

Special Pavement Treatments 6-03

Rumble Strips

Rumble strips are bands of raised material or indentations formed or grooved in the traveled way or shoulders. Rumble strips call the motorist's attention to standard warning or regulatory devices or otherwise alert drivers by transmitting sound and vibration through the vehicle.

Rumble strips should not be used on California's streets and highways unless standard traffic control devices have been thoroughly evaluated and documented and the traffic engineer considers their use as the optimal solution to the identified problem.

The use of rumble strips on State highways requires approval by the District Traffic Engineer. Requests should include a description of location, reasons for use, the alternatives which were considered collision history and a discussion of standard traffic control devices which have been or are in place.

1. TRAVELED WAY RUMBLE STRIPS

Rumble strips on the traveled way are 19 mm or less in height if raised or 25 mm or less in depth if indented and generally extend across the travel lanes.

There are several significant disadvantages to the use of rumble strips across the travel lanes. These include:

- An abrupt rise or depression in the roadway can present problems to bicyclists and motorcyclists. For this reason, there should be provisions made for cyclists to **safely traverse** through or around rumble strips.
- Nearby residents may be subjected to continuous noise and vibration in residential areas prompting citizen's complaints.

- All motorists are subjected to the noise and vibration whereas only a few are in need of this effect to be alerted
- Motorists may make unusual maneuvers to avoid rumble strips.

Typical locations where rumble strips on the traveled way have been used include:

- End of a freeway.
- In advance of toll booths.
- Within a construction zone in advance of the workers.
- In advance of a "T" Intersection where the motorist is not expecting to stop.

2. SHOULDER RUMBLE STRIPS

Shoulder rumble strips are 19 mm or less in height if raised or 25 mm or less in depth if indented and extend along the highway shoulder. The maximum width of shoulder rumble strips is 900 mm.

Shoulder rumble strips are not suitable as a riding surface for bicycles. Where bicycles are permitted, shoulder rumble strips should not be used unless approximately 1.5 m of clear shoulder width for bicycle use is available between the rumble strips and the outer edge of the shoulder.

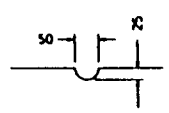
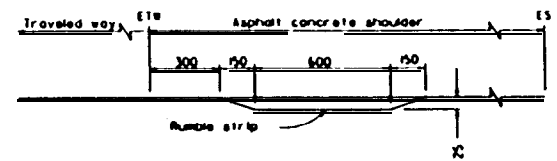
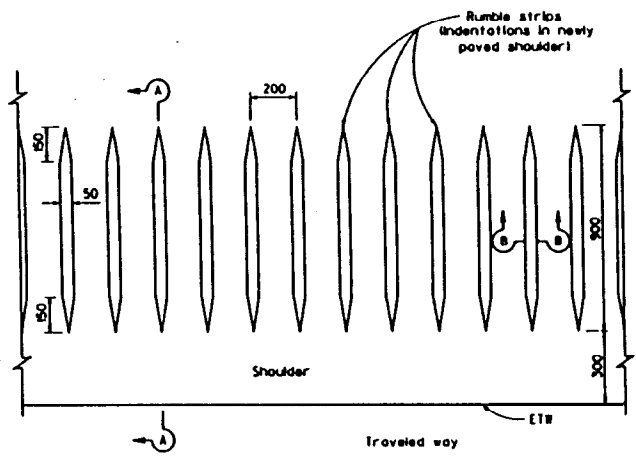
Research findings indicate that the use of rumble strips on shoulders of freeways in remote areas may reduce drift-off-road accidents. Drifting off the road is most likely to be a problem on freeways with few interchanges and long tangents. The rumble strips may consist of grooves rolled into the hot mix as part of a resurfacing project. When freeways in remote areas are to be resurfaced, consideration should be given to the drift-off-road problem.



DIST	COUNTY	ROUTE	SECTION POST	SHEET NO.	TOTAL SHEETS
			TOTAL PROJECT		

Craig A. Copelan
 REGISTERED CIVIL ENGINEER
 July 3, 1995
 PLANS APPROVAL DATE
 E.A. COPELAN
 C.S.E. No. 8-30-58
 CIVIL
 STATE OF CALIFORNIA

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NOTE

Where bicycles are permitted, shoulder rumble strips should not be used unless approximately 1.5 meters of clear shoulder width for bicycle use is available between the rumble strips and the outer edge of the shoulder.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
RUMBLE STRIP DETAILS
 NO SCALE
 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

(Metric conversion changes in paras. 3 and 4)
(Use when rumble strips are to be constructed by indentation on newly paved shoulders.)
(PROJECT PLANS SHALL INDICATE LIMITS OF THE RUMBLE STRIPS.)
(This SSP is to be used as a separate section after the asphalt concrete section and must be used with other 39.XX series SSPs that refer to Section 39 of the Standard Specifications, or modify the asphalt concrete material requirements and the spreading and compacting of such material for the asphalt concrete shoulders.)
(This SSP shall be used only with 1995 Standard. Plan A40, "Rumble Strip Details." Any variations shall have Headquarters Traffic Branch approval.)
(Use ITEM CODE= 394050 RUMBLE STRIP)

.c2.10-1. RUMBLE STRIPS;--This work shall consist of constructing rumble strips by forming indentations in newly paved shoulders in accordance with the details and at the locations shown on the plans and as specified in these special provisions.

2

Rumble strips shall be formed by constructing indentations in the top layer of new asphalt concrete surfacing with a steel-tired 2-axle tandem roller, having a roller wheel diameter of 1000 mm or greater, weighing not less than 11 tonnes, and modified by fitting with pipe segments attached to the non-steering roller drum or formed by other means approved by the Engineer.

3

In addition to the requirements specified in the second paragraph in Section 39-6.01, "General Requirements," of the Standard Specifications, the breakdown compaction and forming of the rumble strips shall be completed before the temperature of the surface of the asphalt concrete falls below 110°C. After breakdown compaction on shoulders has been completed, indentations 25 mm in depth shall be formed by making a single pass along the shoulders with the modified roller drum in the trailing position. Final rolling shall be completed before the pavement temperature drops below 60°C.

4

When the tandem roller with the modified roller drum is used, the pipe segments shall be fabricated from 50-mm commercial quality steel pipe, 900 mm in length, cut longitudinally to provide a 40 percent segment in cross section. The pipe segments shall be beveled 150 mm at each end to provide indentations of the dimensions shown on the plans. The pipe segments shall be welded to the driving, non-steering roller drum at approximately 200-mm centers, with the rounded side of the pipe away from the drum.

5

The rumble snips shall be placed within 50 mm of the required alignment. The tandem roller shall be equipped with a sighting device that will enable the operator to maintain the alignment of the rumble strip.

6

Indentations shall not vary from the required dimensions by more than 10 percent. Should the methods used or equipment furnished by the Contractor fail to produce rumble strip indentations

conforming to the requirements of these special provisions and the details shown on the plans, the rumble strip operations shall be discontinued and the Contractor shall provide other suitable equipment, or modify the equipment or method of constructing the indentations until the dimensional requirements are met.

7

Rumble strips will be measured by the station along each shoulder on which the rumble strips are constructed. The 200-mm distance between the rumble strip indentations will be included in the length of rumble strips to be paid for. A station shall be considered 100 meters.

8

The contract price paid per station for rumble strip shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the rumble strips, complete in place, as shown on the plans, as specified in the Standard Specifications these special provisions, and as directed by the Engineer.