NCHRP 17-113 COUNTERMEASURES

Widen Narrow Pavement

ROADWAY DEPARTURE

Widening narrow pavement improves traffic flow and capacity, and can accommodate adding features like shoulders, turn lanes, or passing lanes.

Implementation Strategy

How and Where to Apply

- Widen pavement widths on rural highways where lanes are narrow and maneuvering space is limited, particularly in areas with a history of run-off-road or head-on crashes.
- Pavement widening improves driver comfort and control, allowing safer passage of vehicles and reducing crash risk associated with constrained roadways.
- Best suited for rural or low-volume roads; avoid where widening could increase speeds on high-speed roads or where right-of-way (ROW), slope stability, or drainage constraints cannot be addressed.

Use in a Safe System Approach

Widening narrow pavement supports the Safe Roads element of the SSA by accommodating human mistakes and vulnerabilities. By adding space through wider lanes or shoulders, it builds redundancy and upholds the principle that death and serious injuries are unacceptable.

Key Stakeholders

State DOTs, MPOs, engineering consultants, construction contractors, freight/trucking associations.

Proactive Implementation

Focus widening efforts on rural roads exhibiting narrow lanes or shoulders combined with high crash rates. Use crash and roadway inventory data to identify segments where narrow pavement contributes most to run-off-road and head-on crashes. Integrate pavement widening with other roadway improvements for cost efficiency and maximum safety benefit.

Countermeasure Overview

Objective: Keep vehicles from encroaching on the roadside or crossing the median.
Strategy: Apply shoulder treatments (Widen and/or pave shoulders) and lane widening.

Targeted Solution

CONTRIBUTING FACTORS	▪ Reduced maneuvering space
TARGET CRASH TYPE	▪ Run-off Road ▪ Head-on
ROAD FACILITY TYPE	▪ N/A
AREA TYPE	▪ Rural

Safety Linkage

NCHRP 500 Series	SAFE SYSTEM APPROACH
Run-off Road	Safe Roads
AASHTO'S TOWARD ZERO DEATHS	SAFE SYSTEM ROADWAY DESIGN
Improved Safety Management	Tier 1

Selected Related Countermeasures

- CM1 Shoulder widening
- CM2 Centerline and rumble strips
- CM3 Clear zone improvements

Cost: $$$ (Moderate to High)
Service Life: 20 years
Benefit-Cost Ratio: 0.3:1 to 2.8:1

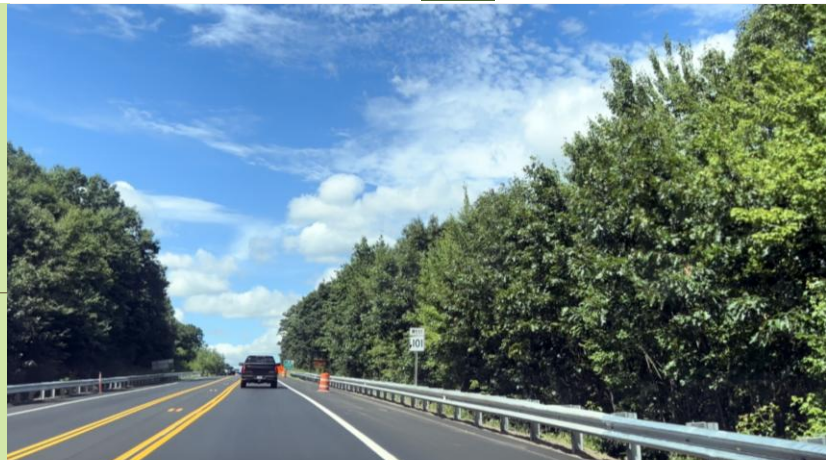
Safety Benefits

31% Reduces crashes of all types and severity levels A, B, and C on rural undivided two-lane roads (CMF ID: 6866)

30% Reduces crashes of all types and severity levels K, A, B, and C on rural undivided two-lane roads (CMF ID: 6865)

Resources

- Flexible Pavement Narrow Widening Best Practices and Lessons Learned
- Operational and Safety Characteristics of Lane Widths



Widen Narrow Pavement. Source: FHWA.