

## CMF / CRF Details

**CMF ID: 10187**

**Change shoulder width from X to Y (meters)**


**Description:** Change shoulder width from X to Y (meters)

**Prior Condition:** Total shoulder width of X meters, where X is greater than or equal to 2.25 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)

|               |  |
|---------------|--|
| <b>Value:</b> | $CMF = e^{[-0.240*(Y-X)]}$ <p><b>Y = proposed average total shoulder width, in meters</b></p> <p><b>X = existing average total shoulder width, in meters</b></p> |
|---------------|--|

|                                 |  |
|---------------------------------|--|
| <b>Adjusted Standard Error:</b> |  |
|---------------------------------|--|

|                                   |  |
|-----------------------------------|--|
| <b>Unadjusted Standard Error:</b> |  |
|-----------------------------------|--|

### Crash Reduction Factor (CRF)

|                            |  |
|----------------------------|--|
| Value:                     | $CRF = 100 * (1 - e^{[-0.240*(Y-X)])}$ <p><b>Y = proposed average total shoulder width, in meters</b></p> <p><b>X = existing average total shoulder width, in meters</b></p> |
| Adjusted Standard Error:   |  |
| Unadjusted Standard Error: |  |

| Applicability                                  |               |
|--|---------------|
| Crash Type:                                    | All           |
| Crash Severity:                                | All           |
| 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**

|                                  |              |
|----------------------------------|--------------|
| <b>Date Range of Data Used:</b>  | 2008 to 2010 |
| <b>Municipality:</b>             |              |
| <b>State:</b>                    |              |
| <b>Country:</b>                  | Israel       |
| <b>Type of Methodology Used:</b> | 5            |
| <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 CMFunction applies when both existing (X) and proposed (Y) total shoulder width are greater than or equal to 2.25 meters. |

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