



Florida Department of Transportation

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JARED W. PERDUE, P.E.
SECRETARY

October 7, 2024

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

Re: State Specifications Office
Section: 283
Proposed Specification: **2830403 Reclaimed Asphalt Pavement Base**

Dear Ms. Kendall:

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

The changes are proposed by Richard Hewitt to change the method by which density target is established.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Signature on File

Daniel Strickland, P.E.
State Specifications Engineer

DS/jb

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

**RECLAIMED ASPHALT PAVEMENT BASE
(REV 8-14-24)**

SECTION 283-1 is deleted and the following substituted:

283-1 Description.

Construct a base course composed of reclaimed asphalt pavement (RAP) material. Use RAP material as a base course only on ~~non-limited-access~~ paved shoulders, shared use paths, or other non-traffic bearing applications. If RAP base thickness is not provided in Table 285-1, use RAP base thickness equivalent to the optional base group thickness for limerock. Do not use RAP on shoulders designated as Emergency Shoulder Use nor substitute RAP in lieu of stabilized subgrade.

283-2 Materials.

Meet the following requirements:

Recycled Asphalt Pavement (RAP)334-2.3

Prime Coat* Section 300

*Use products listed on the Department's Approved Products List (APL).

Obtain the RAP material by either milling or crushing an existing asphalt pavement. Use material so that at least 97% (by weight) pass a 3-1/2 inch sieve and is graded uniformly down to dust.

When the RAP material is from a Department project and the composition of existing pavement is known, the Engineer may approve material on the basis of the composition. When the composition of obtained RAP is not known, the following procedure will be used for approval:

1. Conduct a minimum of six extraction gradation analyses of the RAP material. Take samples at random locations in the stockpile. The average asphalt cement content of the six stockpile samples must be 4% or greater with no individual result below 3-1/2%.
2. Request the Engineer to make a visual inspection of the stockpile of RAP material. Based on this visual inspection of the stockpiled material and the results of the Contractor's extraction gradation analyses, the Engineer will determine the suitability of the materials.
3. The Engineer may require crushing of stockpiled material to meet the gradation criterion. Perform all crushing before the material is placed.

283-3 Equipment.

In addition to meeting the requirements of 200-3, use double drum vibratory roller for the compaction of RAP when vibratory compaction is allowed.

283-4 Transporting RAP Material.

Meet the requirements of 200-4 except replace "rock" with "RAP".

283-5 Preparation of Roadbed.

The areas of stabilized subgrade must be to the lines shown in the Plans to a grade parallel to the finished elevation of the RAP base and to the full thickness of Type B Stabilization, prior to adding the RAP base material. Ensure that a firm and unyielding stabilized

subgrade is established to support the compaction of RAP and the elevation of the roadbed is such that the RAP base will conform to the typical cross-section upon completing the work.

283-~~6~~3 Spreading RAP Material.

283-~~6~~3.1 Method of Spreading: Spread the RAP with a blade or device which strikes off the material uniformly to laying thickness and produces an even distribution of the RAP. The Contractor may ~~also~~ place the RAP material directly from the milling machine into the trench by a conveyor. When placing the RAP material by conveyor directly from the milling machine, obtain the Engineer's approval of the milling process.

283-~~6~~3.2 Number of Courses: When RAP base is used on limited access shoulders, construct lift thicknesses of 6 inches or less construct the base in two 6-inch courses. When the specified compacted thickness of the base is greater than 6 inches, construct the base in multiple courses not to exceed 6 inches and shall not be less than 3 inches~~two courses~~. ~~Place t~~The first course to a thickness of approximately one half the total thickness of the finished base, or sufficient additional thickness of the first course may be increased to bear the weight of construction equipment without disturbing the subgrade or underlying materials.

Except when as might be permitted by the Engineer ~~for special cases~~, conduct all RAP base construction operations for shoulders before placing the final pavement on the adjacent traveled roadway.

283-~~7~~4 Compacting and Finishing Base.

~~283-4.1 General:~~ Meet the requirements of 200-6-~~1~~.

~~283-4.1.1 Single Course Base:~~ Construct as specified in 200-6.1.1.

~~283-4.1.2 Multiple Course Base:~~ Construct as specified in 200-6.1.2.

~~283-4.2 Moisture Content:~~ Meet the requirements of 200-6.2.

~~283-4.3 Density Requirements:~~ Compact the material to a density of not less than 95% of maximum density as determined by FM 1-T180. Where the width of the base construction is not sufficient to permit use of standard base compaction equipment, perform compaction using vibratory compactors, trench rollers, or other special equipment which will provide the density requirements specified herein.

~~283-4.4 Density Tests:~~ Meet the requirements of 200-7 with the exception of 200-7.2.1. Within the entire limits of the width and depth of the base, obtain a minimum density in any LOT of 95% of the maximum density as determined by FM 1-T180.

~~283-4.5 Thickness Requirements:~~ Meets the thickness requirements of 285-6.

283-8 Acceptance Program.

283-8.1 General Requirements: Meet the requirements of 120-10.1.

283-8.2 Quality Control Tests:

283-8.2.1 Maximum Specific Gravity: Collect enough material to split and create three separate samples. Determine test locations, including stations and offsets, using the Random Number generator approved by the Department. Retain the Verification and Resolution samples for the Department until the Engineer accepts the LOTs represented by the samples. Determine the QC Maximum Specific Gravity of Asphalt Paving Mixtures (G_{mm}) in accordance with FM 1-T209.

283-8.2.2 Calculated Proctor Maximum Density Determination: For limited access shoulders, calculate the QC standard maximum density by multiplying the G_{mm} obtained

in 283-8.2.1 by unit weight of water (62.4 lb/ft³) and 85%. This calculated value will be considered the Calculated Proctor Maximum Density from hereon.

283-8.2.3 Density Testing Requirements: Determine the in-place wet density by Nuclear Density testing in accordance with FM 1-T310. Determine the in-place moisture content for each density test in accordance with FM 5-507 (Speedy Moisture) or ASTM D-4643 (Microwave Oven). Calculate the dry density using the measured in-place wet density and moisture content.

Obtain a minimum QC density of 100% of the Calculated Proctor maximum density as determined in 283-8.2.2 for limited access paved shoulders. For non-limited access paved shoulders, shared use paths, and other non-traffic bearing applications, obtain a minimum QC density of 95% of the Calculated Proctor maximum density as determined in 283-8.2.2.

283-8.2.4 Thickness, Surface, and Cross Slope Testing Requirements: Meet the requirements of 200-7.3.1.2 and 200-7.3.1.3.

283-8.2.5 Frequency: Meet the requirements of 200-7.2.2 except replace Modified Proctor Maximum Density with Maximum Specific Gravity for Asphalt Mixtures.

283-8.2.6 Test Selection and Reporting: Meet the requirements of 120-10.2.5.

283-8.3 Department Verification Tests: Meet the requirements of 200-7.3.2 except replace maximum density in 200-7.3.2.1 with maximum specific gravity in accordance with FM 1-T209.

283-8.4 Payment for Resolution Tests: Meet the requirements of 120-10.5.

283-8.5 Verification Comparison Criteria and Resolution Procedures:

283-8.5.1 Maximum Specific Gravity: The Engineer will compare the Verification test results of 283-8.2.1 to the corresponding QC test results. If the test result is within the between-laboratory precision value specified in 334-5.5.1 (Table 334-7) of the QC test result, the LOTs will be verified. Otherwise, the Engineer will collect the Resolution split sample corresponding to the Verification sample tested. The State Materials Office or an AASHTO accredited laboratory designated by the State Materials Office will perform Resolution testing. The material will be sampled and tested in accordance with FM 1-T209.

The Engineer will compare the Resolution Test results with the QC test results. If the Resolution Test result is within the between-laboratory precision value specified in 334-5.5.1 (Table 334-7) of the corresponding QC test result, the Engineer will use the QC test results for material acceptance purposes for each corresponding set of LOTs. If the Resolution test result is not within the between-laboratory precision value specified in 334-5.5.1 (Table 334-7) of the corresponding QC test, Verification Test results will be used for material acceptance purposes for the LOTs in question.

283-8.5.2 Density: Meet the requirements of 200-7.4.3.

283-8.5.3 Surface and Cross Slope Testing Requirements: Meet the requirements of 200-7.4.4 and 200-7.4.5.

283-5 Testing Surface.

Test the surface in accordance with the requirements of 200-7-3.

283-96 Priming and Maintaining.

283-96.1 Priming: Apply the prime coat only when the base meets the specified density requirements ~~and the moisture content in the top half of the base is within 2% of optimum~~. At the time of priming, ensure that the base is firm, unyielding, and in such condition that no undue

distortion will occur. The Engineer will not allow priming if the surface is dry, dusty, or sloughing.

| **283-96.2 Maintaining:** Meet the requirements of 200-8.2.

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3. The Engineer may require crushing of stockpiled material to meet the gradation criterion. Perform all crushing before the material is placed.

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283-4 Transporting RAP Material.

Meet the requirements of 200-4 except replace “rock” with “RAP”.

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subgrade is established to support the compaction of RAP and the elevation of the roadbed is such that the RAP base will conform to the typical cross-section upon completing the work.

283-6 Spreading RAP Material.

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283-6.2 Number of Courses: When RAP base is used on limited access shoulders, construct lift thicknesses of 6 inches or less. When the specified compacted thickness of the base is greater than 6 inches, construct the base in multiple courses not to exceed 6 inches and shall not be less than 3 inches. The thickness of the first course may be increased to bear the weight of construction equipment without disturbing the subgrade or underlying materials.

Except when permitted by the Engineer, conduct all RAP base construction operations for shoulders before placing the final pavement on the adjacent traveled roadway.

283-7 Compacting and Finishing Base.

Meet the requirements of 200-6.

283-8 Acceptance Program.

283-8.1 General Requirements: Meet the requirements of 120-10.1.

283-8.2 Quality Control Tests:

283-8.2.1 Maximum Specific Gravity: Collect enough material to split and create three separate samples. Determine test locations, including stations and offsets, using the Random Number generator approved by the Department. Retain the Verification and Resolution samples for the Department until the Engineer accepts the LOTs represented by the samples. Determine the QC Maximum Specific Gravity of Asphalt Paving Mixtures (G_{mm}) in accordance with FM 1-T209.

283-8.2.2 Calculated Proctor Maximum Density Determination: For limited access shoulders, calculate the QC standard maximum density by multiplying the G_{mm} obtained in 283-8.2.1 by unit weight of water (62.4 lb/ft^3) and 85%. This calculated value will be considered the Calculated Proctor Maximum Density from hereon.

283-8.2.3 Density Testing Requirements: Determine the in-place wet density by Nuclear Density testing in accordance with FM 1-T310. Determine the in-place moisture content for each density test in accordance with FM 5-507 (Speedy Moisture) or ASTM D-4643 (Microwave Oven). Calculate the dry density using the measured in-place wet density and moisture content.

Obtain a minimum QC density of 100% of the Calculated Proctor maximum density as determined in 283-8.2.2 for limited access paved shoulders. For non-limited access paved shoulders, shared use paths, and other non-traffic bearing applications, obtain a minimum QC density of 95% of the Calculated Proctor maximum density as determined in 283-8.2.2.

283-8.2.4 Thickness, Surface, and Cross Slope Testing Requirements: Meet the requirements of 200-7.3.1.2 and 200-7.3.1.3.

283-8.2.5 Frequency: Meet the requirements of 200-7.2.2 except replace Modified Proctor Maximum Density with Maximum Specific Gravity for Asphalt Mixtures.

283-8.2.6 Test Selection and Reporting: Meet the requirements of 120-10.2.5.

283-8.3 Department Verification Tests: Meet the requirements of 200-7.3.2 except replace maximum density in 200-7.3.2.1 with maximum specific gravity in accordance with FM 1-T209.

283-8.4 Payment for Resolution Tests: Meet the requirements of 120-10.5.

283-8.5 Verification Comparison Criteria and Resolution Procedures:

283-8.5.1 Maximum Specific Gravity: The Engineer will compare the Verification test results of 283-8.2.1 to the corresponding QC test results. If the test result is within the between-laboratory precision value specified in 334-5.5.1 (Table 334-7) of the QC test result, the LOTs will be verified. Otherwise, the Engineer will collect the Resolution split sample corresponding to the Verification sample tested. The State Materials Office or an AASHTO accredited laboratory designated by the State Materials Office will perform Resolution testing. The material will be sampled and tested in accordance with FM 1-T209.

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283-8.5.2 Density: Meet the requirements of 200-7.4.3.

283-8.5.3 Surface and Cross Slope Testing Requirements: Meet the requirements of 200-7.4.4 and 200-7.4.5.

283-9 Priming and Maintaining.

283-9.1 Priming: Apply the prime coat only when the base meets the specified density requirements. At the time of priming, ensure that the base is firm, unyielding, and in such condition that no undue distortion will occur. The Engineer will not allow priming if the surface is dry, dusty, or sloughing.

283-9.2 Maintaining: Meet the requirements of 200-8.2.