

Common Safety Countermeasures for Local Agencies



Roadside Design Improvements at Curves

- Increased clear zone:
 - ◇ A 16.7-foot clear zone (increased from 3 feet) can provide a 22 percent reduction in crashes.
 - ◇ A 30-foot clear zone can provide a 44 percent reduction in crashes.
- Roadside barriers:
 - ◇ Guardrail can be used when fixed objects cannot be removed from the clear zone or space is limited.

Source: [Federal Highway Administration \(FHWA\)](#)



Benefits of Using Enhanced Delineation and Friction for Horizontal Curves in Michigan

- Chevron signs:
 - ◇ 20 percent reduction in crashes on curves.
- High Friction Surface Treatment:
 - ◇ 35 percent fewer wet roadway crashes.

Source: [Michigan Department of Transportation \(MDOT\)](#)



Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections

- Doubled up, oversized signs (Stop Ahead and Stop).
- Reflective Sheeting on sign posts.
- Clearing obstructions which limit sight distance.
- Double arrow warning sign (For T-Intersections).
- Benefits of these improvements:
 - ◇ 10 percent reduction in injury and fatal crashes.
 - ◇ 15 percent reduction in nighttime crashes.
 - ◇ 12:1 average benefit-cost ratio.

Source: [Federal Highway Administration \(FHWA\)](#)



Benefits of Installing Longitudinal Rumble Strips and Stripes in Michigan

- Centerline rumble strips:
 - ◇ 50 percent reduction in head-on crashes.
 - ◇ 55 percent reduction in opposite direction sideswipe crashes.
- Shoulder rumble strips:
 - ◇ 46 percent reduction in run-off-the-road crashes.
 - ◇ 51 percent Reduction in fatal crashes.
 - ◇ 41 percent reduction in incapacitating injury crashes.

Source: [Michigan Department of Transportation \(MDOT\)](#)



Benefits of Roundabouts in Michigan

- Converting a signalized intersection to a roundabout:
 - ◇ 20 - 70 percent reduction in injury crashes.
- Changing a stop-controlled intersection to a roundabout:
 - ◇ 35 - 45 percent reduction in injury crashes .

Source: [Michigan Department of Transportation \(MDOT\)](#)

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Road Safety Audit

- A proactive formal safety performance examination of an existing or future road by an independent and multi-disciplinary team:
 - ◇ 10 - 60 percent reduction in total crashes.

Source: [Federal Highway Administration \(FHWA\)](#)



Benefits of Road Diets in Michigan (Roadway Reconfiguration)

- Can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life.
- Four-lane to three-lane conversion:
 - ◇ 40 percent reduction in crashes.

Source: [Michigan Department of Transportation \(MDOT\)](#)



Dedicated Left- and Right-Turn Lanes at Intersections

- Left-turn lanes:
 - ◇ 28 - 48 percent reduction in total crashes.
- Right-turn lanes:
 - ◇ 14 to 26 percent reduction in total crashes.
- Turn lanes provide physical separation between slowing or stopped turning traffic adjacent to through traffic at intersection approaches.

Source: [Federal Highway Administration \(FHWA\)](#)



Benefits of Wider Edge Lines

- Wider edge lines increase drivers' perception of the edge of the travel lane and can provide a safety benefit to all facility types.
- Wider edge lines are relatively low cost.
- Benefits of wider edge lines in reducing crashes on rural two-lane highways:
 - ◇ 15-38% reduction in fatal and injury crashes.
 - ◇ 15-30% reduction in total crashes.
 - ◇ 33-55:1 benefit cost ratio for fatal and injury crashes.

Source: MDOT, [28 Proven Safety Countermeasures – 2021 Michigan Edition](#)



Benefits of Lighting

- While the number of daylight crashes is about the same as those at night, the nighttime fatality rate is three times the daytime rate.
- At nighttime, vehicles traveling at higher speeds may not have the ability to stop once a hazard or change in the road becomes visible by the headlights.
- Benefits of these improvements:
 - ◇ Up to 42% reduction for intersection nighttime injury pedestrian crashes.
 - ◇ Up to 28% reduction for nighttime injury crashes on rural/urban highways.

Source: [Federal Highway Administration \(FHWA\)](#)

For Additional Information:

MDOT – Toward Zero Deaths:

www.michigan.gov/zerodeaths

FHWA – Proven Safety Countermeasures: [https://](https://safety.fhwa.dot.gov/provencountermeasures/)

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