



Florida Department of Transportation

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JIM BOXOLD
SECRETARY

June 29, 2015

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: State Specifications Office
Section **341**
Proposed Specification: **3410000 Asphalt Rubber Membrane Interlayer.**

Dear Mr. Nguyen:

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

The changes are proposed by Tanya Nash of the State Materials Office to delete asphalt rubber binder and replace with P 76-22(ARB). Revisions to Sections 336 and 916 are proposed in concert with this change.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to daniel.scheer@dot.state.fl.us.

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

Sincerely,

Signature on file

Daniel Scheer, P.E.
State Specifications Engineer

DS/dt

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

ASPHALT RUBBER MEMBRANE INTERLAYER.**(REV ~~5-196-26-15-15~~)**

SECTION 341 is deleted and the following substituted:

SECTION 341
ASPHALT RUBBER MEMBRANE INTERLAYER

341-1 Description.

Construct an asphalt rubber membrane interlayer composed of a separate application of asphalt rubber binder covered with a single application of aggregate. Obtain asphalt rubber binder 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 916.

341-2 Materials.

341-2.1 Asphalt Rubber Binder: Use a ~~ARB-20~~ ARB-20 PG 76-22 (ARB) meeting the requirements of Section ~~336~~ 916 and listed on the Department's Approved Products List (APL).

341-2.2 Cover Material: Use Size No. 6 stone, slag, or gravel meeting the requirements of Section 901.

341-3 Equipment.

341-3.1 Power Broom: Provide a power broom for cleaning the existing pavement capable of removing all loose material from the surface.

341-3.2 Spreading Equipment: Provide a self-propelled aggregate spreader that can be adjusted to accurately apply the cover material at the specified rate and that spreads the material uniformly.

341-3.3 Rollers: Provide self-propelled, pneumatic-tired traffic type rollers equipped with at least 7 smooth-tread, low-pressure tires, and capable of carrying a gross load of at least 8 tons. Maintain a minimum tire inflation pressure of 90 psi, or as specified by the manufacturer, such that in no two tires the air pressure varies more than 5 psi. Load the traffic roller as directed by the Engineer.

341-3.4 Mixing Equipment: Use mixing equipment for asphalt rubber binder designed for that purpose and capable of producing and maintaining a homogeneous mixture of rubber and asphalt cement at the specified temperature.

341-3.5 Pressure Distributor: Use a pressure type distributor to apply asphalt rubber binder capable of maintaining a homogeneous mixture of rubber and asphalt cement at the specified temperature and consistently apply the material in a uniform manner.

341-4 Contractor's Quality Control.

Provide the necessary quality control of the asphalt rubber binder, and interlayer construction in accordance with the Contract requirements. If the rate of application varies by more than 5% from the rate set by the Engineer in accordance with 341-6, immediately make all corrections necessary to bring the spread rate into the acceptable range. The Engineer may take additional measurements at any time. The Engineer will randomly check the Contractor's measurement to verify the spread rate.

341-5 Preparation of Asphalt Rubber Binder.

~~Meet the requirements of Section 336 Asphalt Rubber Binder, particularly noting testing and action requirements to be met at the project site/asphalt plant. Combine the materials as rapidly as possible for such a time and at such a temperature that the consistency of the binder approaches that of a semi-fluid material. The Engineer will be the sole judge of when the material has reached application consistency and will determine if an extender oil or diluent is needed for that purpose. After reaching the proper consistency, proceed with application immediately. Never hold the mixture at temperatures over 350°F for more than six hours after reaching that temperature.~~

341-6.5 Construction Procedure.

341-6.5.1 Preparation of Surface: Prior to application of the asphalt rubber binder, clean the existing pavement as specified in 300-5.

341-6.5.2 Application of Asphalt Rubber Binder: Apply the asphalt rubber binder only under the following conditions:

- a. The air temperature is above 50°F and rising.
- b. The pavement is absolutely dry.
- c. The wind conditions are such that cooling of the asphalt rubber binder will not

be so rapid as to prevent good bonding of the aggregate.

Uniformly apply the asphalt rubber binder, at the rate of 0.6 to 0.8 gal/yd², as directed by the Engineer. Use an application rate ~~based on the unit weight as shown in Table 336-1. For conversions~~ corrected to ~~standard~~ 60°F, refer to in accordance with 300-9.3. Determine the rate of application after each application operation.

341-6.5.3 Application of Cover Material: Immediately after application of the asphalt rubber binder, uniformly spread the cover material at a rate of 0.26 and 0.33 ft³/yd². The Engineer will set the exact rate. Determine the application rate at the beginning of each day's production, and as needed to control the operation, a minimum of twice per day. Maintain an application rate such that the pavement is covered uniformly with aggregate, and is one aggregate layer thick. For the cover material, use aggregate that is reasonably free of any adherent coatings and that does not contain excessive moisture. Immediately after the application of cover material, check the surface to ensure a uniform distribution of cover material and a smooth surface.

Do not separate the application of the asphalt rubber binder and the application of the cover material by more than 300 feet, unless approved by the Engineer.

341-6.5.4 Rolling: In order to ensure maximum embedment of the aggregate, cover the entire width of the mat immediately by traffic rollers. For the first coverage, provide a minimum of three traffic rollers in order to accomplish simultaneous rolling in echelon of the entire width of the spread.

After initial rolling, immediately correct all portions of the completed surface, that the Engineer deems defective (not properly covered by aggregates, fat spots, excessive free aggregate, etc.).

Following the first coverage, make additional coverages with traffic rollers as directed by the Engineer.

341-6.5.5 Traffic Control: For the normal sequence of construction operations, place the first course of asphalt concrete overlay over the membrane prior to opening to traffic.

341-7.6 Unacceptable Asphalt Rubber Membrane Interlayer.

If the asphalt rubber membrane interlayer is unacceptable due to incorrect blending, application rate, or not meeting the requirements of this Section, or damaged prior to placement of the asphalt concrete layer, remove and replace it as directed by the Engineer at no additional cost to the Department. Do not apply excessive amounts of asphalt rubber binder.

341-8.7 Placement of Asphalt Concrete Overlay.

Ensure that the thickness and temperature of the initial layer of asphalt concrete placed on top of the asphalt rubber membrane interlayer are such that the overlay bonds to the interlayer and the underlying layer without voids or excessive binder. Core the asphalt overlay as directed by the Engineer to evaluate the binder and aggregate spread rates, as well as the effectiveness of the asphalt concrete overlay in producing a well-bonded interlayer.

341-9.8 Method of Measurement.

341-9.8.1 Asphalt Rubber Membrane Interlayer: The quantity to be paid for will be plan quantity, in square yards, completed and accepted.

341-9.8.2 Bituminous Material (Asphalt Rubber Binder-Interlayer): The quantity will be the volume, in gallons, determined as provided in 300-8.9.

341-9.8.3 Submittal of Certification of Quantities for Bituminous Material: Prepare a Certification of Quantities, using the Department's current approved form, for the quantity of bituminous material placed and accepted. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the monthly estimate cutoff date or as directed by the Engineer. The certification must include the Contract Number, FPID Number, State Project Number, Certification Number and period represented by the Certification.

341-10.9 Basis of Payment.

341-10.9.1 Asphalt Rubber Membrane Interlayer: Price and payment will be full compensation for all work specified in this Section, including furnishing cover materials, handling, spreading, rolling, bituminous material, and other incidental work necessary to complete this item.

341-10.9.2 Bituminous Material (Asphalt Rubber Binder-Interlayer): Payment will be included in the price of the asphalt rubber membrane interlayer and will be full compensation for furnishing asphalt cement, ground tire rubber, blending and handling.

341-10.9.3 Payment Items: Payment will be made under:

Item No. 341- ~~70~~ 1- Asphalt Rubber Membrane Interlayer - per square yard.

ASPHALT RUBBER MEMBRANE INTERLAYER.**(REV 6-26-15-15)**

SECTION 341 is deleted and the following substituted:

**SECTION 341
ASPHALT RUBBER MEMBRANE INTERLAYER**

341-1 Description.

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341-2 Materials.

341-2.1 Asphalt Rubber Binder: Use a PG 76-22 (ARB) meeting the requirements of Section 916 and listed on the Department's Approved Products List (APL).

341-2.2 Cover Material: Use Size No. 6 stone, slag, or gravel meeting the requirements of Section 901.

341-3 Equipment.

341-3.1 Power Broom: Provide a power broom for cleaning the existing pavement capable of removing all loose material from the surface.

341-3.2 Spreading Equipment: Provide a self-propelled aggregate spreader that can be adjusted to accurately apply the cover material at the specified rate and that spreads the material uniformly.

341-3.3 Rollers: Provide self-propelled, pneumatic-tired traffic type rollers equipped with at least 7 smooth-tread, low-pressure tires, and capable of carrying a gross load of at least 8 tons. Maintain a minimum tire inflation pressure of 90 psi, or as specified by the manufacturer, such that in no two tires the air pressure varies more than 5 psi. Load the traffic roller as directed by the Engineer.

341-3.4 Mixing Equipment: Use mixing equipment for asphalt rubber binder designed for that purpose and capable of producing and maintaining a homogeneous mixture of rubber and asphalt cement at the specified temperature.

341-3.5 Pressure Distributor: Use a pressure type distributor to apply asphalt rubber binder capable of maintaining a homogeneous mixture of rubber and asphalt cement at the specified temperature and consistently apply the material in a uniform manner.

341-4 Contractor's Quality Control.

Provide the necessary quality control of the asphalt rubber binder, and interlayer construction in accordance with the Contract requirements. If the rate of application varies by more than 5% from the rate set by the Engineer in accordance with 341-6, immediately make all corrections necessary to bring the spread rate into the acceptable range. The Engineer may take additional measurements at any time. The Engineer will randomly check the Contractor's measurement to verify the spread rate.

341-5 Construction Procedure.

341-5.1 Preparation of Surface: Prior to application of the asphalt rubber binder, clean the existing pavement as specified in 300-5.

341-5.2 Application of Asphalt Rubber Binder: Apply the asphalt rubber binder only under the following conditions:

- a. The air temperature is above 50°F and rising.
- b. The pavement is absolutely dry.
- c. The wind conditions are such that cooling of the asphalt rubber binder will not be so rapid as to prevent good bonding of the aggregate.

Uniformly apply the asphalt rubber binder, at the rate of 0.6 to 0.8 gal/yd², as directed by the Engineer. Use an application rate corrected to 60°F, in accordance with 300-9.3. Determine the rate of application after each application operation.

341-5.3 Application of Cover Material: Immediately after application of the asphalt rubber binder, uniformly spread the cover material at a rate of 0.26 and 0.33 ft³/yd². The Engineer will set the exact rate. Determine the application rate at the beginning of each day's production, and as needed to control the operation, a minimum of twice per day. Maintain an application rate such that the pavement is covered uniformly with aggregate, and is one aggregate layer thick. For the cover material, use aggregate that is reasonably free of any adherent coatings and that does not contain excessive moisture. Immediately after the application of cover material, check the surface to ensure a uniform distribution of cover material and a smooth surface.

Do not separate the application of the asphalt rubber binder and the application of the cover material by more than 300 feet, unless approved by the Engineer.

341-5.4 Rolling: In order to ensure maximum embedment of the aggregate, cover the entire width of the mat immediately by traffic rollers. For the first coverage, provide a minimum of three traffic rollers in order to accomplish simultaneous rolling in echelon of the entire width of the spread.

After initial rolling, immediately correct all portions of the completed surface, that the Engineer deems defective (not properly covered by aggregates, fat spots, excessive free aggregate, etc.).

Following the first coverage, make additional coverages with traffic rollers as directed by the Engineer.

341-5.5 Traffic Control: For the normal sequence of construction operations, place the first course of asphalt concrete overlay over the membrane prior to opening to traffic.

341-6 Unacceptable Asphalt Rubber Membrane Interlayer.

If the asphalt rubber membrane interlayer is unacceptable due to incorrect blending, application rate, or not meeting the requirements of this Section, or damaged prior to placement of the asphalt concrete layer, remove and replace it as directed by the Engineer at no additional cost to the Department. Do not apply excessive amounts of asphalt rubber binder.

341-7 Placement of Asphalt Concrete Overlay.

Ensure that the thickness and temperature of the initial layer of asphalt concrete placed on top of the asphalt rubber membrane interlayer are such that the overlay bonds to the interlayer and the underlying layer without voids or excessive binder. Core the asphalt overlay as directed by the Engineer to evaluate the binder and aggregate spread rates, as well as the effectiveness of the asphalt concrete overlay in producing a well-bonded interlayer.

341-8 Method of Measurement.

341-8.1 Asphalt Rubber Membrane Interlayer: The quantity to be paid for will be plan quantity, in square yards, completed and accepted.

341-8.2 Bituminous Material (Asphalt Rubber Binder-Interlayer): The quantity will be the volume, in gallons, determined as provided in 300-9.

341-8.3 Submittal of Certification of Quantities for Bituminous Material: Prepare a Certification of Quantities, using the Department's current approved form, for the quantity of bituminous material placed and accepted. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the monthly estimate cutoff date or as directed by the Engineer. The certification must include the Contract Number, FPID Number, State Project Number, Certification Number and period represented by the Certification.

341-9 Basis of Payment.

341-9.1 Asphalt Rubber Membrane Interlayer: Price and payment will be full compensation for all work specified in this Section, including furnishing cover materials, handling, spreading, rolling, bituminous material, and other incidental work necessary to complete this item.

341-9.2 Bituminous Material (Asphalt Rubber Binder-Interlayer): Payment will be included in the price of the asphalt rubber membrane interlayer and will be full compensation for furnishing asphalt cement, ground tire rubber, blending and handling.

341-9.3 Payment Items: Payment will be made under:

Item No. 341- 1- Asphalt Rubber Membrane Interlayer - per square yard.