

Centerline Rumble Strips Guidelines

Purpose

To define conditions where centerline rumble strips (CRSs) will be used on the state highway system.

Background

CRSs are a countermeasure designed to reduce the occurrence of head-on, opposite direction sideswipe and/or single vehicle crossover crashes on two-way, undivided roadways. CRSs alert drivers through **noise and vibration as their vehicles cross over the strips**. Preliminary safety analysis shows **benefit-to-cost (B/C) ratios ranging from 0.95 to 26.42**, depending on annual average daily traffic (AADT) volumes. Centerline rumble strips are recommended for use in the state of Texas based upon recent research conducted through the Texas Transportation Institute and previous research conducted by others.

Recommended Usage

- CRSs should be placed on two-way, undivided roadways that have shown a high-incidence crash rate with regard to head-on, opposite direction sideswipe and/or single vehicle crossover crashes as a result of inattentive drivers or impaired visibility of positive guidance pavement markings during adverse weather. Any additional installations may be assessed on a case-by-case basis.
- Milled CRSs are preferred over rolled rumble strips. If pavement thickness is less than two inches for asphalt cement concrete or less than two inches between the top of pavement and the top of rebar in Portland cement concrete, milled CRSs should not be used. Raised CRSs consisting of non-reflective raised pavement buttons may be used. Raised CRSs may be affixed to asphalt cement concrete or Portland cement concrete using bituminous or other adhesives, as per the manufacturer's recommendations.
- The following dimensioning should be used:
 - Milled CRSs should be cut to a minimum of $0.50 \pm 1/8$ inch depth, 7 ± 0.50 inch length, and 16 ± 0.50 inch width.
 - Milled CRSs should be spaced at two feet.
 - The dimensions of non-reflective, raised pavement buttons for use as raised rumble strips should be a minimum of four inches in length and width, and 0.50 inch in height prior to adhering to the pavement.
 - Raised CRSs should be spaced at four feet.
- If CRSs are milled into the roadway, then the centerline pavement markings shall be washed before opening the roadway to traffic.
- CRSs shall not be milled or rolled into bridge decks.
- Pavement markings may be applied over milled CRSs. Raised CRSs shall be placed in the travel lane adjacent to the centerline markings. Raised CRSs may be placed over pavement markings.

- CRSs should be continuous, being installed in both passing and no-passing zones.
- Breaks in the CRSs will start at least 50 feet and no more than 150 feet prior to each approach for the following instances:
 - bridges,
 - intersections, and
 - driveways with high usage or large trucks.
- CRSs may be installed along the edgeline delineating pavement stripes for two way left turn lanes (TWLTL). The TWLTL should have at least a 14-foot width from the outside edges of the solid edgelines, and the CRSs will be reduced to 12 inches in width for each edgeline. Alternatively, CRSs may be installed down the middle of a TWLTL.
- In areas where delineated left-turn bays are installed, the CRSs should follow the outside centerline pavement marking to the direction of travel with the left-turn bay.
 - RPM and lane striping should be placed according to current TxDOT standards as addressed in the *Texas Manual on Uniform Traffic Control Devices* (TMUTCD) and TxDOT Standard Sheets.
 - When specifying RPM placement, the engineer should use the standard specifications as depicted in TxDOT standard drawing PM(2)-00A, "Position Guidance Using Raised Pavement Markers" and should not use the supplemental standard PM(3)-00A.
 - The individual CRS closest to the placement of an individual RPM should be skipped, and the RPM should be placed equidistant from the two remaining adjacent CRSs.
- Consideration should be given to the following before installing CRSs:
 - Consider noise impacts when the installation is near residential areas, schools, churches, etc. A minimum of 3/8 inch depth of milled CRSs or rolled CRSs may be considered in these areas.
 - Roadways with significant deterioration and/or raveling ("significant" will be defined by the engineer with regard to current TxDOT engineering practices) should be resurfaced prior to installation.
 - Coordinate CRS installation with other design projects. For example, schedule the installation of CRSs after roadway resurfacing and prior to pavement striping.