



# CMF / CRF Details

CMF ID: 5511

Increase paved outside shoulder width from 10ft to 12ft

Description: Increase paved outside shoulder width from 10ft to 12ft

Prior Condition: 10 ft paved outside shoulder width

Category: Shoulder treatments

Study: [Using multivariate adaptive regression splines \(MARS\) to develop crash modification factors for urban freeway interchange influence areas , Haleem et al., 2013](#)

Star Quality Rating:	
4 Stars	<a href="#">[View score details]</a>

Crash Modification Factor (CMF)	
Value:	0.816
Adjusted Standard Error:	
Unadjusted Standard Error:	0.117

Crash Reduction Factor (CRF)	
Value:	18.4 (This value indicates a <b>decrease</b> in crashes)
Adjusted Standard Error:	
Unadjusted Standard Error:	11.7

## Applicability

**Crash Type:** Rear end

**Crash Severity:** All

**Roadway Types:** Principal Arterial Other Freeways and Expressways

**Number of Lanes:** 4 to 6+

**Road Division Type:** Divided by Median

**Speed Limit:**

**Area Type:** Urban

**Traffic Volume:** 5700 to 309000 *Annual Average Daily Traffic (AADT)*

**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:** 2007 to 2010

**Municipality:**

**State:** FL

**Country:** USA

<b>Type of Methodology Used:</b>	7
<b>Sample Size Used:</b>	15520 Crashes

<b>Other Details</b>	
<b>Included in Highway Safety Manual?</b>	No
<b>Date Added to Clearinghouse:</b>	Apr-30-2014
<b>Comments:</b>	CMF for urban freeway interchange areas

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