NCHRP 17-113 COUNTERMEASURES

Improved Delineation (Painted Bicycle Lanes, Buffered Bicycle Lanes)

PEDESTRIANS AND BICYCLISTS

Improved delineation uses pavement markings and buffers to define bicycle space, enhancing safety, visibility, and separation from motor vehicles.

Implementation Strategy

How and Where to Apply

- Install painted or buffered bicycle lanes on urban and suburban corridors with moderate to high bicycle activity, prioritizing streets with frequent conflicts between motorists and bicyclists or a history of bicycle-involved crashes.
- Apply improved delineation at locations with narrow shoulders, wide travel lanes, or unclear lane boundaries to create dedicated and more visible space for bicyclists.
- Coordinate with routine resurfacing projects, ensure proper signage and pavement markings, and educate the public and roadway users about the new bicycle lane configurations to maximize safety and compliance.

Use in a Safe System Approach

Improved delineation, such as painted or buffered bicycle lanes, supports the Safe System Approach by enhancing road design (Safe Roads), separating bicyclists from vehicle traffic (Safe Road Users), and promoting safer speeds and interactions (Safe Speeds), which together reduce the risk and severity of crashes involving bicyclists.

Key Stakeholders

State and local transportation agencies, Pedestrian and bicycle planners

Proactive Implementation

Implement improved delineation proactively on corridors with moderate to high bicycle activity, areas with a history of bicycle-involved crashes, or locations where roadway width allows for lane reallocation. Use crash data, bicycle volume studies, and community input to identify priority sites. Coordinate installation with resurfacing projects or planned roadway improvements to maximize efficiency and impact.

Countermeasure Overview

Objective: Reduce bicycle crashes along roadways.

Strategy: Provide safe roadway facilities for parallel travel.

Selected Related Countermeasures

CM1 Protected Bicycle Lanes

CM2 Intersection Bicycle Boxes

CM3 Traffic Calming Measures

Cost: Low

Service Life: 3 years

Targeted Solution

CONTRIBUTING FACTORS	▪ Reduced visibility ▪ Failure to yield
TARGET CRASH TYPE	▪ Right Turn ▪ Side-swipe
ROAD FACILITY TYPE	▪ N/A
AREA TYPE	▪ Urban

Safety Linkage

NCHRP 500 Series

Pedestrian and Bicyclists

AASHTO'S TOWARD ZERO DEATHS

Safer Vulnerable Users

SAFE SYSTEM APPROACH

Safe Road Users

SAFE SYSTEM ROADWAY DESIGN

TIER 1
TIER 2
TIER 3
TIER 4

Tier 4

Improved delineation. Source: City of Orlando

Safety Benefits

Increases safety and comfort for bicyclists by providing clear, dedicated space.

Resources

- Pedestrian Safety Guide and Countermeasure Selection System
- CBA: Installation of Speed Humps