



# CMF / CRF Details

CMF ID: 3414

Install shoulder rumble strips

Description:

Prior Condition: *No Prior Condition(s)*

Category: Shoulder treatments

Study: [NCHRP Report 641: Guidance for the Design and Application of Shoulder and Centerline Rumble Strips, Torbic et al., 2009](#)

Star Quality Rating:

8 Stars

[\[View score details\]](#)

## Crash Modification Factor (CMF)

Value:

1.18

Adjusted Standard Error:

Unadjusted Standard Error:

0.078

## Crash Reduction Factor (CRF)

Value:

-18 (This value indicates an **increase** in crashes)

Adjusted Standard Error:

Unadjusted Standard Error:

7.8

## Applicability

**Crash Type:**

All

**Crash Severity:**

All

**Roadway Types:**

Not Specified

**Number of Lanes:**

**Road Division Type:**

Divided by Median

**Speed Limit:**

**Area Type:**

Rural

**Traffic Volume:**

4959 to 20763 *Average Daily Traffic (ADT)*

**Time of Day:**

All

*If countermeasure is intersection-based*

**Intersection Type:**

**Intersection Geometry:**

**Traffic Control:**

**Major Road Traffic Volume:**

**Minor Road Traffic Volume:**

## Development Details

**Date Range of Data Used:**

1997 to 2006

**Municipality:**

**State:**

MN, MO, PA

**Country:**

U.S.A.

**Type of Methodology Used:**

2

<b>Sample Size Used:</b>	Crashes
<b>Before Sample Size Used:</b>	383 Crashes
<b>After Sample Size Used:</b>	261 Crashes

<b>Other Details</b>	
<b>Included in Highway Safety Manual?</b>	No
<b>Date Added to Clearinghouse:</b>	Mar-21-2011
<b>Comments:</b>	The authors collected data on thru lanes and speed limits but did not provide those data in the report (see p. 50).

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This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

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