

ITEM - BITUMINOUS MEMBRANE (PG 76-22 TR+)**1.0 Description:**

The work under this section shall consist of furnishing all materials including tack coat, bituminous material for the Bituminous Membrane, and cover material and applying the materials in accordance with the details shown on the project plans and the requirements of these specifications.

The average elevation of the roadway for this project is X feet.

The placement dates for the Bituminous Membrane are * to *.

2.0 Materials:**2.01 Bituminous Material:**

Bituminous material for tack coat shall conform to the requirements of Section 1005 of the specifications.

Bituminous material for the bituminous membrane shall be PG 76-22 TR+ conforming to the requirements of Section 1005 of the specifications.

2.02 Cover Material:

Cover material shall conform to the requirements of Subsection 404-2.02(C). The gradation of cover material shall meet the requirements for Class 1.

Prior to placing, the cover material shall be precoated with any grade of PG asphalt cement which meets the requirements of Section 1005 of the specifications. The precoating shall be accomplished by mixing at a central plant until the aggregate is thoroughly coated. The cover material shall have a minimum temperature of 250°F at the time of precoating with asphalt cement. The cover material shall be precoated with approximately 0.40 percent to 0.60 percent asphalt cement, by weight of the aggregate. The final percentage of asphalt cement used for precoating will be as directed by the Engineer. The end result shall be a dust free material.

3.0 Construction Requirements:**3.01 General:**

The existing pavement shall be thoroughly cleaned to the satisfaction of the Engineer prior to applying the bituminous material.

All equipment used to apply bituminous material shall meet the requirements specified under Subsection 404-3.02(A). The equipment shall be capable of maintaining a uniform, homogenous material throughout the operation.

3.02 Application of Tack Coat:

Prior to the application of the Bituminous Membrane, the existing pavement surface shall be cleaned of all objectionable material and tacked in accordance with the requirements of Section 404 of the specifications. The cleaning of the surface, the tacking of the surface, and the type of bituminous material used shall be acceptable to the Engineer. The amount of bituminous material used will be as directed by the Engineer, however, the application rate shall not exceed 0.06 gallons per square yard.

3.03 Application of Bituminous Material for the Bituminous Membrane:

The bituminous material for the Bituminous Membrane shall be placed in accordance with the requirements of Subsection 404-3.05, and shall be made only when all of the following conditions are met:

- (1) The pavement surface temperature is a minimum of 75 degrees F.
- (2) The pavement is dry.
- (3) The wind conditions are such that a satisfactory membrane can be achieved.
- (4) All construction equipment such as distributor truck, aggregate spreader, haul trucks with cover material, and rollers are in position and ready to commence placement operations.

The distributor shall be capable of spreading the bituminous material in accordance with the tolerances specified in Subsection 404-3.02(A) except that the maximum deviation from the specified rate shall not exceed 0.05 gallons per square yard.

The hot bituminous material shall be applied at the rate of approximately 0.50 ± 0.05 gallons per square yard; however, the Engineer will specify the exact rate based on existing surface conditions.

All transverse joints shall be made by placing building paper over the end of the previous application, and the joining application shall start on the building paper. Once the application process has progressed beyond the paper, the paper shall be disposed of as directed by the Engineer.

Longitudinal passes shall not overlap.

Traffic shall not be permitted on the bituminous membrane prior to the application of cover material.

3.04 Application of Cover Material:

Cover material shall be immediately and uniformly spread over the freshly applied bituminous membrane by means of a self-propelled, continuous feed aggregate spreader. Any oversize aggregate or foreign material picked up during stockpiling or loading operations shall be eliminated before entering the aggregate spreader hopper.

Cover material shall be applied at the rate of approximately 0.012 cubic yards per square yard; however, the actual rate of application will be determined by the Engineer. Supplemental spreading and smoothing shall be done by hand methods where necessary.

3.05 Rolling:

At least three pneumatic-tired rollers shall be provided to accomplish the required rolling. The rollers shall conform to the requirements of Subsection 416-7.05(A)(2), except that the minimum air pressure in each tire shall be 100 pounds per square inch, and steel wheel rollers shall not be used.

A sufficient number of rollers shall be furnished to cover the width of the spread on the first pass and complete the required number of passes within the time specified hereinafter. The first pass shall be made immediately behind the spreader and if the spreading is stopped for any reason, the spreader shall be moved ahead so that all cover material may be immediately rolled. The rolling shall continue until a minimum of four complete coverages have been made. Final rolling shall be completed in accordance with the following:

Existing Pavement Temperature	Complete Rolling Within
100°F and above	20 Minutes
Below 100°F	10 Minutes

3.06 Traffic:

Traffic of all types shall be kept off the bituminous membrane until it has had time to set properly. The minimum traffic free period shall be three hours. However, when it is absolutely necessary that hauling equipment or piloted traffic travel on the newly applied membrane and the use is approved in advance by the Engineer, the speed shall not exceed 15 miles per hour. Bituminous membrane operations shall be scheduled so that the normal flow of traffic will be resumed before sunset.

3.07 Removing Loose Cover Material:

Loose cover material shall be removed in accordance with the requirements of Subsection 404-3.08. Sweeping shall be completed and all excess cover material removed prior to the placement of any subsequent layers of asphaltic concrete.

3.08 Placement of Asphaltic Concrete:

If the bituminous membrane has been subjected to traffic, a tack coat, as hereinbefore specified, shall be applied at the rate of approximately 0.06 gallons per square yard prior to placement of any subsequent layers of asphaltic concrete.

When asphaltic concrete is to be placed over the bituminous membrane it shall be placed as soon as practicable. However, in no instance shall it be placed later than seven days after membrane placement.

4.0 Method of Measurement:

Bituminous material for the bituminous membrane will be measured by the ton. Conversion from volume to weight will be calculated on the basis of 229 gallons per ton at 60 degrees F.

Cover material will be measured by the cubic yard. Cover material will be weighed, before precoating, and the amount in tons of dry material will be converted to cubic yards. The weight of all moisture contained in the cover material will be deducted prior to the conversion of the weight in tons to the volume in cubic yards. The dry weight per cubic foot will be determined in accordance with the requirements of AASHTO T19 (Shoveling Procedure).

The quantities of bituminous tack coat and time to apply tack coat will be measured in accordance with the requirements of Section 404 of the specifications.

5.0 Basis of Payment:

The accepted quantity of bituminous material for the bituminous membrane, measured as provided above, will be paid for at the contract unit price, for the bituminous membrane complete in place.

The accepted quantity of cover material, measured as provided above, will be paid for at the contract unit price, complete in place, including precoating the cover material, material for precoating, and rolling and removal of loose cover material.

The accepted quantities of bituminous tack coat and time to apply tack coat will be paid for in accordance with the requirements of Section 404 of the specifications.

The bidding schedule reflects a quantity of bituminous tack coat based on two applications of asphalt cement at the specified rate. No adjustment in the contract unit prices will be made because of a variation in the quantities actually required to complete the work.

The estimated haul distance for the cover material is ** miles.

DESIGNER:

This Item is to be used when a bituminous treatment using PG 76-22 TR+ asphalt binder is being recommended.

* To be supplied by the Bituminous Engineer.

** To be supplied by the Geotechnical Site Supervisor.