

## SECTION 546 RUMBLE STRIPS

### 546-1 Description.

Construct rumble strips in accordance with the details shown in the Plans and Standard Plans, [Index 546-001](#).

### 546-2 Materials for Raised Rumble Strips.

**546-2.1 [General Permanent Raised Rumble Strips](#):** Construct [permanent](#) raised rumble strips using one of the following:

**546-2.1.1 Preformed Thermoplastic:** Use only materials listed on the Department's Approved Product List (APL), meeting the following requirements:

Preformed Thermoplastic..... 971-1 and 971-6

Ensure that the material used can be restored to its original dimensions by using a self bonding overlay meeting these requirements. Submit a certified test report to the Engineer indicating that the materials meet all requirements specified.

**546-2.1.2 Asphalt:** Any plant-mixed hot bituminous asphalt mixture meeting the requirements of a job-mix formula issued by the Department, except open-graded friction course.

**[546-2.2 Short-Term Raised Rumble Strips:](#)** Construct [short-term raised rumble strips meeting the requirements of 546-2.1, or by using removable polymer striping tape meeting the requirements of 990-9.](#)

### 546-3 Application.

**546-3.1 [Permanent Raised Rumble Strips](#):** Notify the Engineer before the placement of raised rumble strips. Apply raised rumble strips having well defined edges. Remove and replace any raised rumble strips not meeting the requirements of the Contract Documents at no additional cost to the Department.

Before applying raised rumble strips, remove any material that would adversely affect the bond of the raised rumble strips by a method approved by the Engineer.

Apply raised rumble strips only to dry surfaces, and only when the ambient air and surface temperature is at least 55°F and rising.

Before applying thermoplastic materials on portland cement concrete surfaces, apply a primer sealer recommended by the manufacturer.

Prior to the application of any plant-mixed hot bituminous material, apply a tack coat meeting the requirements of 300-2.3.

The mixture will be accepted on the basis of visual inspection by the Engineer with no further testing required.

**[546-3.2 Short-Term Raised Rumble Strips:](#)** [Install short-term raised rumble strips before opening to traffic, and in accordance with 546-3.1. Maintain and remove short-term raised rumble strips until permanent raised rumble strips are installed.](#)

### **546-3.23 Ground-In Rumble Strip:**

**546-3.23.1 General:** Grind rumble strips that have well-defined edges and smooth interiors without tearing the finished pavement.

On a daily basis, before opening the adjacent lane to traffic, ensure that all debris generated by the grinding process is removed and disposed of by vacuum or a method

(REV 5-24-18) (FA 7-16-18) (1-19) includes 5460000

approved by the Engineer. Do not dispose of the debris within the right of way. Do not use the debris generated by the grinding process in recycled asphalt (RAP).

Restore any pavement to the satisfaction of the Engineer, at no additional cost to the Department, when ground-in rumble strips do not meet the requirements of the Contract Documents.

**546-3.2.2 Inspection:** For limited access roadways, measure depth every one mile. For arterial and collector roadways, measure depth every 500 feet. Measure depth as distance from pavement grade to top of ground-in grooves at the transverse and longitudinal centerline of the grinding prior to the placement of longitudinal thermoplastic pavement markings. Measure, record and certify on a Department approved form and submit to the Engineer.

**546-4 Method of Measurement.**

The quantity of raised rumble strip ~~sets~~ to be paid for under this Section will be the Plan quantity per ~~set~~**each**, constructed and accepted.

The quantity of ground-in rumble strips to be paid for under this Section will be the plan quantity in gross miles, constructed and accepted. No deduction will be made when the skip array is used.

**546-5 Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section, including all surface cleaning and preparation, all debris disposal, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines, labor, and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

Payment will be made under:

- Item No. 546- 71-      Raised Rumble Strip Sets - ~~per set~~**each**.
- Item No. 546- 72-      Ground-In Rumble Strips - per gross mile.