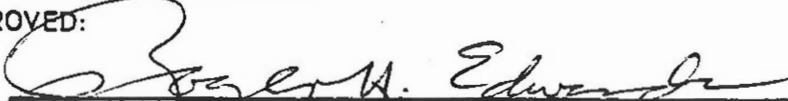


TO:  <b>SUPERSEDED BY EB 01-010 EFFECTIVE 2/6/01</b>	<h1>ENGINEERING INSTRUCTION</h1> <p>NEW YORK STATE DEPARTMENT OF TRANSPORTATION</p>
	SUBJECT: BITUMINOUS SURFACE TREATMENT SINGLE COURSE FOR PAVEMENT FOR MAINTENANCE CONTRACTS  Subject Code: 7.27-1-41-
Distribution:                      30    Main Office    32                      Regions                      34                      Special  APPROVED:  R. H. EDWARDS, Facilities Design Div., Deputy Chief Engr.	Code: <u>      EI 86- 35      </u> Date: <u>      10-9-86      </u> Supersedes:

The attached is a new specification for single surface treatment under pay item 18410.0502, Bituminous Surface Treatment - Single Course for Pavement. It replaces item 18410.05 - Bituminous Surface Treatment - Single Course for Pavement and 18410.06 - Bituminous Surface Treatment - Double Course for Pavement, 410.01 - Bituminous Surface Treatment (Single Course for Pavement); 410.02 - Bituminous Surface Treatment (Double Course for Pavement).

It has been determined that the sealing of pavements is effective only for short term maintenance treatments on roads with less than 2,000 AADT. (Ref: EI 84-16). The procedure is not intended for use on capital projects. Caution must be exercised so that loose stones and dust do not become problems when surface treatment is used.

We are not reissuing any specification for double surface treatments because it has been determined that double surface treatments are not generally cost effective. The basis for this is that they could cost nearly what an armor coat would cost but won't add any strength to the pavement section. Therefore, before any double surface treatments are proposed, an evaluation should be made detailing the cost and benefits of a one inch armor coat vs. a double surface treatment.

In summary this Instruction allows that the specification for Item 18410.0502 can be used on maintenance projects selected by the Maintenance Division, to surface treat structurally sound asphalt concrete rural roads having AADT's of 2,000 or less. A special spec for a double surface treatment may be approved only where supported by an analysis which shows it to be significantly lower in cost than armor coat. This EI takes effect immediately. The item's a Main Office Insert.

ITEM 18410.0502 - BITUMINOUS SURFACE TREATMENT - SINGLE COURSE FOR PAVEMENT

DESCRIPTION

This work shall consist of the construction of a single bituminous surface treatment in accordance with NYSDOT Standard Specifications, January 2, 1985, as amended, and these specifications. The work shall be in substantial conformance with the limits shown on the plans or established by the Engineer.

MATERIALS

Bituminous Materials. The bituminous material required for the surface treatment course shall meet the requirements of Section 702, Bituminous Materials. The grade of rapid set bituminous material shall be that indicated on the plans, in the proposal or as ordered by the Engineer.

The bituminous material shall be obtained from a storage facility that has been approved within the current calendar year, by the Director, Materials Bureau. Copies of the written procedures for achieving approval are available from NYSDOT Materials Bureau, 1220 Washington Avenue, Albany, NY 12232.

Aggregates. The aggregates for pavement surface treatment shall conform to the requirements of Section 703-02, "Coarse Aggregates", shall be from an approved source and meet one of the following requirements:

1. Coarse aggregate shall be crushed limestone or dolomite that have an acid insoluble content of not less than 10%.
2. Coarse aggregates shall be crushed sandstone, granite, trap rock, ore tailings, or other similar materials.
3. Coarse aggregates shall be crushed gravel or blends of two or more of the following types of material; crushed gravel, limestone, dolomite, sandstone, granite, trap rock, ore tailings or other similar materials. Not less than 20% of the coarse aggregate shall be non-carbonate. Non-carbonate particles are defined as those having an acid insoluble content not less than 80%.

Where aggregates for pavement surface treatment are from more than one source or of more than one type of material, they shall be proportioned and blended to provide a uniform mixture. The procedure used for proportioning shall be approved by the Regional Director, or his representative.

Aggregates used for pavement surface treatment shall not contain more than 5% chert.

A. BITUMINOUS SURFACE TREATMENT - SINGLE COURSE FOR PAVEMENT

For single surface treatment courses on pavement, the aggregate size shall be No. 1ST.

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10/09/86  
02/16/86

## CONSTRUCTION REQUIREMENTS

### Bituminous Surface Treatment - Single Course for Pavement

- A. Weather Limitations. Bituminous material shall not be applied on a wet surface or when the ambient temperature is less than 50°F or greater than 95°F, or when weather conditions would prevent proper construction of the surface treatment. The surface on which the bituminous material is applied shall have a temperature of 70°F or higher. Surface Treatments shall be placed only during the period of May 1st up to and including the last Saturday of September.
- B. Equipment. The following equipment shall be required:
1. Bituminous material distributor
  2. Pneumatic tire rollers
  3. Self-propelled aggregate spreader
  4. Self-propelled rotary power broom

A bituminous material distributor shall be so designed, equipped, maintained and operated so that the bituminous material at even heat can be applied uniformly on variable widths of surface up to 15 feet at readily determined and controlled rates from 0.05 to 2.0 gallons per square yard, with uniform pressure, and with an allowable variation from any specified rate not to exceed 0.02 gallons per square yard. Distributor equipment shall include tachometer, accurate volume measuring devices or a calibrated tank, and a thermometer for measuring temperatures of tank contents. Distributors shall be equipped with a separate power unit for the pump, and full circulation spray bars adjustable laterally and vertically.

The distributor and/or transport shall be equipped with a sampling valve so designed and installed as to be non-clogging and safe. The type of valve and its general location shall be according to written instructions by the Department. When samples are taken through such valves, in accordance with Department instructions, they shall be considered representative of all material in the tank.

The pneumatic tire rollers shall be self-propelled and have oscillating wheels with smooth-tread tires. The tire or contact pressure shall be specified by the Engineer. The Engineer will require a sufficient number of pneumatic tire rollers to permit initial rolling of the aggregate to occur within 5 minutes of the application of the bituminous material and the final of the three coverages to be completed within 30 minutes of the application of the bituminous material. The rollers shall be operated at a maximum speed of 5 miles per hour. To prevent pick-up of the aggregate to the tires, the tires shall be kept properly moistened with water or water mixed with small quantities of detergent or other approved material, but in no case shall a solvent having affect upon the surface treatment be used.

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CONSTRUCTION REQUIREMENTS (Continued)

The aggregate spreader shall be a self-propelled unit capable of uniformly spreading the aggregate at the required rate on a minimum width of 6" wider than the width of the lane to be treated. The spreader shall meet the approval of the Engineer.

- C. Preparation of Surface. A self-propelled power broom shall be used to clean any loose material from the pavement surface immediately prior to the application of bituminous material.

Manhole covers, Drop Inlets, Catch Basins, Curb and any other structures within the roadway area shall be protected against the application of the surface treatment material.

- D. Determination of the Quantities of Materials to be Applied. The Contractor shall place a minimum of three test patches at locations determined by the Engineer. Each test patch shall be approximately three square yards and placed with the quantity of bituminous material and aggregate as directed by the Engineer. All test patches shall be compacted in the same manner as required by these specifications. Construction of the test patches shall be completed a minimum of 14 days prior to the placement of the bituminous surface treatment. The quantity of bituminous material and aggregate to be used for pavement will be determined by the Engineer after observing the performance of the test patches. The quantity of bituminous material to be used shall be in the range of 0.25 to 0.40 gallons per square yard for the indicated aggregates unless otherwise directed. The cover aggregate shall be spread in the range of 15 to 25 pounds/square yard for the indicated aggregate unless otherwise directed by the Engineer. The detailed instructions for test patch installations, appear in a written instruction available from the NYSDOT Materials Bureau, 1220 Washington Avenue, Albany, NY 12232.

- E. Application of Bituminous Material. Bituminous material shall be applied by means of a pressure distributor in a uniform, continuous spread over the section to be treated and within the temperature range specified. The quantity of bituminous material to be used shall be as determined by the Engineer. The allowable variation from this quantity shall not exceed 0.02 gallons per square yard. A strip of building paper, at least 3 feet in width and with a length equal to that of the spray bar of the distributor plus one foot, shall be used at the beginning of each spread. If the cut-off is not positive, the use of paper may be required at the end of each spread. The paper shall be removed and disposed of in a satisfactory manner. The distributor shall be moving forward at proper application speed at the time the spray bar is opened. Any skipped areas or deficiencies shall be corrected. Junctions of spreads shall be carefully made to assure a smooth riding surface.

The bituminous material shall not be applied more than 200 feet in advance of the self-propelled stone spreader.

CONSTRUCTION REQUIREMENTS (Continued)

The spread of bituminous material shall not be more than 6 inches wider than the width covered by the aggregate from the spreading device. Under no circumstances shall operations proceed in such a manner that bituminous material will be allowed to chill, set up, dry, or otherwise impair retention of the cover aggregate. Traffic shall never be allowed to run on uncovered bituminous material.

The distributor, when not spreading, shall be parked so that the spray bar or mechanism will not drip bituminous material on the surface of the traveled way.

- F. Application of the Cover Aggregate. Immediately following the application of bituminous material, cover aggregate shall be spread at the rate determined by the Engineer. The allowable variation from this rate shall not exceed three pounds per square yard. All aggregate used for bituminous surface treatment shall be clean as determined by visual inspection of the Engineer at the time of placement.

Spreading shall be accomplished in such a manner that the tires of the aggregate spreader at no time contact the uncovered and newly applied bituminous material.

Immediately after the cover aggregate is spread, any deficient areas shall be covered by additional material. Pneumatic tire rolling shall begin immediately and shall be continued until three complete coverages are obtained within 30 minutes of the application of the bituminous material. Pneumatic tire rollers shall come to a complete stop prior to reversing direction.

Any free bituminous material on the surface caused by a deficient amount of cover aggregate shall be covered in such a manner so as not to displace imbedded material. Excess material shall be removed from the surface by a method acceptable to the Engineer. The surface shall be swept at the time determined by the Engineer.

- G. Opening to Traffic. Unless otherwise specified, the highway shall be kept open to traffic at all times. Traffic shall be discontinued on the lane being surface treated; and as soon as the final layer is applied and rolled, controlled traffic may be permitted thereon. Traffic shall be maintained at a speed not to exceed 15 miles per hour for a period of four hours after placement of the surface treatment by the use of two-way radio equipped patrol vehicles in accordance with the maintenance and protection of traffic details shown on the plans. All patrol vehicles shall be equipped with signs meeting the requirements of Section 254.5 of the Manual of Uniform Traffic Control Devices. The required number of two-way radio equipped patrol vehicles shall be as follows:

CONSTRUCTION REQUIREMENTS (Continued)

<u>Lane Miles Length of Surfacing for past 4 hours</u>	<u>Number of Patrol Vehicles</u>
1	1
2	3
3 or more	4

**Bituminous Surface Treatment**

The requirements of Single Course Surface Treatment shall apply except that sufficient time shall elapse between the completion of the bituminous base course and placing of the surface course so that the bituminous material in the base course has time to set. The quantity of bituminous material and aggregate used in the surface course will be determined by the Engineer.

METHOD OF MEASUREMENT

Bituminous Surface Treatment for Pavement. Bituminous surface treatment will be measured by the number of square yards of compacted material in place making no deductions for minor untreated areas such as catch basins and manholes.

BASIS OF PAYMENT

Bituminous Surface Treatment. The unit price bid per square yard shall include the cost of furnishing the aggregate, all labor and all equipment necessary to complete the work. The costs of installing test patches and furnishing patrol vehicles shall be included in the unit bid price. The bituminous material will be paid for under its appropriate item. If one grade or type of liquid asphalt is substituted for another, payment will be made under the original pay item. Payment for patching material will be made under the appropriate items.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
18410.0502	Bituminous Surface Treatment (Single Course for Pavement)	Square Yard