

Recognize, React, and Recover . . . Using Rumble Strips to Prevent Run-off-Road Crashes

Fact Sheet on Rumble Strips

Problem: *Roadway departure crashes account for more than half of all roadway fatalities, both nationwide and in South Carolina.* Roadway departure fatalities, which include run-off-the road (ROR) and head-on fatalities, are a serious problem in South Carolina. During the five year period of 2004 – 2008, there were 134,975 roadway departure crashes in South Carolina resulting in 2,794 deaths and 59,029 non-fatal injuries. Roadway departure fatalities represent 54% of all crash fatalities.

Solution: *Rumble strips are a proven, cost-effective way to prevent roadway departure crashes.* Many studies show very high benefit-to-cost (B/C) ratios for rumble strips, making them among the most cost effective safety features available. According to the Federal Highway Administration (FHWA), rumble strips are more cost effective than many other safety features, including guardrails, culvert-end treatments, and slope flattening. A Maine DOT survey of 50 state DOTs identified a B/C ratio of 50:1 for milled rumble strips on rural interstates nationwide.

Safety evaluations of shoulder rumble strips have been conducted in many states, and in some cases the evaluations included data from multiple states. Single vehicle ROR crashes were reduced by 10 to 80 percent due to shoulder rumble strips (NCHRP Project 17-32). A number of safety evaluations have quantified the safety effectiveness of centerline rumble strips. Head-on crashes were reduced by 34 to 95 percent due to centerline rumble strips (NCHRP Project 17-32).

What are rumble strips and how do they improve highway safety?

SCDOT defines rumble strips as raised or grooved patterns in the pavement or within profile thermoplastic pavement markings that provide both an audible warning (rumbling sound) and a physical vibration to alert drivers that they are leaving the driving lane. In addition to warning inattentive drivers, rumble strips help drivers stay on the road during inclement weather when visibility is poor.

Rumble strips located on the edgeline or on the roadway shoulder help to prevent roadway departure crashes on interstate highways, other four-lane divided highways, and two-lane rural roadways. An edgeline or shoulder rumble strip has the additional benefit of providing a warning which may prevent an inattentive driver from traveling very far onto the shoulder, and possibly striking a tree, a parked vehicle, a bicyclist, a pedestrian or highway workers.

Centerline rumble strips are used on some two-lane rural highways to prevent head-on collisions and opposite-direction sideswipes. Centerline rumble strips warn drivers whose vehicles are crossing centerlines of two-lane, two-way roadways.

Putting It in Perspective

Facts Supporting Rumble Strips	Benefits of Rumble Strips
Approximately 54% of all fatalities were the result of roadway departure	Reduce ROR crashes caused by driver inattention, driver error, fatigue, & visibility
On average, a roadway departure crash is reported every 30 minutes in South Carolina	Are inexpensive to install
On average, one person dies everyday in a ROR crash in South Carolina	Cause no noticeable pavement degradation
The estimated annual cost of roadway departure crashes in SC was \$987 million in 2008	Require little or no maintenance and can be installed on new or existing pavements

How do I safely recover if I run-off-the road?

The top tips from America's best drivers:

- Don't overreact. Remain calm.
- Stay off the gas and off the brake.
- Keep a firm grip on the steering wheel.
- Quickly check traffic in the front and rear.

As you try to re-gain control:

- If possible, reduce your speed by coasting down to 20 or 30 miles per hour.
- Align your off-road wheels with the road, about 12 to 18 inches off the edge, so that both right tires are free of the pavement. This will keep the tires from scrubbing the pavement and give you more control.
- Steer back onto the road.
- As soon as your front tire strikes the road's edge, steer slightly back to the right, to keep your vehicle from crossing into oncoming traffic.

If you can't get back onto the road:

- Drive as far off the road as you can safely.
- Gradually come to a stop and call for help.

Always remember the three R's of rumble strip safety:

- **Recognize** the rumble strip is there for your safety.
- **React** calmly if you leave the travel lane and encounter a rumble strip. Stay off the gas and off the brake.
- **Recover** using the techniques described above.