NCHRP 17-113 COUNTERMEASURES

Convert Flush Buffered Bike Lane to SBL with a blend of Flexi-post and other Vertical Elements

PEDESTRIANS AND BICYCLISTS

Separated bike lanes with vertical elements are enhanced bicycle facilities that use posts or barriers to physically separate cyclists from motor vehicle traffic.

Implementation Strategy

How and Where to Apply

- Separated Bike Lanes (SBLs) with vertical elements are best applied on roads with high vehicle volumes, speeds above 25 mph, or documented bike-vehicle conflicts.
- They are typically implemented on arterials or collectors with sufficient width to maintain vehicle flow and emergency access.
- According to **FHWA**, these facilities improve safety and comfort for all users and should be placed where clear separation is needed—especially in corridors connecting to schools, transit, and employment centers.

Use in a Safe System Approach

Supports Safer Road Users and Safer Roads by reducing conflict points between bikes and vehicles, improving predictability, and lowering the risk of side-swipe and turning crashes.

Key Stakeholders

Local transportation departments and active transportation planners
Traffic engineers and roadway designers

Proactive Implementation

This upgrade can be deployed proactively along high-volume bike corridors, particularly where buffered lanes are underutilized due to perceived safety concerns. Cities may use bike network master plans, crash data, or origin-destination heatmaps to identify candidate corridors. The presence of youth riders, seniors, or e-mobility users further justifies proactive installation.

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 3

Selected Related Countermeasures

- CM1 Add parking-protected bike lanes
- CM2 Implement green conflict zone markings
- CM3 Narrow vehicle lanes to provide buffer space

Cost: $ (Moderate to High)

Service Life: 20 years

Separated bike lanes. Source: SBL

Safety Benefits

43% Reduces urban vehicle–bicycle crashes[1]

[1] CMF ID: 11302

Resources

- FHWA CMF for Bike Lanes
- FHWA Bicycle Lanes