

Conversion of Intersection into High-Speed Roundabout



High-speed roundabouts are circular intersections that manage fast approaches and reduce the severity of crashes compared to traditional designs.

Implementation Strategy

How and Where to Apply

- High-speed roundabouts are best suited for rural or suburban intersections with moderate-to-high approach speeds and a history of severe crashes.
- They are commonly used as alternatives to stop- or signal-controlled intersections on high-speed corridors.
- Not recommended at low-volume intersections, constrained sites, or locations with high pedestrian activity, where roundabout design compromises safety.

Use in a Safe System Approach

High-speed roundabouts support Safe Roads and Safe Speeds by eliminating high-speed crossing conflicts. Their design reduces the angle and speed of impact during crashes and promotes yielding behavior, making them more forgiving of driver error.

Key Stakeholders

State DOTs, MPOs, engineering consultants, safety advocacy groups, freight/trucking associations.

Proactive Implementation

High-speed roundabouts can be proactively implemented at intersections identified through systemic safety analysis, especially those with patterns of angle or high-speed turning crashes. These sites often lack turn lanes, have poor sight distance, or involve complex driver decisions. Integrating roundabout conversion into corridor-level safety upgrades or during scheduled reconstruction allows agencies to address multiple safety issues cost-effectively. This approach supports long-term crash reduction and improved network performance.

Countermeasure Overview

Objective: Reduce frequency and severity of intersection conflict.
Strategy: Construct special solutions.

Selected Related Countermeasures

CM1

Intersection Conflict Warning Systems

CM2

Median U-turn or RCUT treatments

CM3

Enhanced lighting and warning signs

Cost: \$\$\$\$ (High)**Service Life:** 20 years**Benefit-Cost Ratio:** 4.8:1 to 16.8:1

Targeted Solution



CONTRIBUTING FACTORS

- Failure to yield.



TARGET CRASH TYPE

- Angle.
- Rear-end.
- Turning.



ROAD FACILITY TYPE

- All



AREA TYPE

- All

Safety Linkage



NCHRP 500

Intersection Crashes

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

High-Speed Roundabout. Source: VHB.

83%

Reduces all crash types and severity levels K, A, B, and C on all area roads (CMF ID: 10440)

79%

Reduces all crash types and severity levels K, A, B, and C on all area roads (CMF ID: 10435)



Resources

- [TxDOT Design Aid: Safety Benefits of Roundabouts on High-Speed Facilities](#)
- [FHWA EDC News – Roundabouts in the Safe System Context](#)

