NCHRP 17-113 COUNTERMEASURES

Five to Six Lane Conversion

SPEEDING

Modifying a five-lane roadway to a six-lane setup frees up room for biking, transit, or pedestrian infrastructure, all focused on better safety and access.

Implementation Strategy

How and Where to Apply

- Urban and suburban corridors with moderate traffic volumes (usually below 20,000 AADT), high crash frequency, or strong pedestrian and bicycle activity are good candidates for Road Diets.
- Modify lane markings to transition from four undivided lanes to two travel lanes with a center left-turn lane, reallocating extra space for bike lanes, sidewalks, or on-street parking.
- Not recommended on lower-volume urban corridors, where added lanes may increase crashes and reduce multimodal safety.

Use in a Safe System Approach

This countermeasure advances the Safe System Approach by managing vehicle speeds and reducing the likelihood and severity of sideswipe collisions. It supports the 'Safer People' pillar by addressing unsafe lane-changing behaviours common in fast-moving urban corridors.

Key Stakeholders

State DOTs, MPOs, engineering consultants, urban planners, active road users.

Proactive Implementation

Proactively implementing Road Diets means targeting corridors with moderate traffic, crash trends, and multimodal gaps before serious safety issues emerge. Agencies should perform traffic evaluations and involve the community to determine feasibility and support. Early implementation helps improve safety, slow down traffic, and better accommodate pedestrians, cyclists, and transit users.

Countermeasure Overview

Objective: Keep vehicles from encroaching into opposite lane
Strategy: Provide center two-way left-turn lanes for four- and two-lane roads

Targeted Solution

CONTRIBUTING FACTORS	▪ Limited passing opportunities
TARGET CRASH TYPE	▪ Sideswipe
ROAD FACILITY TYPE (ARTERIAL, COLLECTOR, LOCAL)	▪ Principal Arterial ▪ Freeways ▪ Expressways
AREA TYPE	▪ Urban

Safety Linkage

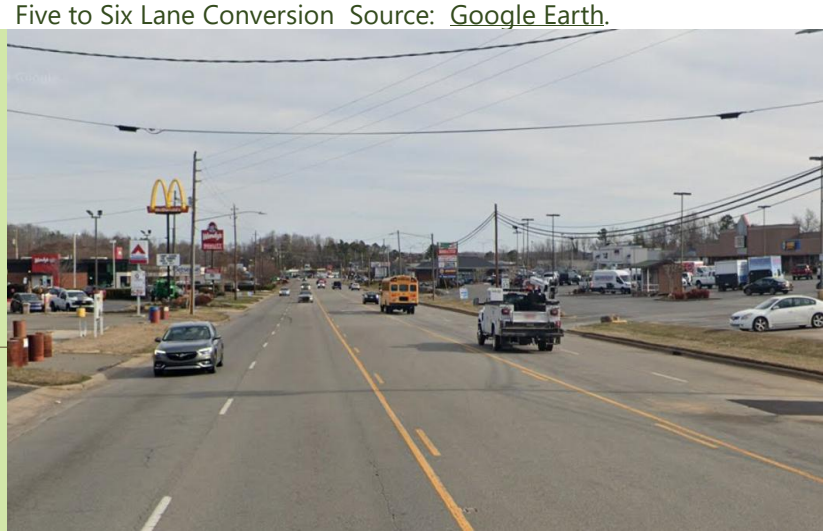
NCHRP 500 Series	SAFE SYSTEM APPROACH
Signalized Intersection	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN (TIER 1, TIER 2, TIER 3, TIER 4)
Safer Infrastructure	Tier 1

Selected Related Countermeasures

- CM1 Pedestrian curb extensions
- CM2 Protected median pedestrian islands
- CM3 Buffered bike lanes with reduced vehicle lanes

Cost: $$$$(High)
Service Life: 20 years
Benefit-Cost Ratio: 4.4:1 to 6.1:1

Five to Six Lane Conversion Source: Google Earth.



Safety Benefits

07% Increases all crash types and severity levels K, A, B, and C on urban five-lane Principal Arterial – Other Freeways and Expressways (CMF ID: 9)

03% Increases all crashes and severities on urban five-lane Principal Arterial – Other Freeways and Expressways (CMF ID: 7)

Resources

- FHWA Road Diet