NCHRP 17-113 COUNTERMEASURES

Provide Intersection Illumination

INTERSECTIONS

Installing or upgrading lighting at intersections to improve nighttime visibility and reduce crashes.

Implementation Strategy

How and Where to Apply

- Intersection illumination is typically applied at both signalized and unsignalized intersections that experience a high volume of nighttime traffic or a history of nighttime crashes.
- This treatment is especially effective at intersections with complex geometry, multiple approaches, or pedestrian activity. Agencies typically consider factors such as crash history, traffic volume, pedestrian presence.
- Not recommended in low-volume rural intersections with minimal nighttime traffic, where installation and maintenance costs outweigh expected safety benefits.

Use in a Safe System Approach

Intersection illumination enhances safe roads and users by improving visibility, addressing human mistakes, supporting shared responsibility, and providing proactive, redundant protection that reduces night crashes and protects vulnerable users.

Key Stakeholders

State DOTs, MPOs, engineering consultants, construction contractors, safety advocacy groups, maintenance agencies, municipal public works departments, utility companies.

Proactive Implementation

Intersection lighting can be implemented proactively through systemic safety reviews or crash data analysis. Locations can be selected based on common risk factors, such as insufficient ambient lighting, frequent nighttime crashes, or intersections along high-speed rural corridors.

Countermeasure Overview

Objective: Improve driver awareness of intersections as viewed from the intersection approach.
Strategy: Improve visibility of the intersection by providing lighting.

Targeted Solution

CONTRIBUTING FACTORS	▪ Low visibility ▪ Driver inattention /distraction ▪ Reduced reaction time
TARGET CRASH TYPE	▪ Angle ▪ Rear-end ▪ Turning
ROAD FACILITY TYPE	▪ N/A
AREA TYPE	▪ Rural

Safety Linkage

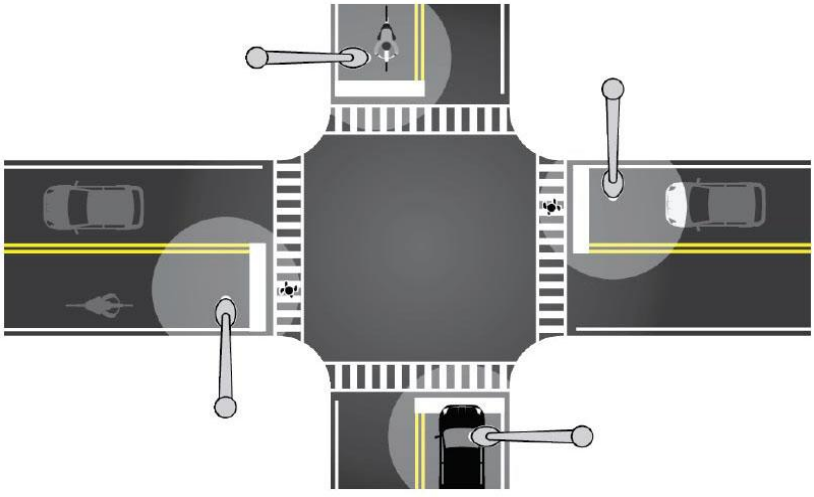
NCHRP 500 Series	SAFE SYSTEM APPROACH
Intersection	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN
Safer Infrastructure	Tier 4

Selected Related Countermeasures

- CM1 Full or Partial Interchange
- CM2 Install Pedestrian-Scale Lighting
- CM3 Install High-Visibility Crosswalks

Cost: $$$ (Moderate to High).
Service Life: 15 years.

Intersection Illumination. Source: FHWA.



Safety Benefits

82% Reduces vehicle–pedestrian crashes across all severity levels K on roads (CMF ID: 440)

77% Reduces all types of crashes and severity level K on roads (CMF ID: 437)

Resources

- Safety Benefits and Best Practices for Intersection Lighting
- FHWA on Proven Safety Effects of Intersection Lighting