NCHRP 17-113 COUNTERMEASURES

Upgrade to Signs with Flashing Lights

INTERSECTIONS

Upgrading signs to flashing lights reduces crashes by enhancing visibility and driver awareness at high-risk or low-visibility locations.

Implementation Strategy

How and Where to Apply

- Install at uncontrolled, marked crosswalks on multilane roads or locations with high pedestrian activity and insufficient gaps in traffic, as recommended by FHWA guidance.
- Best suited for high-risk intersections or low-visibility spots like school zones and curves, where flashing lights boost driver alertness and cut crash risks. Avoid in well-lit urban areas or low-traffic roads, as added lights waste resources and may distract or confuse drivers.

Use in a Safe System Approach

Upgrading signs to flashing lights supports the Safe Roads pillar of the Safe System Approach. It improves visibility to handle human mistakes and boosts driver awareness, preventing crashes and serious injuries at risky spots.

Key Stakeholders

State DOTs, MPOs, traffic engineers, safety advocacy groups, community associations, engineering consultants, utility companies.

Proactive Implementation

Flashing signs should be proactively installed at stop-controlled intersections where limited visibility, high approach speeds, or increasing crash trends indicate a need for enhanced driver alertness. Selection of appropriate sites should be based on detailed analysis of crash history, approach volumes, sight distance limitations, and field conditions to ensure the beacons effectively reduce the risk of stop sign violations and collisions.

Countermeasure Overview

Objective: Improve driver awareness of intersections as viewed from the intersection approach.
Strategy: Install flashing beacons at stop-controlled intersections.

Targeted Solution

CONTRIBUTING FACTORS	▪ Reduce Visibility ▪ Driver Inattention ▪ Failure to yield
TARGET CRASH TYPE	▪ Angle ▪ Rear-end ▪ Turning
ROAD FACILITY TYPE	▪ All
AREA TYPE	▪ N/A

Safety Linkage

NCHRP 500 Series

Unsignalized Intersection

AASHTO'S TOWARD ZERO DEATHS

Improved Safety Management

SAFE SYSTEM APPROACH

Safe Roads

SAFE SYSTEM ROADWAY DESIGN

TIER 1
TIER 2
TIER 3
TIER 4

Tier 4

Selected Related Countermeasures

- CM1 LED-enhanced stop signs
- CM2 Advance stop sign warning signs
- CM3 Rumble strips on approaches

Cost: $ (Low)
Service Life: 5 years
Benefit-Cost Ratio: 92.0:1

Upgrades Flashing Signs. Source: FHWA.

Safety Benefits

79% Reduces all types of crashes and severities on local roads (CMF ID: 485)

78% Reduces all types of crashes and severities on minor arterial roads (CMF ID: 483)

Resources

- FHWA Low cost treatments
- FHWA proven safety countermeasure