

Horizontal Deflection

Horizontal deflection involves altering a vehicle's path laterally using roadway geometry, encouraging drivers to reduce speed

Implementation Strategy

How and Where to Apply

- Use on local streets with speed complaints or cut-through issues to slow vehicles and enhance pedestrian safety and comfort.
- Apply on moderate-volume collectors needing speed control without vertical elements, especially where emergency access and snow removal are priorities.
- Integrate into mixed-use or downtown areas to calm traffic, improve aesthetics, and support pedestrian-oriented design.

Use in a Safe System Approach

Horizontal deflection supports the Safe System Approach by reducing vehicle speeds and enhancing driver awareness. By modifying geometry rather than relying on compliance, it anticipates human error and minimizes crash severity. This design approach creates safer road environments for all users, particularly vulnerable ones like pedestrians and cyclists.

Key Stakeholders

Transportation agencies and bicycle infrastructure planners, Municipal engineering departments

Proactive Implementation

Proactive use of horizontal deflection involves identifying areas with frequent speeding or cut-through traffic before crashes occur. Planners use traffic studies, community input, and land use context to select sites. Early integration into roadway design ensures long-term safety, enhances multimodal access, and aligns with livability and sustainability goals.

Countermeasure Overview

Objective: Improve sight distance at unsignalized intersections

Strategy: Change horizontal and/or vertical alignment of approaches to provide more sight distance

Selected Related Countermeasures

- CM1 Raised Crosswalks
- CM2 High-Visibility Crosswalks
- CM3 Mini-Roundabouts

Cost: Moderate

Service Life: 20 years

Targeted Solution



CONTRIBUTING FACTORS

- Excessive approach speed
- Failure to slow



TARGET CRASH TYPE

- Speeding



ROAD FACILITY TYPE

- N/A



AREA TYPE

- Urban
- Suburban

Safety Linkage



NCHRP 500

Speeding-related Crashes



AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

SAFE SYSTEM APPROACH

Safe Speeds

SAFE SYSTEM ROADWAY DESIGN

TIER 1

TIER 2

TIER 3

TIER 4

Tier 2

Source: ResearchGate



Forces drivers to change direction, naturally slowing traffic.

Resources

- FHWA Guardrail Resources
- Roadside Design Guide, AASHTO
- Manual for Assessing Safety Hardware (MASH), AASHTO (2016)

