

610 - DOUBLE ASPHALT SURFACE TREATMENT

SECTION 610

DOUBLE ASPHALT SURFACE TREATMENT

610.1 DESCRIPTION

Construct a wearing surface composed of an asphalt prime coat followed by the applications of 2 asphalt seal coats and cover material as specified in the Contract Documents.

BID ITEMS

UNITS

Cover Material (*)	Cubic Yard
Cutback Asphalt (*) (**)	Ton
Emulsified Asphalt (*) (**)	Ton
Asphalt Cement (*) (**)	Ton
Water (Flexible Pavement) (Set Price)	M Gallon
Manipulation (D.A.S.T.)	Station

*Type and Grade

** "Prime" denotes material to be used for prime.

"Seal" denotes material to be used for seal.

610.2 MATERIALS

Provide materials that comply with the applicable requirements.

Aggregate for Cover Material	DIVISION 1100
Asphalt Material	DIVISION 1200
Water	DIVISION 2400

610.3 CONSTRUCTION REQUIREMENTS

a. Preparation of Road Surfaces.

(1) Earth subgrade, water-bound base courses and subbases. Before distributing asphalt materials, blade the surface of the roadbed to a smooth, uniform section. Remove all loose materials. Shape, blade and broom side roads that receive asphalt treatment, at the same time as the roadbed surface. When required by the Engineer, give the water-bound base course or subgrade a light application of water (approximately 0.1 gallon per square yard) before the asphalt material is applied.

(2) Asphalt surfaces. Before applying asphalt material, clean all foreign material from the surface to be treated. Broom surface to remove dust. When required by the Engineer, give the asphalt surface a light application of water (approximately 0.1 gallon per square yard) before the asphalt material is applied.

b. Protection of Adjacent Structures. Protect the surfaces of all structures and other roadway appurtenances from damage or splatter of asphalt material. Restore any damaged or splattered appurtenances to their original condition at own expense.

c. Temperature of Asphalt Materials at Time of Application. Apply asphalt material at the temperature specified in **TABLE 601-1**, or as shown on the producer's Bill of Lading.

d. Application of Prime Coat. Apply the prime coat to earth subgrades, water-bound base courses and subbases as soon as practicable after they have been prepared and are sufficiently dry.

Apply the prime coat to asphalt surfaces immediately after final rolling and before any traffic has been allowed upon or when the surface has hardened and glazed so penetration of asphalt material is hindered.

Using a distributor (see **subsection 155.2**), uniformly apply asphalt material at the rate shown in the Contract Documents. Frequently check and adjust the spray nozzles and spray bar to obtain uniform distribution. Should any nozzle malfunction, immediately stop distribution. Correct any deficiency before distribution is resumed.

Only use hand sprayers for areas that can not be primed by normal operation of the distributor.

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e. Preparation of Road Surfaces for First Seal Coat. After the prime coat has thoroughly penetrated the subgrade, and before applying asphalt material, clean the surface to be treated of all foreign material and broom it as necessary to remove dust.

f. Application of Asphalt Material for First Seal Coat. Using a distributor, uniformly apply asphalt material at the rate shown in the Contract Documents. Equip and operate the distributor to prevent asphalt material from dripping on the pavement.

At the beginning of each spread, use a strip of building paper, approximately 3 feet in width and 1 foot longer than the spray bar. If the spray cut-off is not positive, use paper at the end of each spread. Remove the paper and dispose of it in a satisfactory manner. Open the spray bar when the distributor is moving forward at proper speed, unless it is equipped to apply the specified rate from a standing start. Correct any skipped areas or deficiencies. Carefully make junctions of spreads to obtain a smooth riding surface.

Do not spread more asphalt material than can be immediately covered. Do not allow the asphalt material to remain uncovered long enough to impair retention of the cover material. Do not exceed the spread width of the cover material with the spread width of asphalt material by more than 6 inches.

Regulate the distribution of the asphalt material to obtain a uniform application. Do not allow the distributor to "blow".

Check and adjust the angle of the spray nozzles and the height of the spray bar frequently to obtain uniform distribution. If the rise of the spray bar as the load is removed is excessive and contributes to drilling and streaking, modify the distributor to maintain a constant spray bar height. Should any nozzle malfunction, immediately stop distribution. Correct any deficiency before distribution is resumed.

g. Application of Aggregate for First Seal Coat. Immediately following the application of the asphalt material, spread cover material with a self-propelled aggregate spreader in quantities designated in the Contract Documents. The tires of the trucks or aggregate spreaders shall not come in contact with the fresh asphalt material at any time.

Do not allow the asphalt material to remain uncovered long enough to impair retention of the cover material. Do not apply the spread width of the cover material greater than 6 inches wider than the spread width of asphalt material.

Uniformly cover the asphalt before rolling. Equip and operate spreading equipment to provide complete coverage. Brooming, dragging or blading of the cover material is prohibited before initial rolling. Perform any rearrangement of the cover material by hand methods. Avoid overlapping applications of cover material and remove all spillage from the surface.

At the time of delivery to the roadway, the moisture content of the cover material shall not exceed 3% by weight plus $\frac{1}{2}$ the water absorption of the aggregate. Do not let free moisture drain from the truck. The moisture limitations do not apply if lightweight aggregate is used.

When directed by the Engineer, moisten the cover material with water to eliminate or reduce the dust coating of the aggregate. Perform the moistening the day before the aggregate is used.

Any operation of equipment that results in displacement of the cover material or damage to the seal course is prohibited.

h. Rates of Application of Cover Material for First Seal Coat. When alternate types of cover material are shown in the Contract Documents, the quantities of aggregate and asphalt material are for the purpose of estimating and bidding only. Once the Contractor designates the alternate type of aggregate to be supplied, the total quantities to be used and paid for are determined by using the application rates in **TABLE 608-1**. No change in the contract unit price will be made.

The application rate shown in **TABLE 608-1** may be changed with written approval from the Engineer.

If the quantity of cover material computed from **TABLE 608-1** exceeds the amount used on the roadway, the Engineer will designate a stockpile location for this excess quantity. Locate the stockpile along the project, or at locations requiring a haul distance no longer than the most distant end of the project.

The maximum quantity of cover material to be stockpiled is as follows:

- The amount shown on the Contract Documents minus the amount used on the road when one type of cover material is shown in the Contract Documents.
- The amount determined by using the application rates in **TABLE 608-1** minus the amount used on the road when alternate types of cover material are shown in the Contract Documents.

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- The amount specified by the Engineer minus the amount used on the road when the Engineer changes the application rates in **TABLE 608-1**.

Payment for the stockpiled material will be at the contract unit price per cubic yard of cover material.

i. Manipulation. Immediately following the application of cover material, embed using pneumatic rolling. Provide a sufficient number of pneumatic rollers to complete the initial roller coverage within 15 minutes after the application of cover material. Continue pneumatic rolling until a total of 7 complete coverages are obtained. Keep the speed of rollers such that aggregate displacement is minimized. Vary the weight of the rollers to embed the cover material as shown in the Contract Documents.

If emulsified asphalt is used, cure the asphalt material a minimum of 4 hours before opening the roadway to unrestricted traffic. If polymer modified emulsified asphalt is used, the cure time shall be a minimum of 1 ½ hours before the traveled way is opened to unrestricted traffic. If traffic causes excessive chip loss, increase the cure time until excessive chip loss is eliminated.

On seals using CM-A, B or E, the Engineer may require the use of a steel roller for one of the coverages, provided excessive crushing of the cover material does not occur.

Control the rolling sequence so it shall be unnecessary for one roller to turn out to permit another roller to pass. Do not turn rollers on the sealed surface.

When required, apply additional cover material and roll it with the pneumatic rollers as directed by the Engineer.

Provide self-propelled rollers.

Broom the loose cover material from the surface of the traveled way as soon as the asphalt material has cured enough to prevent damage by brooming or vehicular traffic. Continue periodic brooming until all loose aggregate has been removed. Perform a minimum of 1 light brooming of the cover material before opening to traffic. Additional broomings may be required before opening to traffic to prevent the cover material from being picked up by moving vehicles. Broom excess cover material from the shoulder.

The Contractor may seal in 1 lane for the entire day.

When CM-B and cutback asphalt are specified in the Contract Documents, begin a second period of manipulation on the day following the first rolling, or as soon thereafter as weather conditions permit. This manipulation consists of spreading the loose cover material uniformly over the surface and rolling with the type of rollers specified by the Engineer. The rolling operation consists of 2 complete coverages of the previous day's work. Following the second day's rolling, broom excess cover material off the traveled way and shoulders, as directed by the Engineer.

j. Maintenance of First Seal Coat. When directed by the Engineer, add asphalt material and aggregate to completed portions of the project. All additional asphalt material and aggregate so ordered will be included in the pay quantities. Spreading and rolling of additional aggregate will not be paid for separately but is considered as subsidiary to the item of "Manipulation (D.A.S.T.)".

If the shoulder vegetation is not sufficient to define the edge of the traveled way, broom and blade the excess cover material off the shoulder to provide delineation.

k. Treatment of Adjacent Areas. When shown in the Contract Documents, seal the existing intersections and entrances, mailbox turnouts, etc. having asphalt surfaces. Seal all widened areas. Asphalt and cover material for this work is included in the contract quantities and will be paid for at the contract unit price.

l. Second Seal Coat. If the asphalt material consists of cutback asphalt, do not apply the second seal coat until 60 days after the application of the first seal coat, unless shown otherwise in the Contract Documents.

Immediately prior to the second seal coat application, clean the surface of all foreign material, and broom to remove dust and excess cover material. Exercise care not to dislodge any cover material which is embedded in the asphalt material. Apply the second seal coat according to the provisions for the First Seal Coat in **subsections 610.3f. thru i.** Do not use brooms to shift the cover material until the initial rolling is complete, and until the asphalt material has sufficiently cured to hold the cover material. Perform any rearrangement of the cover material during the initial rolling by hand methods.

Continue rolling until the entire surface has been covered a minimum of 7 times with a pneumatic roller. Operate rollers at speeds which shall not displace the aggregate.

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m. Maintenance of Completed Work. Maintain the completed surface for a period of 5 days after the project or portions of the project are open to traffic. If for reasons beyond the Contractor's control, traffic can not be routed over the work upon completion of the project, maintain the surface for a period of 5 days after completion of the second seal coat. Maintenance consists of the following:

(1) Make one, complete coverage each day of the 5 days after the project or portions of the project are open to traffic with a light blade equipped with broom drag followed by a pneumatic roller. If weather and roadbed conditions are such that the dragging and rolling would not be beneficial to the surface the daily dragging and rolling may be omitted with approval of the Engineer.

(2) The application of additional asphalt material, aggregate, dragging and rolling or all of these operations may be required.

Asphalt material and aggregate ordered by the Engineer used in the maintenance work will be included in the quantities of these materials for which payment is to be made. Additional manipulation required for the maintenance work will not be paid for separately, but will be considered as subsidiary work to the item of "Manipulation (D.A.S.T.)" included in the Contract Documents.

n. Treatment of Adjacent Areas. When shown in the Contract Documents, perform the second seal on the same areas as the first seal, including existing intersections and entrances, mailbox turnouts, all widened areas etc. Asphalt and cover material for this work is included in the contract quantities and will be paid for at the contract unit.

o. Maintenance of Traffic. Maintain traffic according to **DIVISION 800** and the following.

Coordinate all construction operations to result in the least practicable delay of traffic. Maintain one-way traffic and restrict traffic speeds to 30 MPH on bare pavement and 20 MPH on freshly applied seal. Use pilot cars to lead one-way traffic through the areas of distribution and curing. Coordinate the work so the pilot car completes a round trip in 15 minutes or less. Do not delay traffic at more than 2 separate locations of work on a project.

Station one flagger immediately ahead of the application of the asphalt material and one flagger immediately behind the section being cured. Move the signs and flaggers forward as the work progresses.

Complete all brooming activities before opening the traveled way to unrestricted traffic.

On projects where asphalt sealing is constructed in connection with other work from which traffic is detoured, the provisions of this subsection do not apply. Restrict the speed of all equipment traveling on the freshly applied seal to 20 MPH for 24 hours.

p. Seasonal and Weather Limitations.

(1) Construct asphalt sealing using cutback asphalt between May 1 and October 15, when the ambient air temperature is 60°F and rising.

(2) Construct asphalt sealing using emulsified asphalt between June 1 and September 15, when the ambient air temperature is 60°F and rising, and the pavement temperature is a minimum of 70°F.

(3) Construct asphalt sealing using asphalt cement between June 1 and September 1, when the ambient air temperature is 70°F and rising, and the pavement temperature is a minimum of 80°F.

When aggregate retention is unsatisfactory, suspend sealing. Do not seal when the surface is wet, or the weather is foggy or rainy. These limitations may be modified with written approval from the Engineer.

If the seal is damaged or lost, due to rain or wet pavement, repair or re-seal the damaged pavement.

q. Pavement Smoothness. Double asphalt surface treatment is excluded from profilograph testing, and not eligible for pay adjustments.

610.4 MEASUREMENT AND PAYMENT

The Engineer will measure cover material by the cubic yard. The material will be measured in the vehicle at the time and place of unloading. No deductions will be made for moisture in the cover material.

The Engineer will measure asphalt material by the ton. Deductions will be made for the number of tons that are not placed on the road surface.

The Engineer will measure manipulation by the Station, along the centerline. On divided highways, the Engineer will measure manipulation by the Station, along the centerline of each divided direction. This includes all widened and irregular areas and irregular variations in depth.

The Engineer will measure ordered water by the M Gallon by means of calibrated tanks or water meters.

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Payment for "Cover Material", "Cutback Asphalt", "Emulsified Asphalt", "Asphalt Cement" and "Manipulation (D.A.S.T.)" at the contract unit prices and "Water (Flexible Pavement) (Set Price)" at the contract set unit price is full compensation for the specified work.

When the Contract Documents call for asphalt cement for asphalt sealing, the following provisions apply:

- If the work is not completed by September 1, and when ordered by the District Engineer in writing, change the type of asphalt material to cutback asphalt.
- If approved changes are made, the unit price for cutback asphalt will be the contract price for asphalt cement plus or minus the difference in the invoice price of the two materials at the refinery at the time of application.

Such measurement and payment is full compensation for the work specified.