NCHRP 17-113 COUNTERMEASURES

Widen Managed Lane Envelope

Widening the managed lane envelope increases the lateral buffer between managed and general-purpose lanes using markings or separators to reduce lane-change crashes and enhance safety.

Implementation Strategy

How and Where to Apply

- Apply on freeways or expressways with existing or planned managed lanes (e.g., HOV, toll, or bus-only lanes).
- Use during restriping, pavement rehabilitation, or capacity expansion projects, especially in corridors with lane-change-related crash history near managed lane entry/exit points.
- The **FHWA** states that "Expanding lateral separation between managed and general-purpose lanes can reduce conflict points, improve operational consistency, and enhance safety for all users."

Use in a Safe System Approach

This supports the SSA by promoting Safe Roads and Safe Speeds. It addresses user error by improving lane clarity and reducing pressure to change lanes abruptly. The additional buffer enhances system forgiveness and crash survivability.

Key Stakeholders

State and local transportation agencies, MPOs, Pedestrian Advocacy Groups and Community Organizations

Proactive Implementation

Proactively implementing widened managed lane envelopes during design, resurfacing, or capacity projects enhances safety and operations. Target corridors with high lane-change crash rates, and coordinate with enforcement and emergency responders. Integrating this treatment early supports Safe System goals, reduces retrofit costs, and improves managed lane effectiveness and driver compliance.

Countermeasure Overview

Objective: Keep vehicles from encroaching into opposite lane

Strategy: Provide center two-way left-turn lanes for four- and two-lane roads

Selected Related Countermeasures

- CM1 Channelizing Devices
- CM2 Managed Lane Access Control
- CM3 Dynamic Lane Use Control

Cost: $ (Moderate to High)

Service Life: 20 years

Targeted Solution

CONTRIBUTING FACTORS	▪ Fixed object ▪ Overturn
TARGET CRASH TYPE	▪ Run-off-road
ROAD FACILITY TYPE	▪ Not specified
AREA TYPE	▪ Urban ▪ Suburban

Safety Linkage

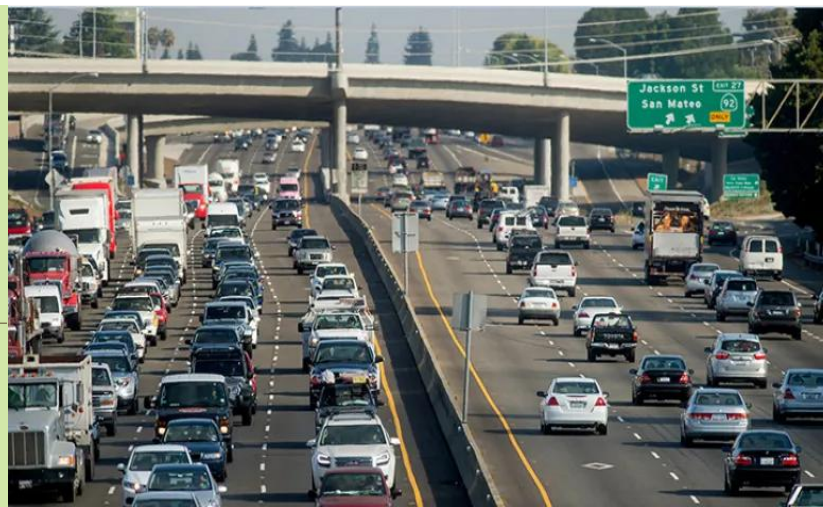
NCHRP 500 Series	SAFE SYSTEM APPROACH
Run-off Road	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN (TIER 1, TIER 2, TIER 3, TIER 4)
Safer Infrastructure	Tier 1

Source: Driven2Drive

Safety Benefits

2% Reduce all crashes for all types of roads [2]

[2] CMF ID: 9398



Resources

- FHWA Proven Safety Countermeasures
- Manual on Uniform Traffic Control Devices (MUTCD)