



## *Florida Department of Transportation*

RICK SCOTT  
GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450

JIM BOXOLD  
SECRETARY

January 3, 2017

Khoa Nguyen  
Director, Office of Technical Services  
Federal Highway Administration  
3500 Financial Plaza, Suite 400  
Tallahassee, Florida 32312

Re: State Specifications Office  
Section: **334**  
Proposed Specification: **3340102 Superpave Asphalt Concrete.**

Dear Mr. Nguyen:

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

The changes are proposed by Greg Sholar of the State Materials Office (SMO) to update the language.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to [dan.hurtado@dot.state.fl.us](mailto:dan.hurtado@dot.state.fl.us).

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Dan Hurtado, P.E.  
State Specifications Engineer

DH/dt  
Attachment  
cc: Florida Transportation Builders' Assoc.  
State Construction Engineer

**SUPERPAVE ASPHALT CONCRETE.****(REV 11-10-161-3-17)**

SUBARTICLE 334-1.2 is deleted and the following substituted:

**334-1.2 Traffic Levels:** The requirements for Type SP Asphalt Concrete mixtures are based on the design traffic level of the project, expressed in 18,000 pound Equivalent Single Axle Loads (ESAL's). The five traffic levels are as shown in Table 334-1. The traffic levels for the project are as specified in the Contract Documents.

Table 334-1 Superpave Traffic Levels	
Traffic Level	Traffic Level ( $1 \times 10^6$ ESAL's)
A	<0.3
B	0.3 to <3
C	3 to <10
D	10 to <30
E	$\geq 30$

The traffic levels for the project are as specified in the Contract Documents. A Type SP mix one traffic level higher than the traffic level specified in the Contract Documents may be substituted, at no cost to the Department (i.e., Traffic Level D may be substituted for Traffic Level C, etc.). As an exception, the same traffic level and binder type that is used for the mainline traffic lanes may be placed in the shoulder at no additional cost to the Department.

SUBARTICLE 334-2.2 is deleted and the following substituted:

**334-2.2 Superpave Asphalt Binder:** Unless specified otherwise in the Contract Documents, use a PG 67-22 asphalt binder. In addition, grade meet the requirements of as determined from Table 334-2.3.

SUBARTICLE 334-2.3.1 is deleted and the following substituted:

**334-2.3.1 General requirements:** RAP may be used as a component of the asphalt mixture subject to the following requirements:

1. When using a PG 76-22 (PMA), or PG 76-22 (ARB), or PG 82-22 (PMA) asphalt binder, limit the amount of RAP material used in the mix to a maximum of 20% by weight of total aggregate. As an exception, amounts greater than 20% RAP by weight of total aggregate can be used if no more than 20% by weight of the total asphalt binder comes from the RAP material. RAP is not allowed in mixtures containing High Polymer asphalt binder. High Polymer asphalt is defined in Section 916.

2. Assume full responsibility for the design, production and construction of asphalt mixes which incorporate RAP as a component material.

3. Use RAP from a Department approved stockpile or millings from a Department project.

4. Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.

5. Provide RAP material having a minimum average asphalt binder content of 4.0% by weight of RAP. As an exception, when using fractionated RAP, the minimum average asphalt binder content for the coarse portion of the RAP shall be 2.5% by weight of the coarse portion of the RAP. The coarse portion of the RAP shall be the portion of the RAP retained on the No. 4 sieve. The Engineer may sample the stockpiles to verify that this requirement is met.

SUBARTICLE 334-3.2.1 is deleted and the following substituted:

**334-3.2.1 General:** Design the asphalt mixture in accordance with AASHTO R 35-12, 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 Director of the Office of Materials Engineer a maximum of four weeks to either conditionally verify or reject the mix as designed.

~~-For a Traffic Level A mixture, meet the mix design criteria for a Traffic Level B mixture and for a Traffic Level D mixture meet the mix design criteria for a Traffic Level E mixture. In addition, a Type SP mix one traffic level higher than the traffic level specified in the Contract Documents may be substituted, at no cost to the Department (i.e., Traffic Level D may be substituted for Traffic Level C, etc.). Therefore, bBased on the previous conditions, the following substitutions are allowed:~~

~~Traffic Level E can be substituted for Traffic Level D.~~

~~Traffic Level- D or E can be substituted for Traffic Level- C.~~

~~Traffic Level- C can be substituted for Traffic Level- B.~~

~~Traffic Level- B or C can be substituted for Traffic Level- A.~~

~~The same traffic level and binder type that is used for the mainline traffic lanes may be placed in the shoulder at no additional cost to the Department, even if the conditions stated above are not met.~~

Do not use more than four mix designs per nominal maximum aggregate size per traffic level per binder grade per year, where the year starts at the Notice to Proceed. Exceeding this limitation will result in a maximum Composite Pay Factor (CPF) 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/statematerialsoffice/quality/programs/warmmixasphalt/index.shtml>

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 334-3.2.7 is deleted and the following substituted:

**334-3.2.7 Additional Information:** In addition to the requirements listed above, provide the following information with each proposed mix design submitted for verification:

1. The design traffic level and the design number of gyrations ( $N_{\text{design}}$ ).
2. The source and description of the materials to be used.
3. The Department source number and the Department product code of the aggregate components furnished from a Department approved source.
4. The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation caused by handling and processing as necessary.
5. A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly material passing the No. 200 sieve) should be accounted for and identified.
6. The bulk specific gravity ( $G_{\text{sb}}$ ) value for each individual aggregate and RAP component, as identified in the Department's aggregate control program.
7. A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.
8. A target temperature for the mixture at the plant (mixing temperature) and a target temperature for the mixture at the roadway (compaction temperature) in accordance with 320-6.3. Do not exceed a target temperature of 340°F for ~~PG 82-22 (PMA)~~High Polymer asphalt binders, 330°F for PG 76-22 ~~(PMA)~~ and ~~PG 76 22 (ARB)~~ asphalt binders, and 315°F for unmodified asphalt binders.
9. Provide the physical properties achieved at four different asphalt binder contents. One of which must be at the optimum asphalt content, and must conform to all specified physical requirements.
10. The name of the Construction Training Qualification Program (CTQP) Qualified Mix Designer.
11. The ignition oven calibration factor.
12. The warm mix technology, if used.

SUBARTICLE 334-5.4.4 is deleted and the following substituted:

**334-5.4.4 Individual Test Tolerances for QC Testing:** Terminate the LOT if any of the following QC 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 does not meet the requirements of Table 334-5,
3. Two consecutive test results within the same LOT for gradation or asphalt binder content do not meet the requirements of Table 334-5,

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 QC Manager and/or Asphalt Plant Level II technician responsible for the decision to resume production after a QC failure, as

identified in Section 105. 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. Prior to resuming production, 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 QC failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future QC failures.

Address any material represented by a failing test result, as defined above in this subarticle, 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 eachall quality characteristicssand will include all material placed up to the point when the LOT was terminated.

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

Table 334-5  
Master Production Range

Characteristic	Tolerance <sup>(1)</sup>
Asphalt Binder Content (%)	Target $\pm 0.55$
Passing No. 200 Sieve (%)	Target $\pm 1.50$
Air Voids (%)	2.30 – 6.00
Density (minimum % $G_{mm}$ ) <sup>(2)</sup>	89.50

(1) Tolerances for sample size of  $n = 1$  from the verified mix design

(2) Based on an average of 5 randomly located cores

SUBARTICLE 334-5.6.3 is deleted and the following substituted:

**334-5.6.3 Resolution Determination:** The Resolution test results (for the property or properties in question) will be compared with the QC test results based on the between-laboratory precision values shown in Table 334-6.

If the Resolution test results compare favorably with all of the QC results, then acceptance and payment for the LOT will be based on the QC results, and the Department will bear the costs associated with Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution test results do not compare favorably with all of the QC results, then acceptance and payment for the LOT will be based on the Resolution test data for the LOT, and the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing.

-In addition, the material failure requirements of 334-5.4.4 in the event that the application of apply to the Resolution test data. results in a failure to meet the requirements of Table 334-5, aAddress any material represented by the failing test results in accordance with

334-5.9.5. For this situation, the LOT will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for all quality characteristics.

In the event of an unfavorable comparison between the Resolution test results and QC test results, make the necessary adjustments to assure that future comparisons are favorable.

**SUPERPAVE ASPHALT CONCRETE.**  
**(REV 1-3-17)**

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**334-2.3.1 General requirements:** RAP may be used as a component of the asphalt mixture subject to the following requirements:

1. When using a PG 76-22 asphalt binder, limit the amount of RAP material used in the mix to a maximum of 20% by weight of total aggregate. As an exception, amounts greater than 20% RAP by weight of total aggregate can be used if no more than 20% by weight of the total asphalt binder comes from the RAP material. RAP is not allowed in mixtures containing High Polymer asphalt binder. High Polymer asphalt is defined in Section 916.

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Traffic Level E can be substituted for Traffic Level D.

Traffic Level D or E can be substituted for Traffic Level C.

Traffic Level C can be substituted for Traffic Level B.

Traffic Level B or C can be substituted for Traffic Level A.

The same traffic level and binder type that is used for the mainline traffic lanes may be placed in the shoulder at no additional cost to the Department, even if the conditions stated above are not met.

Do not use more than four mix designs per nominal maximum aggregate size per traffic level per binder grade per year, where the year starts at the Notice to Proceed. Exceeding this limitation will result in a maximum Composite Pay Factor (CPF) of 1.00 as defined in 334-8.2 for all designs used beyond this limit.

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In the event of an unfavorable comparison between the Resolution test results and QC test results, make the necessary adjustments to assure that future comparisons are favorable.