

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.
- Best suited for urban or suburban roads with high crash rates, where curves or chicanes naturally slow drivers and enhance safety. Avoid where high-speed highways or emergency routes, where deflections may disrupt traffic flow or delay critical access.

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.

Use in a Safe System Approach

Horizontal deflection supports the Safe Speeds and Safe Roads pillars of the Safe System Approach. It uses road design to slow vehicles, addressing human errors and vulnerabilities to prevent crashes and serious injuries.

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 Series

Speeding-related Crashes



AASHTO'S TOWARD ZERO DEATHS

Safer Vulnerable Users

SAFE SYSTEM APPROACH

Safe Speeds

SAFE SYSTEM ROADWAY DESIGN

- TIER 1
- TIER 2
- TIER 3
- TIER 4

Tier 2

Forces drivers to change direction, naturally slowing traffic.

Resources

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

Horizontal Deflection. Source: FHWA

