



# CMF / CRF Details

**CMF ID: 10231**

**Convert paved shoulder to curb and gutter**

**Description: Convert paved shoulder to curb and gutter**

**Prior Condition: Paved shoulders**

**Category: Shoulder treatments**

**Study: [Estimation of bicycle crash modification factors \(CMFs\) on urban facilities using zero inflated negative binomial models, Raihan et al., 2019](#)**

**Star Quality Rating:**

3 Stars

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

## Crash Modification Factor (CMF)

**Value:**

1.21

**Adjusted Standard Error:**

**Unadjusted Standard Error:**

0.1

## Crash Reduction Factor (CRF)

**Value:**

-21 (This value indicates an **increase** in crashes)

**Adjusted Standard Error:**

**Unadjusted Standard Error:**

10

## Applicability

**Crash Type:** Vehicle/bicycle

**Crash Severity:** All

**Roadway Types:** Not specified

**Number of Lanes:** 6

**Road Division Type:** Divided by Median

**Speed Limit:** 40-55 MPH

**Area Type:** Urban

**Traffic Volume:** 8000 to 98500 *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:** 2011 to 2014

**Municipality:**

**State:** FL

**Country:** USA

**Type of Methodology Used:** 7

<b>Sample Size Used:</b>	
--------------------------	--

<b>Other Details</b>	
<b>Included in Highway Safety Manual?</b>	No
<b>Date Added to Clearinghouse:</b>	Dec-07-2019
<b>Comments:</b>	This CMF applies to vehicle-bicycle crashes on urban six-leg divided highways.

---

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.*