

UNSIGNALIZED INTERSECTION SAFETY STRATEGIES



Provide Left-Turn Acceleration Lanes at Divided Highway Intersections

WHERE TO USE

Unsignalized intersections on divided highways that experience a high proportion of rear-end crashes related to the speed differential caused by vehicles turning left onto the highway. Also where intersection sight distance is inadequate or where there are high volumes of trucks or recreational vehicles entering the divided highway.



Photo by: FHWA

DETAILS

Drivers turning onto a highway accelerate until the desired highway 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 left-turning traffic at divided highway intersections, median 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 safely maneuver into a gap before reaching the end of the acceleration lane.

KEY TO SUCCESS

Make sure that the acceleration lanes are operationally warranted by relatively high left-turn volumes, justified on the basis of an existing pattern of rear-end or sideswipe crashes related to left-turn maneuvers, or justified by having a high percentage of vehicles requiring more time to accelerate, such as trucks or recreational vehicles.

Another key to success is appropriate design of the median opening area to minimize conflicts between vehicles entering the left-turn acceleration lane and other through and turning vehicles using the median opening.



ISSUES

If a left-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 median 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 divided highway intersections.

When installation of left-turn acceleration 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.

TIME FRAME ●●○

Implementation time of left-turn acceleration lanes at divided highway intersections may vary from 3 months to 4 years. At some locations, left-turn acceleration lanes can be constructed simply by restriping the roadway. At other locations, widening the roadway, cutting further into a median, or acquiring additional right-of-way may be needed. Such projects may require a substantial time for development and construction.

COSTS ●●○○

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

EFFECTIVENESS

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