

RUMBLE STRIPS

A Safety Tool to Prevent Crashes

WHAT IS A RUMBLE STRIP?

Rumble strips are grooves or rows of indents in the pavement that cause a vibration and audible rumbling, transmitted through the wheels into the car body. Rumble strips are used to grab a driver's attention through vibration and noise to alert them that they are leaving the travel lane.

WARNING DRIVERS

Rumble strips are an effective countermeasure for reducing roadway departure crashes. This relatively low cost engineering treatment alerts drivers of a lane departure through vibration and noise created when a vehicle's tires contact the rumble strip.



Note the brightness of the rumble strip at night, as compared to the normal pavement marking to the left of the rumble line.

ROADWAY DEPARTURE CRASH

A roadway departure crash is defined by Federal Highway Administration (FHWA) as a crash where a vehicle crosses an edge line, a center line, or leaves the traveled way. The types of crashes fitting this definition include vehicles that crossed the centerline or median, ran-off-the-road, or hit a fixed object.

BY THE NUMBERS

Roadway departure crashes account for over 70% of all traffic fatalities in Arkansas. A large portion of roadway departure fatalities result from crashes where the vehicle hit a fixed object (tree, guardrail, etc). Rumble strips are proven to reduce run-off-the-road type crashes.

REDUCING CRASHES

Arkansas participated with FHWA to develop a Roadway Departure Safety Implementation Plan for reducing these types of crashes. Rumble strips were identified as a countermeasure to reduce the annual number of roadway fatalities.

ROADWAY DEPARTURE CRASHES

> 70%



OF ALL TRAFFIC FATALITIES
IN THE STATE

ABIDE BY THE RULES OF THE ROAD

Driving violations (speeding, alcohol, and unbelted driving) are major factors in roadway departure crashes. Many of these crashes involve multiple driving violations. Rumble strips are effective at addressing:

- Speeding
- Distracted drivers
- Fatigued or drowsy drivers
- Inattentive drivers



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SHOULDER RUMBLE STRIPS

CENTERLINE RUMBLE STRIPS



PREVENTING A TRAGEDY

There are two main applications of rumble strips used to help reduce roadway departure crashes:

Centerline Rumble Strips – reduce head-on, opposite direction side-swipe, and run-off-the-road left crashes by 20%. Primarily placed near (or on) the centerline of the roadway to separate opposing traffic on undivided highways.

Shoulder Rumble Strips – reduce run-off-the-road crashes by 33% for two-lane rural roads. These are installed on the shoulder, placed adjacent to the edge of the travel lane or placed at the edge of the travel lane on the pavement marking, which improves the visibility of the marking. Shoulder Rumble Strips can be installed with gaps so that bicyclists can more easily move from the travel lane to the shoulder.

Both types of rumble strips may also have gaps at driveways, intersections, interchanges, and sometimes across bridges.

NOISE CONCERNS

While the noise made by tires hitting rumble strips helps keep drivers alive, this sound may also be heard periodically by nearby residents.

The average noise inside of a traveling passenger vehicle with no rumble strips is about 60 decibels (dB). In order to alert a drowsy driver, an increase in interior noise must be approximately 6-15 decibels. There is a corresponding larger increase in noise outside the vehicle and proximity is also a factor.

A Minnesota DOT study of rumble noise found the following...

NOISE LEVELS NEAR SHOULDER RUMBLE STRIPS:

- 50' away = 82_{dB}
- 100' away = 75_{dB}
- 200' away = 67_{dB}
- 300' away = 62_{dB}

EQUIVALENT SOUNDS:

-  Motorcycle at 25' = 90_{dB}
-  Garbage disposal = 80_{dB}
-  Vacuum cleaner = 70_{dB}
-  Normal conversation at 3' = 60_{dB}

