NCHRP 17-113 COUNTERMEASURES

Convert Flush Buffered Bike Lane to SBL with Flexi-posts

PEDESTRIANS AND BICYCLISTS

A separated bike lane (SBL) with flexible posts converts a standard buffered bike lane into a protected facility by adding vertical elements that physically separate bicycles from motor vehicle traffic.

Implementation Strategy

How and Where to Apply

- This treatment is most effective on urban arterials and collectors with high vehicle volumes or speeds where cyclist comfort and safety are concerns.
- It can be implemented during resurfacing, repaving, or bike lane retrofits.
- Best suited for corridors with high bicycle volumes or crash history; avoid where roadway width or drainage constraints prevent safe separation.

Use in a Safe System Approach

Converting buffered bike lanes to separated bike lanes (SBL) with flexi-posts supports the Safe Roads element by addressing human vulnerability in mixed traffic. Physical separation adds redundancy and reflects that death and serious injuries are unacceptable.

Key Stakeholders

State DOTs, MPOs, bicycle advocacy groups, community associations, safety advocacy groups. active road users, engineering consultants.

Proactive Implementation

Agencies can identify retrofit opportunities by analyzing bicycle crash patterns, stress-level maps, and public input. Converting flush buffered lanes to separated facilities can be prioritized on corridors with documented safety concerns or high bicycle demand. Pairing these projects with other low-cost safety enhancements supports systemic safety improvements.

Countermeasure Overview

Objective: Reduce bicycle crashes along roadways.
Strategy: Provide safe roadway facilities for parallel travel.

Targeted Solution

CONTRIBUTING FACTORS	▪ Lack of dedicated space for bicyclists
TARGET CRASH TYPE	▪ Bicyclist ▪ Crossing-related
ROAD FACILITY TYPE	▪ Urban arterial ▪ Urban collector
AREA TYPE	▪ Urban

Safety Linkage

NCHRP 500 Series	SAFE SYSTEM APPROACH
Pedestrian and Bicyclist	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

Selected Related Countermeasures

- CM1 Install dedicated bike signals
- CM2 Convert shared lanes to dedicated bike lanes
- CM3 Improve intersection bike treatments

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

Buffered Bike Lane. Source: FHWA.

Safety Benefits

56%

Reduce vehicle-bicycle crashes on urban areas (CMF ID: 11295)

Resources

- FHWA Proven Safety Countermeasures
- FHWA CMF for Bike Lanes