

University of Houston Master Specification

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SECTION 32 0116 – ASPHALT OVERLAY

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information

Edit and finalize this Section, where prompted by Editor's notes, to suit Project specific requirements. Make selections for the Project at text identified in bold.

This Section uses the term "Engineer." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Delete hidden text after this Section has been edited for the Project.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
 - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas, available on the web site of the Texas Facilities Commission.
 - 2. The University of Houston's *Supplemental General Conditions and Special Conditions for Construction*.

1.2 SUMMARY

- A. This Section specifies the requirements for scarifying, grinding, sweeping and repair of existing asphalt concrete pavement to establish a base course and provide a new asphalt surface course to the lines, grades and elevations as shown in the Drawings and in accordance with these Specifications.

1.3 APPLICABLE PUBLICATIONS

- A. The latest issues of the publications listed below, but referred to hereafter by basic designation only, form a part of this Specification to the extent indicated by references thereto.
- B. Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (TxDOT).
 - 1. Item 247 – Flexible Base

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2. Item 300 – Asphalts, Oils and Emulsions
3. Item 302 – Aggregates for Surface Treatments
4. Item 310 – Prime Coat
5. Item 320 – Equipment for Asphalt Concrete Pavement
6. Item 340 – Dense Graded Hot Mix Asphalt
7. Item 292 – Asphalt Treatment (Plant Mix)

C. American Society for Testing and Materials Standards (ASTM)

1. ASTM D 698 – Moisture Density Relations of Soil Using 5.5 Pound Rammer and 12 Inch Drop
2. ASTM D 8-02 – Standard Terminology Relating to Materials for Road Pavements

D. Texas Department of Transportation Test Procedures

1. TEX 207-F – Determining Density of Compacted Bituminous Mixtures
2. TEX 227-F – Theoretical Maximum Specific Gravity of Bituminous Mixtures
3. TEX 227-F – Theoretical Maximum Specific Gravity of Bituminous Mixtures

1.4 DEFINITIONS

- A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each paving material, signed by manufacturers.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
1. A paving-mix manufacturer registered with and approved by authorities having jurisdiction or, if none exists, a manufacturer registered with the Texas Department of Transportation.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Prime and Tack Coats: Minimum surface temperature of 60 degrees F.

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2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
3. Asphalt Base Course: Minimum surface temperature of 40 degrees F and rising at time of placement.
4. Asphalt Surface Course: Minimum surface temperature of 60 degrees F at time of placement.

PART 2 - PRODUCTS

2.1 ASPHALTIC MATERIALS

- A. Provide asphaltic material conforming to the applicable requirements of TxDOT Item 300.
 1. Asphalt cement shall be PG64-22.
 2. Prime coat shall be MC-30.
 3. Tack coat shall be CSS-1, CSS-1h, RS-1, or CRS-1.

2.2 MINERAL AGGREGATES

- A. Provide coarse aggregate, fine aggregate, and mineral filler conforming to the requirements of TxDOT Item 340 articles 340.2.A.1 Course Aggregate, 340.2.A.3 Fine Aggregate and 340.2.B Mineral Filler.

2.3 ADDITIONAL BASE MATERIAL

- A. Additional crushed limestone required in Construction Method Article 3.3 below shall conform to the following requirements:
 1. Table 1 in TxDOT Item 247.2.A Aggregate for Grade 2 when constructing roadways and constructing parking lots.
 2. Test results: Maximum Liquid Limit = 40; Maximum Plasticity Index = 12.
 3. Materials shall be crushed stone produced and graded from oversize quarried aggregate that originates from a single, naturally occurring source. Do not use gravel or multiple sources.

2.4 SURFACE COURSE AGGREGATE

- A. Surface course aggregate material shall be composed of clean, tough and durable particles of gravel, crushed gravel or crushed stone meeting the sieve analysis requirements of TxDOT Item 302 "Type D".

2.5 EQUIPMENT

- A. All equipment necessary to perform the Work of this Section shall conform to requirements of Item 320, TxDOT.

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2.6 WATER

- A. Water used for mixing or curing shall be clean and free of oil, salt, acid, alkali, sugar, vegetable matter or other substances injurious to the finished product.
- B. Source: The local municipal domestic water supply.
 - 1. If onsite reclaimed water sources are used, tanks and appurtenances must be clearly marked with the words "non-potable" water.

PART 3 - EXECUTION

3.1 GENERAL

- A. The equipment to be provided for the recycling and stabilization of asphalt overlay shall include but not be limited to the following:
 - 1. Recycling Unit: The recycling unit shall be a self-propelled unit consisting of a variable speed rotor equipped with a minimum of 100 removable cutting teeth. The rotor shall have a minimum cutting width of 72 inches and a minimum cutting depth of 9 inches.
 - 2. Compaction Equipment: The compaction equipment used to compact the stabilized material shall consist of approved rollers including pneumatic-tired roller, steel wheel, and vibratory sheepsfoot of sufficient compactive effort to attain the required density requirements.
 - 3. Water Placement Equipment: The equipment used to add water to the mixed material shall include spray bars or other distribution devices that will insure even distribution of water across the surface of the mixture. The equipment shall have adequate capacity to distribute the water during one application.

3.2 EROSION PROTECTION

- A. Provide at all times adequate protection to newly graded areas to prevent soil erosion as specified in Section 31 2513 "Erosion and Sedimentation Control."
- B. Soil erosion that occurs prior to acceptance of the Work shall be repaired at no expense to the Owner.

3.3 CONSTRUCTION METHOD

- A. Clean the pavement surface of loose materials and all vegetation prior to the start of milling/mixing operations. This cleaning shall be accomplished by blading and sweeping.
- B. All asphalt and base material where specified shall be removed and relocated to a stockpile area. Additional base material consisting of crushed limestone per Article 2.3 above as required shall

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be added to the stockpiled mix. The limestone material shall be thoroughly mixed with the stockpiled material to a uniform gradation throughout the mixture.

- C. The completely mixed composite base material shall then be relocated to its original location after the subgrade has been lime stabilized per Section 31 3213.19 "Lime Stabilization." Water shall be added during this operation until the optimum moisture content has been reached. The water shall be introduced into the mixture and shall be uniformly mixed throughout the material.
- D. The base material shall be compacted as described in TxDOT ITEM 247 Flexible Base per article 247.4.C Compaction using Density Controls.
- E. Degree of finish:
 - 1. Check the surface of the completed pavement longitudinally and transversely for smoothness with a 10 foot straightedge.
 - 2. The surface shall not vary more than ¼ inch in 16 feet. Correct by loosening, adding or removing base material, reshaping and re-compacting in accordance with paragraph 3.3 C above.
- F. Base course shall be allowed to cure until the moisture content is at least 2 percentage points below optimum before applying the next successive course or prime coat.
- G. Take special care in working in the area of underground electrical and other conduits for parking lot lights and security cameras.

3.4 ASPHALTIC STABILIZED BASE

- A. Refer to Section 32 1126 "Asphalt Stabilized Base" for requirements.

3.5 ASPHALT SURFACE COURSE

- A. Asphalt surface course shall be applied in accordance with Article 340.4, Item 340, TxDOT.
- B. Prior to application of the prime coat, clean the prepared base of all foreign or objectionable matter with power blowers, power brooms, or hand brooms as required.
- C. Apply the prime coat to the base at a rate ranging from 0.2 to 0.5 gallons per square yard of surface.
- D. Apply the prime coat in accordance with Item 310, TXDOT.
 - 1. Material shall be as specified in Article 2.1 ASPHALTIC MATERIALS.
 - 2. Application temperature shall be 100 degrees F.
- E. A tack coat of 0.05 to 0.15 gallons per square yard of surface shall be applied on each layer of the surface course and allowed to cure before placing the succeeding course.

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F. Compact and finish the surface course as follows:

1. The mix shall be compacted immediately after placing.
2. Initial rolling with a steel-wheeled tandem roller, steel three-wheeled roller, or a pneumatic-tired roller shall follow the paver as close as possible.
3. Intermediate rolling with a pneumatic-tired roller shall follow the paver as close as possible.
4. Final rolling shall eliminate marks from previous rolling.
5. In areas too small for the roller, a vibrating plate compactor or a hand tamper shall be used to achieve thorough compaction.
6. Compaction with Air Void Control shall meet requirements stated in TxDOT Item 340.4.H
7. Determined target density by taking the average density of five laboratory-prepared specimens collected at random from trucks delivering the mixture to the job site. Take a bulk sample at least every 300 tons or at a minimum of one sample per day.
8. Test samples in accordance with TEX 207-F, TEX 222-F and TEX 227-F. Report test results to the Engineer the same day the tests are made.
9. Check the surface of the completed pavement longitudinally and transversely for smoothness with a 10 foot straightedge.
10. The surface shall not vary more than 1/8 inch in 10 feet.

3.6 TESTING AND INSPECTION

- A. Contractor shall notify Owner's testing laboratory 24 hours in advance of beginning any earth work operations and coordinate testing schedules to meet these Specifications.
- B. Base Course Testing
 1. Maximum density tests per ASTM D 698-07e1 shall be taken on all fill materials at a rate of one test for every 100 cubic yards of fill.
 2. Field density tests per ASTM D 1556-07 shall be taken on all fill material at a rate of one test for every 100 cubic yards of fill.
 3. All imported fill material shall be approved prior to importing.
 4. Provide certifications from Owner's testing laboratory that the specified quantity of cement has been provided.
 5. Requests for payment shall not be made until specified tests are submitted to Owner and Engineer.
- C. Surface Course Testing
 1. Test samples in accordance with TEX 207-F, TEX 222-F and TEX 227-F and report test results to the Engineer the same day the tests are made.

3.7 DUST ABATEMENT

- A. Comply with applicable Federal, State, and local laws and regulations concerning the prevention and control of dust pollution.

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- B. During performance of the Work required by this Section, whether on right-of-way provided by Owner or elsewhere, Contractor shall furnish all labor, equipment, materials, and means required, and shall carry out proper and efficient measures as necessary to reduce dust and to prevent dust from damaging plants and structures or causing a nuisance to persons. Contractor will be held liable for damage resulting from dust originating from Contractor's operations.
- C. Dust control shall be accomplished by one of the following methods:
 - 1. When ordered by Owner, apply calcium chloride over the traveled road surfaces that have not yet been fully restored. The material used shall be Regular Flake Calcium Chloride having a minimum chemical content of 77 percent calcium chloride. The rate of application shall be three pounds per square yard of surface covered.
 - 2. When ordered by Owner, apply "Bituminous Surface Treatment" on traveled road surfaces in accordance with the Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges.
- D. Include the cost of sprinkling or other methods of reducing the formation of dust in the Work.

END OF SECTION 32 0116

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