

Install Dynamic Signal Warning Flashers



Dynamic signal warning flashers are active warning devices placed in advance of signalized intersections that flash when the signal ahead is red or about to change.

Implementation Strategy

How and Where to Apply

- This countermeasure is used on high-speed arterial roads or rural highways approaching signalized intersections.
- It is most effective where visibility of the signal is limited due to curves, grades, or weather conditions, or where crash history indicates frequent rear-end or signal violations.
- Dynamic flashers should be placed at a calculated distance upstream of the intersection to allow sufficient deceleration time based on approach speed.

Use in a Safe System Approach

This treatment supports Safe System principles of redundancy, predictability, and safe speeds by giving drivers additional time and cues to safely respond to an approaching red signal, especially when visibility or reaction time is limited.

Key Stakeholders

Agency maintenance personnel

Proactive Implementation

Dynamic signal warning flashers can be implemented proactively based on systemic risk analysis, speed studies, or crash patterns near signalized intersections on high-speed corridors. They can also be added during signal upgrades or corridor ITS projects.

Countermeasure Overview

Objective: Improve driver awareness of intersections and signal control

Strategy: Improve visibility of intersections on approach(es)

Selected Related Countermeasures

- CM1** Install Dual Red Signal Lenses
- CM2** Install Intersection Lighting
- CM3** Apply Advance Intersection Warning Signs

Cost: \$ (Moderate)

Service Life: 10 years

Benefit-Cost Ratio: 143:1

Targeted Solution



CONTRIBUTING FACTORS

- Signal non-compliance
- Reduced visibility
- Driver inattention



TARGET CRASH TYPE

- Angle
- Rear-end
- Turning



ROAD FACILITY TYPE

- Not specified



AREA TYPE

- All

Safety Linkage



NCHRP 500 Series

Unsignalized 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 4

Dynamic Signal Warning Flashers Source: NCHRP

Safety Benefits

25%

Reduce rear-end crashes at signalized intersections

21%

Reduce total crashes when dynamic flashers are used on high-speed approaches

¹ CMF ID: 4200

² CMF ID: 4199

Resources

- FHWA Signalized Intersections: Informational Guide
- FHWA Traffic Signal Visibility and Signing Enhancements
- ITE Recommended Practice: Advance Warning Flashers

