



Conversion of Signalized Intersection into Single- or Multi-lane Roundabout

Convert signalized intersections to roundabouts to reduce severe crashes and improve flow at high-crash or congested locations.

Implementation Strategy

How and Where to Apply

- Suitable for both urban and rural areas under various traffic conditions
- Useful for speed management and transitions at interchanges or high-speed rural roads. Not suitable for low-volume sites, constrained geometry, or limited right-of-way.
- MUTCD recognizes roundabouts as a proven safety countermeasure, supported by proper signage, markings, and geometric design.

Use in a Safe System Approach

Roundabouts strengthen the Safe Roads and Safe Speeds elements of the Safe System Approach by lowering vehicle speeds, reducing conflict points, and adjusting impact angles. By limiting exposure for pedestrians and improving crash survivability, they support the principle that deaths and serious injuries are unacceptable.

Key Stakeholders

State DOTs, MPOs, engineering consultants, construction contractors.

Proactive Implementation

Identify high-crash signalized intersections or locations with delay and speed issues, especially near schools, interchanges, or rural highways, and evaluate their suitability for roundabout conversion based on traffic volume, geometry, and crash history before problems escalate.

Countermeasure Overview

Objective: Reduce frequency and severity of intersection conflicts through geometric improvements.
Strategy: Construct special solutions.

Selected Related Countermeasures

- CM1 High-visibility signage and lighting
- CM2 Access Management
- CM3 Gateway treatments

Cost: \$\$\$\$ (High)
Service Life: 20 years
Benefit-Cost Ratio: 1.0:1

Targeted Solution



CONTRIBUTING FACTORS

- Limited visibility
- Failure to yield



TARGET CRASH TYPE

- Angle
- Rear-End Turning



ROAD FACILITY TYPE

- N/A



AREA TYPE

- Urban

Safety Linkage



NCHRP 500 Series

Signalized Intersection



SAFE SYSTEM APPROACH

Safe Roads



AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

SAFE SYSTEM ROADWAY DESIGN

TIER 1
TIER 2
TIER 3
TIER 4

Tier 1

Safety Benefits

74%

Reduces crashes of all types and A, B, C severities in urban areas (CMF ID: 212)

71%

Reduces crashes of all types and A, B, C severities on two-lane urban and suburban roads (CMF ID: 4195)



Resources

- [Proven safety countermeasures](#)
- [FHWA Roundabout](#)
- [Safe System Roadway Design Hierarchy.pdf](#)

Roundabout. Source: FHWA.

