NCHRP 17-113 COUNTERMEASURES

Increase Separation Distance Between Driveway Exit and Downstream U-turn by 10%

INTERSECTIONS

Increasing driveway-to-U-turn spacing reduces crashes by allowing safer merging and fewer conflicts.

Implementation Strategy

How and Where to Apply

- Apply on multilane divided roadways with high driveway density and frequent U-turn movements, especially in suburban commercial corridors where quick lane changes cause crashes.
- Extend the distance between driveways and downstream U-turn openings by at least 10%, using access management principles and geometric design standards to ensure adequate space for lane changes and decision-making.

Use in a Safe System Approach

This countermeasure aligns with the Safe System Approach by reducing conflict points and giving drivers more time to make safe decisions, especially when turning or merging. It supports safer roads and safer road users by improving predictability and minimizing crash risk from sudden maneuvers.

Key Stakeholders

Agency maintenance personnel, DOT, Active road users

Proactive Implementation

Proactive implementation involves reviewing access spacing along corridors with frequent crashes involving left turns or U-turns near driveways. Planners and engineers should use traffic data and roadway design standards to identify locations where short separation distances create safety risks. By increasing spacing before crash patterns develop, agencies can improve traffic flow and reduce the likelihood of sudden lane changes and collisions.

Countermeasure Overview

Objective: Improve access management near signalized intersections

Strategy: Restrict access to properties using driveway closures or turn restrictions

Targeted Solution

CONTRIBUTING FACTORS	▪ Misjudgment ▪ Insufficient distance for safe lane change
TARGET CRASH TYPE	▪ Indirect left turn ▪ Angle collision ▪ Rear end
ROAD FACILITY TYPE	▪ Principal Arterial Other
AREA TYPE	▪ All

Safety Linkage

NCHRP 500 Series	SAFE SYSTEM APPROACH
Signalized Intersection	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN
Safer Infrastructure	Tier 1

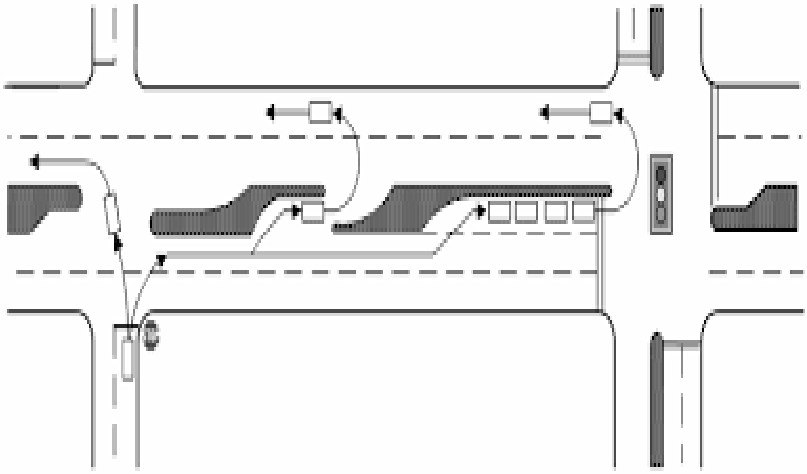
TIER 1
TIER 2
TIER 3
TIER 4

Selected Related Countermeasures

- CM1 Access consolidation
- CM2 Raised medians with restricted openings
- CM3 Right-in/right-out driveway design

Cost: $(Low)

Service Life: 20 years



Increase driveway exit and U-turn. Source: FDOT

Safety Benefits

4.5% Reduces all crash types across all severity types especially on principal arterial roadways[1]

[1] CMF ID: 2215

Resources

- FHWA Safety Research
- Safety effects of the separation distances between driveway exits and downstream U-turn locations, Liu et al (2007)