

CMF / CRF Details

CMF ID: 10197

Change unpaved shoulder width from X to Y (in meters)

Description: Change unpaved shoulder width from X meters to Y meters

Prior Condition: Unpaved shoulder width of X meters, where X is less than 0.9 meters

Category: Shoulder treatments

Study: [The influence of shoulder characteristics on the safety level of two-lane roads: A case-study, Gitelman et al., 2019](#)

Star Quality Rating:



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

Crash Modification Factor (CMF)

Value:

$$CMF = e^{[-0.087*(Y-2.25)+0.149*(X-2.25)]}$$

Y = proposed average unpaved shoulder width, in meters

X = existing average unpaved shoulder width, in meters

Adjusted
Standard
Error:

Unadjusted
Standard
Error:

Crash Reduction Factor (CRF)

Value:	$CRF = 100 * (1 - e^{[-0.087*(Y-2.25)+0.149*(X-2.25)])}$ <p>Y = proposed average unpaved shoulder width, in meters</p> <p>X = existing average unpaved shoulder width, in meters</p>
Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability	
Crash Type:	Single vehicle
Crash Severity:	K (fatal),A (serious injury),B (minor injury),C (possible injury)
Roadway Types:	Not specified
Number of Lanes:	2
Road Division Type:	Undivided
Speed Limit:	
Area Type:	Rural
Traffic Volume:	
Time of Day:	All
<i>If countermeasure is intersection-based</i>	
Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	2008 to 2010

Municipality:	
State:	
Country:	Israel
Type of Methodology Used:	5
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Dec-07-2019
Comments:	This applies when the existing unpaved shoulder width (X) is less than 2.25 meters and the proposed unpaved shoulder width (Y) is greater than or equal to 2.25 meters.

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.