



**DEVELOPMENTAL SPECIFICATIONS
FOR
MILLED SHOULDER RUMBLE STRIPS - HMA OR PCC SURFACE**

Effective Date
December 20, 2005

THE STANDARD SPECIFICATIONS, SERIES 2001, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

01070.01 GENERAL.

This work shall consist of furnishing all necessary labor, equipment, and materials; and performing all operations necessary for milling shoulder rumble strips in HMA or PCC surfaced shoulders. Shoulder rumble strips shall be milled to the dimensions and spacing shown in the plans. The work shall also include applying diluted asphalt emulsion to the milled shoulder rumble strips by means of a bituminous distributor.

01070.02 MATERIALS.

A. Milling.

Milling equipment shall be equipped with a cutting head with cutting tips arranged in a pattern as to provide a smooth cut, approximately 1/16 inches (2 mm) between peaks and valleys.

B. Asphalt Emulsion Fog Seal.

Asphalt emulsion grade CSS-1h, meeting requirements of Section 4140, shall be used.

The asphalt emulsion shall be diluted with water prior to application to the milled shoulder rumble strip. The dilution rate is one part of asphalt emulsion to one part of water.

01070.03 CONSTRUCTION.

If degraded shoulders are encountered that will not accommodate milled rumble strips, the Engineer shall be notified. These sections shall be skipped.

A. Test Strip.

The Contractor shall demonstrate to the Engineer on an initial 500 foot (150 m) test section that the equipment and method will provide the desired milled shoulder rumble strip and surface inside each depression without damaging the adjacent pavement. If the desired results are not being provided, as determined by the Engineer, the Contractor shall provide new equipment, different methods, or make necessary adjustments to provide the desired results. If the initial 500 foot (150 m) section

results are unsatisfactory, it will be repaired or replaced as determined by the Engineer, at no additional cost to the Contracting Authority.

B. Milling.

Shoulder rumble strips shall be milled in a straight line, offset from the painted edge line as shown in the plans and shall not deviate from that offset more than ± 2 inches (50 mm). The offset may be decreased to 6 inches (150 mm) on shoulders with a top width less than 30 inches (750 mm). The depth of the rumble strips shall be as shown in the plans. The alignment and depth will be randomly checked by the Engineer.

Waste material (millings) resulting from the operation shall be removed on a daily basis. The waste material may be used as fillet material adjacent to the paved shoulder or it may become property of the Contractor and disposed of off the project. Disposal of material may be at an approved landfill, approved stockpile, or other methods that will allow the material to be recycled. Waste material shall be removed prior to opening adjacent lane to traffic.

C. Asphalt Emulsion Fog Seal.

The equipment shall meet the requirements of Section 2001 of the Standard Specifications.

Application width shall cover the entire milled shoulder rumble strip.

Asphalt emulsion fog seal shall be placed in accordance with Article 2308.06, of the Standard Specifications, at a rate of 0.13 gallon per square yard (0.6 L/m²).

Asphalt emulsion shall not be placed on a damp or wet surface.

Asphalt emulsion shall be applied during weather conditions under which satisfactory application can be obtained. Asphalt emulsion shall not be applied when the air temperature is below 50°F (10°C). Asphalt emulsion shall not be placed after October 15 without permission from the Engineer.

D. Limitations.

The Contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The Contractor shall not park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service areas shall be subject to approval of the Engineer.

01070.04 METHOD OF MEASUREMENT.

A. Milled Shoulder Rumble Strips.

The quantity of Milled Shoulder Rumble Strips, of the type specified, in stations (meters), along each edge of the pavement, will be the quantity shown in the contract documents. ~~The length of gapped sections through interchanges and bridges will be included in this length.~~ No deduction will be made for gapped sections through interchanges and bridges. The quantity will be adjusted for the length of degraded shoulders skipped, not milled, as defined in Article 01070.03 of this specification. The quantity will be adjusted for test sections that were deemed unsatisfactory.

B. Asphalt Emulsion for Fog Seal.

The quantity of undiluted Asphalt Emulsion for Fog Seal will be measured in gallons (liters) as provided in Article 2307.06, B, of the Standard Specifications.

01070.05 BASIS OF PAYMENT.

A. Milled Shoulder Rumble Strips.

The Contractor will be paid the contract unit price for Milled Shoulder Rumble Strips, of the type specified, per station (meter).

B. Asphalt Emulsion for Fog Seal.

The Contractor will be paid the contract unit price per gallon (liter) for undiluted Asphalt Emulsion for Fog Seal that is mixed and used on the project. Diluted asphalt emulsion that is delivered to the project site, but not applied to the roadway surface will not be considered for payment.

This payment shall be full compensation for cleaning the shoulder surface, furnishing and applying diluted asphalt emulsion, mixing water, and protecting the adjacent pavement and edge lines.