



Rumble Strips

General Information

Rumble strips are one of FHWA's nine proven safety countermeasures. At a cost of \$700-\$900 per mile, they are a low cost, effective countermeasure. In ODOT's *Highway Design Manual* it is recognized that "rumble strips are a relatively low cost engineering treatment designed to alert drivers of a lane departure through vibration and noise created when a vehicle's tires contact the rumble strip." Different road characteristics determine the kind of rumble strips installed on a roadway. The main installations are listed below.

- ✓ Shoulder Rumble Strips (SRS) - are the most common type of rumble strip. They are installed in the shoulder near the edge of the travel lane. They can also be placed at the edge of the travel lane, usually in line with the EL pavement marking. These are called Edge Line Rumble Strips (ELRS).
- ✓ Centerline Rumble Strips (CLRS) - are used to reduce head-on and run-off-road left crashes. They are placed near (or on) the centerline of the roadway and can be a single or double line of rumble strips.

Oregon Specific Information

In Oregon, rumble strips are considered to be a traffic control device. Depending on the application, they require either State Traffic Roadway Engineer (STRE) or Region Traffic Engineer (RTE) approval. ELRS are the preferred form of SRS. Placing the EL over the top of the rumble strips adds conspicuity to the edge line.

ODOT makes a conscious effort to use a bike friendly rumble strip design. This includes using a more shallow design with periodic openings.



Credit: OR22 West of Salem Taken with Google Maps

On designated bikeways, rumble strips may be omitted, but can be used when the shoulders have sufficient width for cyclists. In the case that effects on cyclists cannot be mitigated, an alternative may include profiled durable pavement markings or another durable material.

By the Numbers

According to the FHWA, 53% of fatal crashes are attributed to roadway departure. Rumble strips are proven to reduce fatal and injury run-off the road type crashes. NCHRP 641: *Guidance for Design and Application of Shoulder and Centerline Rumble Strips* and the *Highway Safety Manual* document the crash modification factors associated with rumble strips listed below.

- ✓ CLRS on rural 2-lane roads: 44% reduction in head-on fatal and injury crashes, 14% reduction in all types of crashes.
- ✓ CLRS on urban 2-lane roads: 64% reduction of head-on fatal and injury crashes
- ✓ SRS on rural 2-lane roads: 33% reduction of run-off-road fatal and injury, and 15% of all run-off-road crashes.
- ✓ SRS on multilane divided roads: 16% reduction of all crash types and severities.



Credit: FHWA Proven Safety Countermeasures

Helpful Resources

- ✓ NCHRP Report 641: *Guidance for the Design and Application of Shoulder and Centerline Rumble Strips*, 2009
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_641.pdf
- ✓ Crash Modification Clearinghouse
<http://www.cmfclearinghouse.org/>
- ✓ *Highway Safety Manual* Chapter 13
- ✓ FHWA Safety Website
<http://safety.fhwa.dot.gov/>