

UNSIGNALIZED INTERSECTION SAFETY STRATEGIES



Provide Right-Turn Lanes at Intersections

WHERE TO USE

Unsignalized intersections with a high frequency of rear-end crashes resulting from conflicts between (1) vehicles turning right and following vehicles and (2) vehicles turning right and through vehicles coming from the left on the cross street.



Photo by: Texas Transportation Institute

DETAILS

Many crashes at unsignalized intersections are related to right-turn maneuvers. Right-turn lanes remove slow vehicles that are decelerating to turn right from the through-traffic stream, thus reducing the potential for rear-end crashes.

KEY TO SUCCESS

Make sure that any right-turn lane considered is operationally justified on the basis of right-turning volumes or an existing pattern of right-turn related crashes.

At some locations, it may be desirable to create a right-turn roadway by a channelizing island on the intersection approach. This allows the turning radius to be increased without introducing a large unused pavement area that might lead to operational problems. The right-turn lane may be controlled by a yield sign where the roadway enters the intersecting street or may operate as a free-flow roadway where a right-turn acceleration lane is provided on the intersecting street (see Strategy B9).



ISSUES

One of the potential problems with installing a right-turn lane may occur in the design stage of this strategy. If, for example, a decision is made to restripe a shoulder and through lane to provide a right-turn lane, part of the safety benefits may be lost due to the loss of shoulder and the greater proximity of traffic to roadside objects. Vehicles using a major road right-turn lane may obstruct the sight lines of drivers on the minor road approach. Similarly, addition of the right-turn lane may be accompanied by shifting of the minor road stop bar. Care should be taken to ensure that the sight triangle remains clear of obstructions on the stopped approach.

When installation of right-turn lanes increases the overall width of the intersection, 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. If the right-turn lane is designed as a free-flow lane, it may cause safety problems for pedestrians and bicyclists.

TIME FRAME ●●○

Implementing this strategy may take from 3 months to 4 years. At some locations, right-turn lanes can be quickly and simply installed by restriping the roadway. At other locations, widening of the roadway or acquisition of additional right-of-way may be needed. Such projects require a substantial time for development and construction. Where right-of-way is required or where the environmental process requires analysis and documentation, project development and implementation may require as long as 4 years.

COSTS ●●○○

Costs are highly variable. Where restriping within an existing roadway is possible, the costs are nominal. Where widening and/or reconstruction are necessary, costs may be significantly higher.

EFFECTIVENESS

Research found that added right-turn lanes are effective in improving safety at rural unsignalized intersections. Installation of a single right-turn lane on a rural major road approach would be expected to reduce total intersection crashes by 14%. Right-turn lane installation reduced crashes on individual approaches to four-legged rural unsignalized intersections by 27%.

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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