NCHRP 17-113 COUNTERMEASURES

Protected Intersection

PEDESTRIANS AND BICYCLISTS

A protected intersection uses physical elements to separate users and enhance safety for pedestrians and cyclists at crossings.

Implementation Strategy

How and Where to Apply

- Protected intersections are most effective at urban and suburban intersections with high pedestrian and bicycle activity.
- They can be implemented at new intersections or retrofitted into existing ones as part of complete streets projects.
- Best suited for busy urban intersections with heavy bike and pedestrian traffic, where physical barriers like bollards or curbs boost safety. Avoid where low-traffic rural or suburban intersections with limited space, as added elements may overcomplicate design and increase costs.

Key Stakeholders

Transportation agencies, Bicycle and pedestrian safety planners.

Proactive Implementation

Agencies can use crash data, speed studies, and community input to identify intersections that would benefit from protected designs. Systematic implementation may target corridors with frequent turning movements, high vehicle speeds, or significant pedestrian and bicycle volumes. Protected intersections can be added during major repaving, intersection redesigns, or complete streets projects.

Use in a Safe System Approach

A protected intersection supports the Safe Roads pillar of the Safe System Approach. It uses physical barriers to handle human mistakes and protect vulnerable pedestrians and cyclists, reducing crash risks and preventing deaths or serious injuries.

Countermeasure Overview

Objective: Reduce bicycle crashes at intersections.
Strategy: Improve intersection geometry.

Selected Related Countermeasures

- CM1 Dedicate bike signals
- CM2 Raised crosswalks
- CM3 High-visibility crosswalks

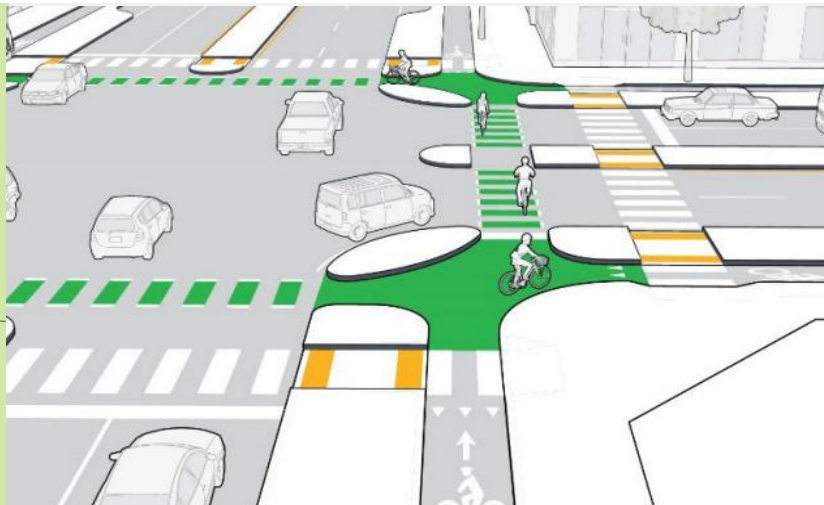
Cost: $$$$ (High)
Service Life: 20 years

Targeted Solution

CONTRIBUTING FACTORS	▪ Turning vehicles ▪ High-speed vehicle interactions
TARGET CRASH TYPE	▪ Intersection-related
ROAD FACILITY TYPE (ARTERIAL, COLLECTOR, LOCAL)	▪ N/A
AREA TYPE	▪ Urban

Safety Linkage

NCHRP 500 Series	SAFE SYSTEM APPROACH
Pedestrians and Bicyclists	Safe Road Users
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN (TIER 1, TIER 2, TIER 3, TIER 4)
Safer Vulnerable Users	Tier 1



Protected Intersections. Source: Arlingtonva.

Safety Benefits

This treatment does not have an established CMF but has promise for improving safety performance.

Resources

- Innovative Intersection Designs
- Protected Intersection p.13