



## CMF / CRF Details

CMF ID: 3443

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:



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

### Crash Modification Factor (CMF)

Value: 1.11

Adjusted Standard Error:

Unadjusted Standard Error: 0.1707

### Crash Reduction Factor (CRF)

Value: -11 (This value indicates an **increase** in crashes)

Adjusted Standard Error:

<b>Unadjusted Standard Error:</b>	17.07
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### Applicability

<b>Crash Type:</b>	Run off road
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<b>Crash Severity:</b>	All
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<b>Roadway Types:</b>	Not Specified
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<b>Number of Lanes:</b>	2
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<b>Road Division Type:</b>	Undivided
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<b>Speed Limit:</b>	
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<b>Area Type:</b>	Rural
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<b>Traffic Volume:</b>	782 to 10386 <i>Average Daily Traffic (ADT)</i>
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<b>Time of Day:</b>	All
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### *If countermeasure is intersection-based*

<b>Intersection Type:</b>	
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<b>Intersection Geometry:</b>	
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<b>Traffic Control:</b>	
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<b>Major Road Traffic Volume:</b>	
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<b>Minor Road Traffic Volume:</b>	
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### Development Details

<b>Date Range of Data Used:</b>	1997 to 2005
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<b>Municipality:</b>	
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<b>State:</b>	MN
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<b>Country:</b>	U.S.A.
<b>Type of Methodology Used:</b>	2
<b>Sample Size Used:</b>	Crashes
<b>Before Sample Size Used:</b>	61 Crashes
<b>After Sample Size Used:</b>	43 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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