



## CMF / CRF Details

**CMF ID: 6331**

**Widen shoulder (paved) (from 0 to 4 ft)**

**Description:**

**Prior Condition: No paved shoulder**

**Category: Shoulder treatments**

**Study: [Safety Effects of Shoulder Paving for Rural and Urban Interstate, Multilane, and Two-Lane Highways, Li et al., 2013](#)**

**Star Quality Rating:**



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

### Crash Modification Factor (CMF)

**Value:** 0.93

**Adjusted Standard Error:**

**Unadjusted Standard Error:** 0.01

### Crash Reduction Factor (CRF)

**Value:** 7 (This value indicates a **decrease** in crashes)

**Adjusted Standard Error:**

**Unadjusted Standard Error:**

1

### Applicability

**Crash Type:**

Fixed object,Head on,Run off road,Sideswipe

**Crash Severity:**

K (fatal)

**Roadway Types:**

Not specified

**Number of Lanes:**

Multilane

**Road Division Type:**

**Speed Limit:**

**Area Type:**

Urban

**Traffic Volume:**

**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:**

2000 to 2006

**Municipality:**

**State:**

IL

<b>Country:</b>	USA
<b>Type of Methodology Used:</b>	2
<b>Sample Size Used:</b>	

<b>Other Details</b>	
<b>Included in Highway Safety Manual?</b>	No
<b>Date Added to Clearinghouse:</b>	Mar-11-2015
<b>Comments:</b>	Crash type is "Run-off-road right, then head-on and sideswiped with a vehicle in the opposite direction; Run-off-road right, then sideswiped with a vehicle in the same direction of multilane highways; Run-off-road right, then collided with fixed object on the right; Run-off-road right, then collided with fixed object on the left; Run-off-road right, then overturned in road or roadside involving single vehicle; and Run-off-road right, then overturned in road or roadside involving multiple vehicles" The number of crashes in the after period were not reported in this study, however, they have been recorded as 300 to give 10 points as a benefit of doubt for one or more of the following: (1) number of miles/sites in the reference/treatment group, (2) number of crashes in the references/treatment group, (3) reporting AADTs for the aggregate dataset but not for the disaggregate dataset used for CMF development.

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

*The information contained in the Crash Modification Factors (CMF) Clearinghouse is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The U.S. Government assumes no liability for the use of the information contained in the CMF Clearinghouse. The information contained in the CMF Clearinghouse does not constitute a standard, specification, or regulation, nor is it a substitute for sound engineering judgment.*