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# Conventional Fog Seal

## Sample Construction Specification Guideline

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## 1. Scope

The scope of this sample construction specification guideline is limited and intended to provide general information regarding the design, component material specification, application, inspection, measurement, and payment of Conventional Fog Seal.

## 2. Description

A Conventional Fog Seal is a light application of a diluted asphalt emulsion used to extend the service life of a flexible pavement structure. A Conventional Fog Seal is recommended on pavement in relatively good condition to prevent or correct distresses such as raveling, oxidation, and minor top-down cracking.

## 3. Materials

### 3.1 Asphalt Emulsion

The asphalt emulsion shall contain asphalt and water and shall be diluted 1:1 with water at the point of manufacture. The asphalt emulsion shall be tested prior to dilution to ensure compliance with applicable specifications. Asphalt emulsion delivered to the project shall be accompanied by a laboratory Certificate of Analysis and any other certifications as deemed necessary or advisable.

The asphalt emulsion shall be designated CSS-1H and meet the specification as listed in AASHTO M208.

### 3.2 Aggregate

Aggregate is used only as a blotting agent in areas of excess emulsion application or as a means to protect a freshly placed seal in high-traffic areas or to facilitate early return to traffic. The aggregate shall be any suitable manufactured or natural sand with top-sized material of less than 0.25 inch (0.64 cm).

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## 4. Equipment

### 4.1 Asphalt Distributor

The distributor shall be self-powered and capable of providing a uniform application rate of asphalt binder varying from 0.05-1.00 gal/yd$^2$ (0.23-4.5 L/m$^2$) over a variable width up to 16 feet (4.88 m) in a single pass. Nozzles on the distributor bar shall be fully operational and of the size suggested by the manufacturer to apply the intended application rate. Coverage shall be full with no overlapping areas or bare spots. Multiple passes shall overlap by a maximum of four inches (10.2 cm), with the end nozzles applying 50% of the desired application rate of each pass. The distributor shall be self-powered and include computerized application controls and be capable of heating material to 160°F (71.1°C).

### 4.2 Broom

Self-propelled, four-wheeled rotary mechanical brooms and/or vacuum brooms capable of operating in both forward and reverse are recommended. Brooms should be in good condition and meet applicable environmental standards.

## 5. Equipment Calibration

The asphalt distributor shall be calibrated by applying asphalt emulsion for a continuous section of minimum 300 feet (91.4 m). The amount of material distributed shall be within 5% of the intended application rate and shall be verified by use of a strapping stick as supplied by the equipment manufacturer. Neither a visual gauge indicating volume nor the computer readout shall be used as a calibration method. The application rate is measured in gal/yd$^2$ (L/m$^2$).

## 6. Test Strip

Prior to the beginning of the project, the contractor may be required to perform a test strip in a suitable area such as a parking lot or staging area to assure the materials, contractor personnel, and equipment are suitable to produce a satisfactory Conventional Fog Seal. The location for the test strip shall be approved by the owner. The test strip may be conducted as part of the calibration procedure and may be performed as part of the project.

## 7. Weather

The Conventional Fog Seal shall not be placed when rain is likely prior to curing of the product or when freezing conditions are expected within 24 hours of application. Both ambient temperature and roadway surface temperature in all areas shall be minimum 50°F (10°C) and rising before beginning application.

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## 8. Traffic Control

Prior to start of the project, a traffic control plan shall be developed to address all aspects of traffic control, including without limitation, coordination with local officials and traffic control equipment and methods. The traffic control plan is intended to promote controlled traffic flow through the project in order to protect the safety of the contractor and owner personnel, the public, and the product. The traffic control plan shall remain in place until the product has sufficiently cured to withstand traffic without damage. Any damage to the newly applied Conventional Fog Seal due to construction traffic or the premature release of traffic shall be repaired to the satisfaction of the owner at the contractor's expense.

## 9. Surface Preparation

### 9.1 General

Immediately prior to applying the Conventional Fog Seal, the pavement surface shall be cleared of all loose material, silt spots, vegetation, and other objectionable material. If water is used, cracks shall be allowed to dry thoroughly before applying the asphalt emulsion. Manholes, valve boxes, drop inlets, and other service entrances shall be protected from the Conventional Fog Seal by a suitable method. Thermoplastic and other striping should be removed or protected prior to application of the asphalt emulsion. The agency shall approve the surface preparation prior to application of the Conventional Fog Seal.

### 9.2 Cracks

Cracks wider than 0.25 inches (0.64 cm) should be treated with an approved crack sealer after application of the Conventional Fog Seal.

### 9.3 Patching

Prior to application, all failed pavement sections should be removed and patched using accepted best practices. The perimeter of excavated areas should be milled or saw cut to form a neat vertical face. Unstable areas of sub-grade should be backfilled with well-graded and compacted aggregate. Patching should be completed 30 days prior to application of the Conventional Fog Seal. Patches may require an individual application of asphalt emulsion prior to the full-width application.

## 10. Application

The asphalt emulsion shall be applied by means of a pressure distributor. Application shall be a uniform, continuous, full-coverage spread, and under such pressure as to thoroughly coat the surface at the specified rate. The temperature of the asphalt emulsion during application shall be maintained from 100°F-160°F (37.8°C-71.1°C).

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## 11. Material Storage and Handling

### 11.1 Asphalt Emulsion

Asphalt emulsion stored on the job site must be agitated and heated using the distributor prior to use. Stored emulsion shall be inspected by the contractor for suitability prior to use on the project. Diluted asphalt emulsion shall not be stored over five days. Contractor shall comply with all material handling, storage, and safety requirements outlined in any applicable SDS or other product label.

### 11.2 Aggregate

Aggregate intended for use on the project shall be maintained in such manner as to protect it from contamination by debris and excess moisture. Large or oversized particles shall be removed from the aggregate by screening or other acceptable method prior to use on the project.

## 12. Inspection

Assure all distributor operations are functional. The nozzles shall be clean and producing a consistent fan of material, providing full and complete coverage of material across the asphalt surface with no overlap or excessive material. Assure material is within required temperature range and the material is sufficiently cured prior to return of traffic. Assure traffic control measures are in place and are adequate to satisfy all safety and product requirements.

## 13. Measurement

The Conventional Fog Seal shall be measured in square yards (square meters) of pavement covered.

## 14. Payment

Payment shall be in consideration of all materials, tools, labor, and other items as necessary to complete the project as required by the plans. The Conventional Fog Seal shall be paid at either of the methods below as set forth in the bid documents:

- By the square yards (square meters) of the project
- By the gallons (liters) of emulsion used