

UNSIGNALIZED INTERSECTION SAFETY STRATEGIES



Provide Right-Turn Acceleration Lanes at Intersections

WHERE TO USE

Unsignalized intersections that experience a high proportion of rear-end and/or sideswipe crashes related to the speed differential caused by vehicles making a right-turn maneuver onto the highway.



Photo by: Texas Transportation Institute

DETAILS

Drivers turning onto an uncongested highway accelerate until the desired open-road speed is reached. When acceleration by entering traffic takes place directly on the traveled way, it may disrupt the flow of through-traffic. To minimize this operational problem due to right-turning traffic at divided highway intersections, right-turn acceleration lanes may be used. An acceleration lane is an auxiliary or speed-change lane that allows vehicles to accelerate to highway speeds before entering the through-traffic lanes of a highway. Acceleration lanes should be of sufficient length to permit adjustments in speeds of both through and entering vehicles so that the driver of the entering vehicle can position the vehicle opposite a gap in the through-traffic stream and maneuver into that gap before reaching the end of the acceleration lane.

KEY TO SUCCESS

Make sure that right-turn acceleration lanes are operationally warranted by relatively high right-turn volumes or justified on the basis of an existing pattern of rear-end or sideswipe crashes related to right-turn maneuvers.



ISSUES

If a right-turn acceleration lane is excessively long or poorly marked, through drivers may mistake it for an additional through lane.

There is little guidance available on the best geometric design for right-turn acceleration lanes. Both parallel and tapered acceleration-lane designs have been used. The *AASHTO Policy on Geometric Design for Highways and Streets* provides guidance on the design of acceleration lanes for freeway entrance ramps, but there is no specific design guidance for acceleration lanes at intersections.

Installation of right-turn acceleration lanes increases the overall width of the intersection. Therefore, the additional width may cause potential problems for pedestrians crossing the intersection. One possible solution to this problem is to provide a pedestrian refuge island in the median.

TIME FRAME ●●○

Time for implementation of right-turn acceleration lanes at intersections may vary from 3 months to 4 years. At some locations, right-turn acceleration lanes can be constructed simply by restriping the roadway. At other locations, widening the roadway, cutting further into a shoulder, or acquiring additional right-of-way may be needed. Such projects may require a substantial time for development and construction. Where additional right-of-way is required or where the environmental process requires analysis and documentation, project implementation may take up to 4 years.

COSTS ●●○○

Costs are highly variable. Where sufficient roadway or shoulder width to provide a right-turn acceleration lane is available, it may be possible to provide a right-turn acceleration lane at moderate cost. Where additional right-of-way must be acquired, higher costs are likely.

EFFECTIVENESS

TRIED: By removing the slower right-turning vehicles from the through lanes, this strategy is expected to reduce rear-end and sideswipe crashes resulting from conflicts between vehicles making a right-turn maneuver onto the highway and through vehicles on the highway. Research has shown that right-turn acceleration lanes at intersections function effectively and do not create safety problems. However, no quantitative estimates of the safety effectiveness of right-turn acceleration lanes at intersections are available.

COMPATIBILITY

This strategy can be used in conjunction with other strategies for improving safety at unsignalized intersections.

For more details on this and other countermeasures: <http://safety.transportation.org>

For more information contact:

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