SECTION 546
RUMBLE STRIPS

546-1 Description.
Construct rumble strips in accordance with the details shown in the Plans and Design Standards.

546-2 Materials for Raised Rumble Strips.
546-2.1 General: Construct 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.

546-3 Application.
546-3.1 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 55ºF 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 Ground-In Rumble Strips for Shoulders: Construct ground-in rumble strips on asphalt pavement surfaces only. Before the construction of any ground-in rumble strips, demonstrate to the Engineer that the equipment to be used can achieve a depression having well defined edges and a smooth interior finish without snagging or tearing the finished pavement.
Before opening the adjacent lane to traffic, ensure that all debris generated by the grinding process is removed and disposed of daily by vacuum or a method 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.
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.

546-3.3 Rumble Striping for Centerlines and Edge Lines: Construct ground-in rumble strips in accordance with 546-3.2. Apply the pavement markings over the ground-in rumble strip as shown in Design Standards, Index No. 519.

546-4 Method of Measurement.

The quantity of raised rumble strips to be paid for under this Section will be the Plan quantity per set, constructed and accepted.

The quantity of ground-in shoulder 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.

The quantity of centerline and edge line ground-in rumble strips will be the length, 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 cleaning and preparing of surfaces, disposal of all debris, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines 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.
Item No. 546- 72-	Ground-In Rumble Strips - per gross mile.