NCHRP 17-113 COUNTERMEASURES

Widen Paved Shoulder from 6 ft to 8 ft

ROAD WAY DEPARTURE

Wider paved shoulders on roadways can help reduce run-off road crashes, increase stability for vehicles, and improve maneuvering space for drivers.

Implementation Strategy

How and Where to Apply

- Expanding existing paved shoulders from 6 ft to 8 ft enhances the operational and safety performance of high-speed roadways, particularly on interstates and major arterials.
- Increasing to 8 ft provides a full-width refuge for vehicles, reducing the likelihood of secondary crashes and supporting safer emergency maneuvers.
- This countermeasure is especially useful in segments with higher volumes, frequent breakdowns, or constrained enforcement access.

Use in a Safe System Approach

Widening shoulders beyond the minimum standard supports the SSA by improving road design (Safe Roads) and creating a safer environment for drivers who make mistakes (Safe Road Users). The added width increases system resilience, helps prevent serious run-off-road.

Key Stakeholders

State DOTs, Traffic Safety Analysts

Proactive Implementation

Shoulder widening from 6 ft to 8 ft is a logical upgrade during major rehabilitation, widening, or safety-focused improvement projects. The additional width should be prioritized on routes with high-speed limits, heavy freight traffic, or limited existing pull-off opportunities. Projects should also consider how the expanded shoulder integrates with adjacent roadside features—such as barriers, drainage elements, and slopes—to maximize usable space and long-term durability.

Countermeasure Overview

Objective: Keep vehicles from encroaching on the roadside

Strategy: Apply shoulder treatments

Targeted Solution

CONTRIBUTING FACTORS	▪ Reduced visibility ▪ Driver inattention
TARGET CRASH TYPE	▪ Run-off Road
ROAD FACILITY TYPE	▪ Principal Arterial Interstate
AREA TYPE	▪ All

Safety Linkage

NCHRP 500 Series	Run-off Road
SAFE SYSTEM APPROACH	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	Safer Infrastructure
SAFE SYSTEM ROADWAY DESIGN (TIER 1 / TIER 2 / TIER 3 / TIER 4)	Tier 1

Selected Related Countermeasures

- CM1 Designated emergency pull-off areas
- CM2 Advance warning for shoulder use areas
- CM3 Dynamic shoulder use systems

Cost: $$ (moderate)

Service Life: 20 years

Benefit-Cost Ratio: 1.2:3

Wide Shoulder on Road, Source: Wikipedia.

Safety Benefits

31% Reduces risk of fixed object, head-on, run-off-road, and sideswipe crashes in urban area.[1]

3% Reduces risk of fixed object, head-on, run-off-road, and sideswipe crashes in rural area.[2]

[1] CMF ID: 6320
[2] CMF ID: 6317

Resources

- Analysis of the Shoulder Widening Need on the State Highway System
- Potential Safety Effects of Lane Width and Shoulder Width on Two-Lane Rural State Highways in Idaho