

**Item No.320S**  
**Two Course Surface Treatment**

**320S.1 Description**

This item shall govern the construction of a wearing surface composed of a double application of asphaltic material, each covered with aggregate, constructed on existing pavements, a prepared base course or surface in accordance with these specifications.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

**320S.2 Submittals**

The submittal requirements of this specification item include:

- A. Recommended design mix (asphaltic material, aggregate type, modifier type and %)
- B. Test results on the asphaltic material (Viscosity, penetration, solubility, ductility, stability, distillation test, residue tests, etc.).
- C. Test results on the aggregate (gradation and percent wear).
- D. Characteristics (i.e. manufacturer, rate of application, speed, etc.) of the proposed distributor and aggregate spreader.
- E. List of facilities and equipment proposed for temperature measurements.
- F. List of facilities and equipment proposed for storage and handling of asphaltic materials.

**320S.3 Materials**

All material shall be of the type(s) and grade(s) shown on the Drawings and shall conform to the pertinent material requirements for the following items:

A. Asphaltic Materials

The asphaltic materials used shall conform to Item No. 301S, "Asphalts, Oils and Emulsions" as follows:

- 1. Air Temperature 65 to 80<sup>0</sup> F (18 to 27<sup>0</sup>C), HFRS-2
- 2. Air Temperature over 81<sup>0</sup>F (27<sup>0</sup>C), RS-2

B. Aggregate

The aggregate materials shall conform to Item No. 302S, "Aggregate for Surface Treatments" as follows:

- 1. First Course  
Grade 3
- 2. Second Course  
Grade 5

C. Aggregate (Stockpiled)

When the Drawings include the Item, "Aggregate (Stockpiled)", aggregate of the type and grade specified for the surface treatment shall be stockpiled within the limits of the project at sites designated on the drawings or as directed by the Engineer or designated representative. Stockpile sites shall be leveled, if required and prepared as specified herein. The Contractor shall load, haul, distribute and apply the stockpiled aggregate in accordance with specification requirements governing for this item. The stockpile areas and remaining stockpiles shall be left in a neat condition satisfactory to the Engineer or designated representative.

D. Temporary Pavement Markings

Temporary pavement markings shall conform to Item No. 864S, "Abbreviated Pavement Markings".

**320S.4 Construction Methods**

Prior to commencement of this work, all required erosion control and tree protection measures shall be in place and the utilities located and protected as specified in the City of Austin Standard Contract Documents, Section 00700, "General Conditions". Construction equipment shall not be operated within the drip line of trees unless otherwise indicated. Construction materials shall not be stockpiled under the canopies of trees. Excavation or embankment materials shall not be placed within the drip line of trees until tree wells are constructed.

The two course surface treatment shall be applied when the air temperature is above 50°F (10°C) and rising. Air temperature shall be taken in the shade and away from artificial heat. The two course surface treatment shall not be applied when the temperature of the roadway surface is below 60°F(16°C).

When latex modified asphalt cement is specified, the two course surface treatment shall be applied when the air temperature is above 70°F (21°C) and rising. Air temperature shall be taken in the shade and away from artificial heat. The two course surface treatment shall not be applied when the temperature of the roadway surface is below 70°F(21°C).

Asphaltic material shall not be placed when general weather conditions, in the opinion of the Engineer or designated representative, are not suitable.

The area to be treated shall be cleaned of dirt, dust or other deleterious matter by sweeping or other approved methods. If deemed necessary by the Engineer or designated representative, the surface shall be lightly sprinkled just prior to the first application of asphaltic material.

The Contractor shall be responsible for the proper preparation of all stockpile areas before aggregates are placed thereon, including leveling, cleaning of debris necessary for protection of the aggregate to prevent any contamination thereof and clean up of any stockpile area at the completion of the work.

All storage tanks, piping, retorts, booster tanks and distributors used in storing or handling asphaltic materials shall be kept clean and in good operating condition at all times and shall be operated in such manner that there will be no contamination of the asphaltic material with foreign material. It shall be the responsibility of the Contractor to provide and maintain in good working order a recording thermometer at the storage heating unit at all times.

Application temperatures will be determined by weather conditions within the limits recommended in Specification Item 301S, "Asphalts, Oils and Emulsions", as determined by the Engineer or designated representative.

The Contractor shall provide all necessary facilities for determining the temperature of the asphaltic material in all of the heating equipment and in the distributor for determining the rate at which it is applied and for securing uniformity at the junction of two distributor loads. The distributor shall have been calibrated within three (3) years from the date it is first used on this project. The Contractor shall furnish the Engineer or designated representative with an accurate and satisfactory record of such calibration. After beginning the work, should the rate of the asphaltic material appear to be inappropriate, the distributor shall be adjusted to provide a satisfactory rate before proceeding with the work.

When a uniform application of asphaltic material is not being achieved, the Engineer or designated representative may require that the Contractor provide an operator at the rear of the distributor to manually control the spray bar operations.

Asphaltic material for each course may be applied for the full width of the surface treatment in one application, unless the width exceeds 26 feet (8 meters). No traffic or hauling will be permitted over the freshly applied asphaltic material. The asphaltic material shall not be applied until immediate covering is assured.

#### A. First Course

Asphaltic material for the first course shall be applied on the clean surface by an approved type of self-propelled pressure distributor so operated as to distribute the material, evenly and smoothly, under a pressure necessary for proper distribution at a rate of 0.30 to 0.35 gallons per square yard (1.4 to 1.6 liters per square meter) or as directed by the Engineer or designated representative.

Aggregate for the first course shall be immediately and uniformly applied and spread by an approved self-propelled continuous feed aggregate spreader, unless otherwise indicated or authorized by the Engineer in writing. The aggregate shall be applied at the approximate rate of 15 to 20 lbs. per square yard (8 to 11 kilograms per square meter) or as directed by the Engineer or designated representative. The Contractor shall be responsible for the maintenance of the surface of the first course until the second course is applied.

The entire surface shall then be broomed, bladed or raked as required by the Engineer and shall be thoroughly rolled in accordance with Specification Item 230S, "Rolling (Flat Wheel)" with power rollers of the three-wheel or tandem, self-propelled type, weighing not less than 3 tons (2.7 megagrams) nor more than 6 tons (5.4 megagrams). All wheels shall be flat.

In lieu of the rolling equipment specified, the Contractor may, upon written permission from the Engineer or designated representative, operate other compacting equipment that will produce equivalent relative compaction in the same period of time as the specified equipment. If the substituted compaction equipment fails to produce the desired compaction within the same period of time as would be expected of the specified equipment, as determined by the Engineer or designated representative, its use shall be discontinued. Rollers shall be maintained in good repair and condition and shall be approved by the Engineer or designated representative prior to their use.

## B. Second Course

It is the intent of this specification that the application of asphalt and aggregate for the second course be applied within the same day or immediately thereafter and prior to opening the roadway to traffic.

The second course shall consist of asphaltic material and aggregate applied and covered in the manner specified for the first application. The surface shall then be broomed, bladed or raked as required by the Engineer or designated representative and thoroughly rolled in accordance with Standard Specification Item 232S, "Rolling (Pneumatic Tire)" with a pneumatic tire roller. Asphaltic materials for the course shall be applied at the rate of 0.25 gallons per square yard (1.1 liters per square meter) or as directed by the Engineer or designated representative. Aggregate for the second course shall be applied at the rate of 14 to 18 lbs. per square yard (7.5 to 10 kilograms per square meter) or as directed by the Engineer or designated representative.

The Contractor shall be responsible for the maintenance of the surface treatment until the work is accepted by the Engineer or designated representative. All holes or failures in the surface shall be repaired by use of additional asphalt and aggregate. All fat or bleeding surfaces shall be covered with approved cover material in such a manner that the asphaltic material will not adhere to or be picked up by the wheels of vehicles.

Temporary pavement markings shall be placed in accordance with Item No. 864S, "Abbreviated Pavement Markings".

### **320S.5 Measurement**

A "Two Course Surface Treatment" application shall be measured by the square yard (square meter: 1 square meter equals 1.196 square yards) of completed and accepted two-course surface treatment.

### **320S.6 Payment**

The work performed and materials furnished as prescribed by this item and measured as provided under "Measurement" will be paid at the unit bid price for two course surface treatment. The price shall each include full compensation for: a) cleaning and sprinkling the base; furnishing, preparing, hauling and placing all materials, and rolling, b) all freight involved; c) all manipulations, labor, tools, equipment cleanup, and temporary pavement markings and d) all incidentals necessary to complete the work.

Payment will be made under the following:

**Pay Item No. 320S-A:** Two Course Surface Treatment, Per Square Yard.  
Plan Quantity

**End**

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| <b><u>SPECIFIC</u> CROSS REFERENCE MATERIALS</b>       |
| Specification Item 320S "Two Course Surface Treatment" |

City of Austin Standard Specifications

| <u>Designation</u> | <u>Description</u>                |
|--------------------|-----------------------------------|
| Item No. 232S      | Rolling (Pneumatic Tire)          |
| Item No. 301S      | Asphalts, Oils and Emulsions      |
| Item No. 302S      | Aggregates for Surface Treatments |
| Item No. 642S      | Silt Fence (SF)                   |
| Item No. 864S      | Abbreviated Pavement Markings     |

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| <b><u>RELATED</u> CROSS REFERENCE MATERIALS</b> |
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City of Austin Standard Contract Documents

| <u>Designation</u> | <u>Description</u> |
|--------------------|--------------------|
| Section 00700      | General Conditions |

City of Austin Standard Specifications

| <u>Designation</u> | <u>Description</u>                  |
|--------------------|-------------------------------------|
| Item No. 206S      | Asphalt Stabilized Base             |
| Item No. 210S      | Flexible Base                       |
| Item No. 306S      | Prime Coat                          |
| Item No. 307S      | Tack Coat                           |
| Item No. 310S      | Emulsified Asphalt Treatment        |
| Item No. 311S      | Emulsified Asphalt Repaving         |
| Item No. 312S      | Seal Coat                           |
| Item No. 340S      | Hot Mix Asphaltic Concrete Pavement |
| Item No. 341S      | Paving Fabric                       |
| Item No. 350S      | Heating, Scarifying and Repaving    |
| Item No. 351S      | Recycling Agent                     |

City of Austin Standard Details

| <u>Designation</u> | <u>Description</u>                                     |
|--------------------|--|
| 1000S-10           | Local Street Sections                                  |
| 1000S-11(1)        | Residential and Neighborhood collector Street Sections |
| 1000S-11(2)        | Industrial and Collector Street Sections               |
| 1000S-12(1)        | Primary Collector Street Sections                      |
| 1000S-12(2)        | Primary Arterial Street Sections                       |
| 1000S-13(1)        | Minor Arterial Street Sections (4 Lanes)               |
| 1000S-13(2)        | Minor Arterial Street Sections- (4 Lanes divided)      |
| 1000S-14           | Major Arterial Street                                  |

Texas Department of Transportation: Standard Specifications for Construction And Maintenance of Highways, Streets, and Bridges

| <u>Designation</u> | <u>Description</u>                       |
|--------------------|--|
| Item 300           | Asphalts, Oils and Emulsions             |
| Item 301           | Asphalt Antistripping Agents             |
| Item 310           | Prime Coat (Cutback Asphaltic Materials) |
| Item 314           | Emulsified Asphalt Treatment             |
| Item 316           | Surface Treatments                       |
| Item 345           | Asphalt Stabilized Base (Plant Mixed)    |
| Item 354           | Planing and/or Texturing Pavement        |