Prior to the production of any asphalt mixture, submit the proposed mix design with supporting test data indicating compliance with all mix design criteria to the Engineer. For Traffic Level- B through E mix designs, include representative samples of all component materials, including asphalt binder. Allow the State Materials Engineer a maximum of four weeks to either conditionally verify or reject the mix as designed.

Do not use more than three mix designs per nominal maximum aggregate size per traffic level per binder grade per contract year. Exceeding this limitation will result in a maximum Composite Pay Factor of 1.00 as defined in 334-8.2 for all designs used beyond this limit.

Warm mix technologies (additives, foaming techniques, etc.) listed on the Department's website may be used in the production of the mix. The URL for obtaining this information, if available, is:

<http://www.dot.state.fl.us/Specificationsoffice/implemented/URLinSpecs/files/WarmMixAsphalt.pdf>.

The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient

evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of the mix design.

SUBARTICLE 334-3.2.4 (of the Supplemental Specifications) is deleted and the following substituted:

334-3.2.4 Gyratory Compaction: Compact the design mixture in accordance with AASHTO T 312-08/11, with the following exception: use the number of gyrations at N_{design} as defined in Table- 334-3. Measure the inside diameter of gyratory molds in accordance with FM 5-585.

Traffic Level	N_{design} Number of Gyrations
A	50
B	65
C	75
D	100
E	100

SUBARTICLE 334-5.4.3 (of the Supplemental Specifications) is deleted and the following substituted:

334-5.4.3 Roadway Sampling and Testing Requirements: Obtain five 6 inch diameter roadway cores within 24 hours of placement at random locations as directed by the Engineer within each subplot. Test these Quality Control samples for density (G_{mb}) in accordance with 334-5.1.1. In situations where it is impractical to cut five cores per subplot, obtain a minimum of three cores per subplot at random locations as identified by the Engineer. Do not obtain cores any closer than 12 inches from an unsupported edge. *The Engineer may adjust randomly generated core locations for safety purposes or as the Engineer deems necessary.* Maintain traffic during the coring operation; core the roadway, patch the core holes (within three days of coring); and trim the cores to the proper thickness prior to density testing.

Density for the subplot shall be based on the average value for the cores cut from the subplot with the target density being the maximum specific gravity (G_{mm}) of the subplot. Once the average density of a subplot has been determined, do not retest the samples unless approved by the Engineer. Ensure proper handling and storage of all cores until the LOT in question has been accepted. ~~For situations where it was determined that less than five cores would be obtained for a subplot, additional cores obtained at a later time for the purpose of altering the density value for that subplot, will not be allowed.~~

SUBARTICLE 334-5.4.4 (of the Supplemental Specifications) is deleted and the following substituted:

334-5.4.4 Individual Test Tolerances for Quality Control Testing: Terminate the LOT if any of the following Quality Control failures occur:

- 1) An individual test result of a subplot for air voids does not meet the requirements of Table 334-5,
- 2) The average subplot density ~~for coarse mixes~~ does not meet the requirements of Table 334-5,
- 3) Two consecutive test results for gradation (~~P₂₀₀~~) do not meet the requirements of Table 334-5,
- 4) Two consecutive test results for asphalt binder content do not meet the requirements of Table 334-5,
- ~~5) The average subplot density for two consecutive subplots for fine mixes does not meet the requirements of Table 334-5,~~
- 6) Two core densities for coarse mixes within a subplot are less than 91.00% of G_{mm} .

When a LOT is terminated due to a QC failure, stop production of the mixture until the problem is resolved to the satisfaction of the Quality Control Manager(s) and/or Asphalt Plant Level II technician(s) responsible for the decision to resume production after a quality control failure, as identified in 105-8.6.4. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it will not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume production until appropriate corrections have been made. Inform the Engineer of the problem and corrections made to correct the problem. After resuming production, sample and test the material to verify that the changes have corrected the problem. Summarize this information and provide it to the Engineer prior to the end of the work shift when production resumes.

In the event that a Quality Control failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future Quality Control failures.

Address any material represented by a failing test result in accordance with 334-5.9.5. Any LOT terminated under this Subarticle will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for each quality characteristic.

In the event that a G_{mm} test result differs by more than 0.040 from the mix design G_{mm} , investigate the cause(s) of the discrepancy and report the findings and proposed actions to the Engineer.

Table 334-5 Master Production Range	
Characteristic	Tolerance ⁽¹⁾
Asphalt Binder Content (percent)	Target ± 0.55
Passing No. 200 Sieve (percent)	Target ± 1.50
Air Voids (percent) Coarse Graded	2.00 - 6.00
Air Voids (percent) Fine Graded	2.30 - 6.00
Density (percent G_{mm}) ⁽²⁾	

Table 334-5 Master Production Range	
Characteristic	Tolerance ⁽¹⁾
Coarse Graded (minimum)	93.00
Fine Graded (minimum)	90.00
⁽¹⁾ Tolerances for sample size of n = 1 from the verified mix design	
⁽²⁾ Based on an average of 5 randomly located cores	

SUBARTICLE 334-5.9.5 (of the Supplemental Specifications) is deleted and the following substituted:

334-5.9.5 Defective Material: Assume responsibility for removing and replacing all defective material placed on the project, at no cost to the Department.

As an exception to the above and upon approval of the Engineer, obtain an engineering analysis by an independent laboratory (as approved by the Engineer) to determine the disposition of the material. The engineering analysis must be signed and sealed by a Professional Engineer licensed in the State of Florida.

The Engineer may determine that an engineering analysis is not necessary or may perform an engineering analysis to determine the disposition of the material.

Any material that remains in place will be accepted with a composite pay factor as determined by 334-8, or as determined by the Engineer.

If the defective material is due to a gradation, asphalt binder content or density failure, upon approval of the Engineer the Contractor may perform delineation tests on roadway cores in lieu of an engineering analysis to determine the limits of the defective material that *may* requires removal and replacement. Prior to any delineation testing, all sampling locations shall be approved by the Engineer. All delineation sampling and testing shall be monitored and verified by the Engineer. ~~The minimum limit of removal of defective material is fifty feet either side of the failed sample.~~ For materials that are defective due to air voids, an engineering analysis is required.

When evaluating defective material by engineering analysis or delineation testing, at a minimum, evaluate all material located between passing Quality Control, Process Control or Independent Verification test results. Exceptions to this requirement shall be approved by the Engineer.

SUPERPAVE ASPHALT CONCRETE.
(REV 1-17-12)

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334-1.4.3 Additional Requirements: The following requirements also apply to coarse and fine Type SP Asphalt Concrete mixtures:

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2. When construction includes the paving of adjacent shoulders (less than or equal to 5 feet wide), the layer thickness for the upper pavement layer and shoulder must be the same and paved in a single pass, unless called for differently in the Contract Documents.
3. All overbuild layers must be fine Type SP Asphalt Concrete designed at the traffic level as stated in the Contract. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the Contract Documents. On variable thickness overbuild layers, the minimum and maximum allowable thicknesses will be as specified below, unless called for differently in the Contract Documents.

Type SP-9.5.....	3/8 to 2 inches
Type SP-12.5.....	3/4 to 3 inches
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Do not use more than three mix designs per nominal maximum aggregate size per traffic level per binder grade per contract year. Exceeding this limitation will result in a maximum Composite Pay Factor of 1.00 as defined in 334-8.2 for all designs used beyond this limit.

Warm mix technologies (additives, foaming techniques, etc.) listed on the Department's website may be used in the production of the mix. The URL for obtaining this information, if available, is:
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The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of the mix design.

SUBARTICLE 334-3.2.4 (of the Supplemental Specifications) is deleted and the following substituted:

334-3.2.4 Gyratory Compaction: Compact the design mixture in accordance with AASHTO T 312-11, with the following exception: use the number of gyrations at N_{design} as defined in Table 334-3. Measure the inside diameter of gyratory molds in accordance with FM 5-585.

Traffic Level	N_{design} Number of Gyrations
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Density for the subplot shall be based on the average value for the cores cut from the subplot with the target density being the maximum specific gravity (G_{mm}) of the subplot. Once the average density of a subplot has been determined, do not retest the samples unless approved by the Engineer. Ensure proper handling and storage of all cores until the LOT in question has been accepted.

SUBARTICLE 334-5.4.4 (of the Supplemental Specifications) is deleted and the following substituted:

334-5.4.4 Individual Test Tolerances for Quality Control Testing: Terminate the LOT if any of the following Quality Control failures occur:

1) An individual test result of a subplot for air voids does not meet the requirements of Table 334-5,

- Table 334-5,
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91.00% of G_{mm} .
- 2) The average subplot density does not meet the requirements of
 - 3) Two consecutive test results for gradation do not meet the requirements
 - 4) Two consecutive test results for asphalt binder content do not meet the requirements of Table 334-5,
 - 5) Two core densities for coarse mixes within a subplot are less than

When a LOT is terminated due to a QC failure, stop production of the mixture until the problem is resolved to the satisfaction of the Quality Control Manager(s) and/or Asphalt Plant Level II technician(s) responsible for the decision to resume production after a quality control failure, as identified in 105-8.6.4. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it will not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume production until appropriate corrections have been made. Inform the Engineer of the problem and corrections made to correct the problem. After resuming production, sample and test the material to verify that the changes have corrected the problem. Summarize this information and provide it to the Engineer prior to the end of the work shift when production resumes.

In the event that a Quality Control failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future Quality Control failures.

Address any material represented by a failing test result in accordance with 334-5.9.5. Any LOT terminated under this Subarticle will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for each quality characteristic.

In the event that a G_{mm} test result differs by more than 0.040 from the mix design G_{mm} , investigate the cause(s) of the discrepancy and report the findings and proposed actions to the Engineer.

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Density (percent G_{mm}) ⁽²⁾	
Coarse Graded (minimum)	93.00
Fine Graded (minimum)	90.00

⁽¹⁾ Tolerances for sample size of $n = 1$ from the verified mix design
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When evaluating defective material by engineering analysis or delineation testing, at a minimum, evaluate all material located between passing Quality Control, Process Control or Independent Verification test results. Exceptions to this requirement shall be approved by the Engineer.