

# Improving Safety through Missouri's Intersection Safety Implementation Plan (ISIP)

## Introduction

The Federal Highway Administration (FHWA) provided technical assistance to Missouri in the winter of 2008 to develop an Intersection Safety Implementation Plan (ISIP). FHWA held a workshop, provided a data package, and identified a list of candidate intersections by countermeasure type. Lastly, they provided the completed ISIP to the State in May 2009. Prior to the ISIP, the Missouri Department of Transportation (MoDOT) focused on improving intersections with high volumes, but the ISIP introduced MoDOT to applying a systemic approach. With this approach, MoDOT can install low-cost, effective countermeasures at a large number of locations with moderate to high crash frequencies. Missouri has also identified improving intersection safety as one of the top nine strategies in its latest Strategic Highway Safety Plan.

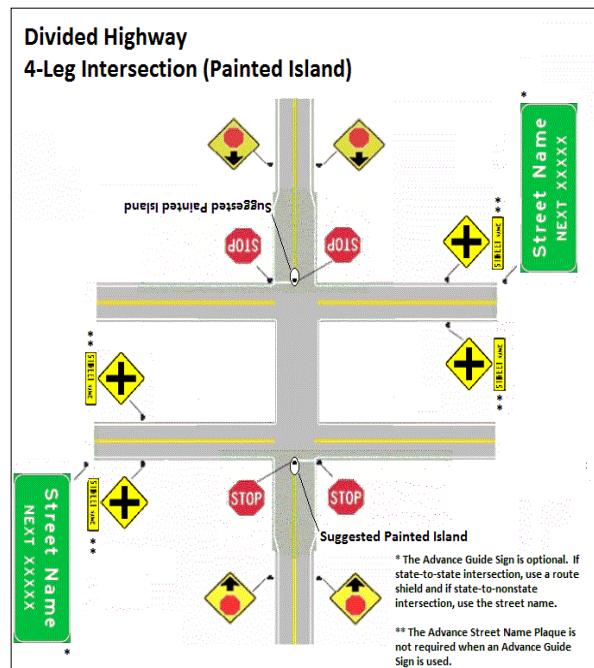


Advance intersection warning sign. Source: MoDOT.

## Process and Results

The development of the ISIP engaged key individuals and managers from all MoDOT districts, as well as its central office. Out of 1,108 stop-controlled intersections with crash histories identified in the ISIP, MoDOT began its implementation effort by successfully installing low-cost sign and pavement marking improvements at the top 250 intersections. This project was completed in 2013 and 2014.

Additionally, as a direct result of the ISIP, Missouri adopted new policies related to implementing signal enhancements through its existing signal maintenance cycle. These low-cost, systemic countermeasures include adding reflectorized backplates, adjusting clearance intervals to be in compliance with the ITE formula, and limiting or eliminating the use of late-night flashing operations. Traffic signals in Missouri predominantly use 12-inch LED lenses and have one signal head per lane; however, if any inconsistencies are identified as part of its maintenance cycle, MoDOT will give consideration to addressing the inconsistency as part of the maintenance operation.



Low-cost sign enhancements at a stop-controlled intersection. Source: MoDOT.

Finally, Missouri used the ISIP to initiate corridor-level intersection improvements for portions of U.S. Route 54 and U.S. Route 30. The improvements involved both low-cost and higher-cost infrastructure, education, and enforcement activities along the corridors. The State reconfigured several two-way, stop-controlled intersections on at-grade expressways to incorporate J-turn treatments to address high-speed angle crashes. Although J-turn intersections are higher-cost improvements, they are proven to be very effective at improving intersection safety along high-speed divided highways with crash histories. The early success with J-turns has helped it gain traction; in 2008, Missouri had only one J-turn intersection, but—by the end of 2015—there were 19 J-turn intersections installed across the State.



J-Turn Intersection.  
Source: Tennessee DOT.

## Expected Outcome

To fully implement the ISIP, MoDOT would implement these treatments at 3,234 intersections, requiring an investment of approximately \$50 million beyond currently-programmed intersection safety projects over the current 4-year period—or \$12.5 million annually. MoDOT personnel and local municipalities implement some of the signing and pavement marking countermeasures when possible, thereby reducing the level of necessary funding. MoDOT has continued to initiate many intersection improvement projects and recently identified its high-need intersection locations. However, each district must prioritize its safety needs annually and include the projects in the district safety plans. MoDOT is pleased with its progress to date and intends to implement additional intersection countermeasures identified in its ISIP.

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