NCHRP 17-113 COUNTERMEASURES

STOP AHEAD Pavement Markings

INTERSECTIONS

STOP AHEAD pavement markings are a type of pavement marking to warn approaching drivers of a stop-controlled intersection approach.

Implementation Strategy

How and Where to Apply

- STOP AHEAD markings are intended to increase driver awareness of a downstream STOP sign, usually on an unsignalized intersection approach (with either minor road or all-way stop control).
- They can be considered for application on any stop-controlled intersection approach and may be most effective on approaches with limited approach sight distance or other visibility issues.
- Best Suited for rural roads or at locations with a high frequency of rear-end or right-angle collisions; avoid at locations where a stop is always required, drivers have clear sightlines.

Use in a Safe System Approach

STOP AHEAD pavement markings support the Safe Roads elements of SSA by reinforcing redundancy. They complement STOP signs to accommodate human mistakes and vulnerabilities.

Key Stakeholders

State DOTs, MPOs, engineering consultants, construction contractors, safety advocacy groups.

Proactive Implementation

STOP AHEAD pavement markings can be implemented proactively at intersections. Agencies might select locations for these markings by performing approach sight distance reviews, receiving observations from the public, or other information sources. Locations may also be selected through a systemic approach focused on identifying risk factors present at other STOP-controlled intersection locations with a history of crashes.

Countermeasure Overview

Objective: Improve driver awareness of intersections as viewed from the intersection approach.
Strategy: Provide pavement markings with supplementary messages, such as STOP AHEAD.

Selected Related Countermeasures

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

Cost: $ (Low)
Service Life: 2 years
Benefit-Cost Ratio: 55.1:1

Targeted Solution

CONTRIBUTING FACTORS	▪ Reduced visibility ▪ Driver inattention ▪ Failure to stop or yield
TARGET CRASH TYPE	▪ Angle ▪ Rear-end ▪ Turning
ROAD FACILITY TYPE	▪ N/A
AREA TYPE	▪ Rural

Safety Linkage

NCHRP 500 Series	SAFE SYSTEM APPROACH
Unsignalized Intersection	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN
Safer Infrastructure	TIER 1 / TIER 2 / TIER 3 / TIER 4 — Tier 4

Safety Benefits

96% Reduces rear end crashes and K, A, B, C severities on rural two-lane roads (CMF ID: 9070)

76% Reduces all types of crashes and K, A, B, C severities on rural two-lane roads (CMF ID: 9064)

Resources

- MUTCD Chapter 3B: Pavement and Curb Markings
- Unsignalized Intersection Improvement Guide
- FHWA Safety Evaluation of STOP AHEAD Pavement Markings

STOP AHEAD Pavement Marking. Source: FHWA.