

Install Left-Turn Lane at Signalized Intersections



Installation of a left-turn lane at a signalized intersection is a safety improvement that physically separates left-turning vehicles from through traffic.

Implementation Strategy

How and Where to Apply

- Install left-turn lanes at signalized intersections with high volumes of left-turning vehicles, limited sight distance, or frequent left-turn-related crashes.
- Especially effective at intersections with high-speed approaches or where left-turning vehicles block through lanes, increasing rear-end and angle crash risk.
- Best suited for intersections with high volumes of left-turning traffic; avoid when it would significantly increase pedestrian crossing distances or not enough right-of-way.

Use in a Safe System Approach

Supports the Safe Roads elements of SSA reducing conflict points and accommodating human mistakes and vulnerabilities. By providing physical and temporal separation of turning and through traffic, this treatment builds redundancy and lowers the risk of severe crashes from misjudged gaps or late decisions.

Key Stakeholders

State DOTs, MPOs, transit agencies, community associations, business owners, engineering consultants.

Proactive Implementation

Proactively assess intersections for left-turn volumes, crash history, and available sight distance. Incorporate turn lane improvements during intersection upgrades, signal modernization, or corridor safety projects. Prioritize locations with older signals, limited space, or transitions from rural to urban settings.

Countermeasure Overview

Objective: Reduce frequency and severity of intersection conflicts through geometric improvements.
Strategy: Provide/improve left-turn channelization.

Selected Related Countermeasures

- CM1 Advance intersection warning signs
- CM2 Retroreflective sheeting on signposts
- CM3 Wider stop bar markings

Cost: \$\$ (Moderate)
Service Life: 20 years
Benefit-Cost Ratio: 1.5:1

Targeted Solution



CONTRIBUTING FACTORS

- Inadequate Storage Capacity
- Poor Sight Distance



TARGET CRASH TYPE

- Left-turn



ROAD FACILITY TYPE

- Urban/suburban arterials
- Rural arterial



AREA TYPE

- All

Safety Linkage



NCHRP 500 Series

Signalized Intersection



AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

SAFE SYSTEM APPROACH

Safe Roads

SAFE SYSTEM ROADWAY DESIGN

TIER 1

TIER 2

TIER 3

TIER 4

Tier 1

Left-Turn Lane at Signalized Intersections. Source: [Google Earth](#).

43%

Reduces all types of crashes and severity levels K, A, B, and C on all area types of two-lane roads (CMF ID: 7999)

26%

Reduces all types of crashes and severity levels K, A, B, and C on all area types of two-lane roads (CMF ID: 8001)

Resources

- [Development of Left-Turn Lane Guidelines for Signalized and Unsignalized Intersections](#)
- [Impacts of Safety of Left-Turn Treatment at High Speed Signalized Intersections](#)

