NCHRP 17-113 COUNTERMEASURES

Replace Standard STOP Sign with Flashing LED STOP sign

INTERSECTIONS

Flashing LED STOP signs help to increase visibility, reduce accidents, and improve compliance with STOP sign rules.

Implementation Strategy

How and Where to Apply

- Flashing LED STOP signs are best applied at intersections with high crash rates, low driver compliance, or where STOP signs are frequently missed due to visibility or driver distraction.
- They are especially effective at rural or unsignalized intersections and locations where traditional STOP signs have proven insufficient in reducing crash occurrences.
- Best suited for high-risk intersections with poor visibility or high non-compliance, like rural roads, school zones, or unsignalized stops. Avoid where low-risk, high-compliance areas or well-lit urban spots, as extra flashing may distract drivers.

Use in a Safe System Approach

Flashing LED STOP signs support the Safe Roads pillar of the Safe System Approach. They boost visibility to handle human mistakes and vulnerabilities, improving driver compliance and preventing crashes or serious injuries.

Key Stakeholders

State DOTs, MPOs, traffic engineers, safety advocacy groups, community associations.

Proactive Implementation

LED STOP signs should be proactively installed at intersections with prior crash histories or observed issues with driver compliance. They are particularly suited for locations flagged during network screening as having potential for safety improvement. Installation during routine sign upgrades can keep implementation costs low while maximizing visibility and impact.

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	▪ Reduced visibility ▪ Driver inattention ▪ Non-Compliance
TARGET CRASH TYPE	▪ Angle ▪ Rear-end ▪ Turning
ROAD FACILITY TYPE	▪ N/A
AREA TYPE	▪ All

Safety Linkage

NCHRP 500 Series

Unsignalized Intersection

AASHTO'S TOWARD ZERO DEATHS

Safer Infrastructure

SAFE SYSTEM APPROACH

Safer Roads

SAFE SYSTEM ROADWAY DESIGN

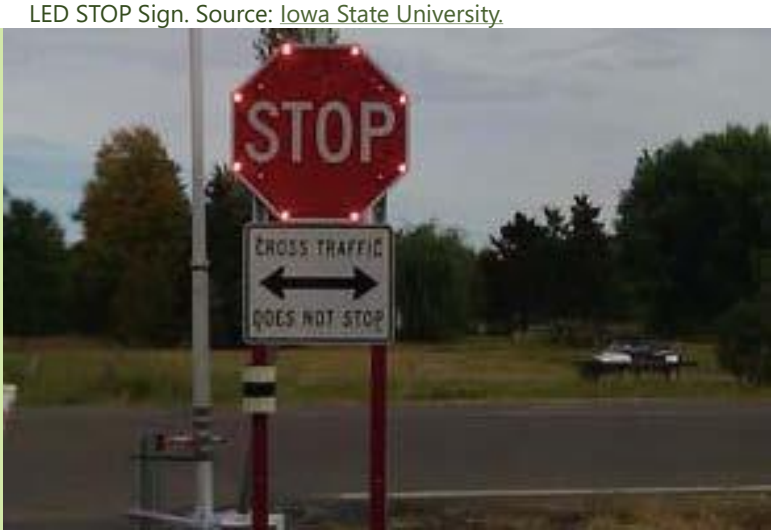
TIER 1
TIER 2
TIER 3
TIER 4

Tier 4

Selected Related Countermeasures

- CM1 Add High-Visibility Pavement Markings
- CM2 Increase intersection sight distance
- CM3 Improve Intersection Lighting

Cost: $ (Low)
Service Life: 5 years
Benefit-Cost Ratio: 25.0:0



LED STOP Sign. Source: Iowa State University.

Safety Benefits

42%

Reduce angle crashes and all severities on roads (CMF ID: 6602).

Resources

- Impact of Flashing LED Stop Signs on Crash Reduction and Driver Behavior
- Flashing LED Stop Sign and Optical Speed Bars