



US 15, Frederick County, MD

RESTRICTED CROSSING U-TURN INTERSECTION

THE PROBLEM

Located in a rural area, US 15 is a four lane divided highway that intersects numerous two lane minor roads. Before conversion, drivers found it difficult to judge left turn and through movements at these intersections, resulting in high levels of fatal and injury crashes.

THE SOLUTION

Install a series of six RCUTs between Frederick and Emmitsburg in Frederick County.

THE OUTCOME

- After construction of the RCUTs, injury and fatal crashes decreased by 40 percent and 70 percent respectively. Property damage crashes decreased by 20 percent.



Frederick County, MD RCUT Intersection
Source: RCUT Case Study Video FHWA-SA-14-061

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CORRIDOR LOCATION

39°40'57.7" N, 77°20'50.5" W

Background

The state of Maryland has implemented a series of Restricted Crossing U-Turn, or RCUT, intersections along US 15 in the towns of Frederick and Emmitsburg in Frederick County. In 2009, average annual daily traffic (AADT) along that stretch of US 15 ranged from about 45,000 vehicles per day near Frederick down to about 20,000 vehicles per day near the Pennsylvania border.¹

Built in the late 1980s and early 1990s, these RCUT intersections, which are also called J-Turns, are a cost-effective way to reduce angle collisions and still provide connectivity at minor roads that intersect multi-lane, divided highways. In a 3-year period before conversion, over 250 injury crashes and 10 fatal crashes occurred at these intersections.²

Challenges

US 15 is a four-lane divided highway with several minor road intersections. The stretch between Frederick and Emmitsburg experienced high rates of injury and fatal crashes at these intersections, but there wasn't enough funding to build expensive interchanges. Instead, Maryland started looking for a lower cost solution. The state opted to install a series of RCUT intersections, which can cost only a fraction of what an interchange would cost to build.³

Approach

Maryland installed six RCUTs along US 15. Due to the higher speed limits on this stretch, many of the U-Turn crossovers have dedicated acceleration lanes that allow drivers to safely reach highway speeds before merging with traffic.

Results

After construction of the RCUTs, injury and fatal crashes decreased by 40 percent and 70 percent respectively. Property damage crashes decreased by 20 percent.⁴

“We can achieve the [safety] results we’re looking for at a fraction of the cost of an interchange.”

— Keith Killen, P.E.
Transportation Project Manager, Missouri DOT



Frederick County, MD RCUT Intersection
Source: RCUT Video FHWA-SA-14-020

¹ V.W. Inman, R.P. Haas, and C.Y. Yang, "Evaluation of Restricted Crossing U-Turn Intersection as a Safety Treatment on Four-Lane Divided Highways," ITE Journal, 83(9): 29-35.
² Ibid.
³ Interview with Keith Killen, Columbia, MO, October 30, 2013.
⁴ Inman, Haas, and Yang, "Evaluation of Restricted Crossing U-Turn," 29-35.

