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16. Abstract The overall objective of the research project was to develop guidelines for determining whether an offset left-turn lane (Type A) or a traditional left-turn lane (Type B) is more cost-effective on rural unsignalized four-lane expressways in Nebraska and to determine desirable geometric characteristics for the left-turn lane design for high-speed through traffic conditions. Data collected showed that while offset left-turn lanes provide enhanced safety by providing an uninterrupted sight line beyond an opposing left-turning vehicle, they decrease safety due to left-turners decelerating significantly in the through passing lane before entering the offset left-turn bay. Costs used in the analysis method were construction, maintenance and operating, traffic operations and safety related. The operational effects of left-turn lanes were determined by means of computer simulation to evaluate the effects on vehicle delay and fuel consumption and develop regression equations based on traffic conditions and available storage length of the left-turn bay. Safety effects were assessed in terms of the expected accidents derived from 1) speed differences between left-turning and through vehicles and 2) the advantage of the uninterrupted sight line of offset left-turn lanes. This research project developed a spreadsheet procedure using existing Nebraska Department of Roads design policies to determine the lowest cost left-turn lane to construct given the known variables of: expressway and crossroad AADT, percent lefts and heavy trucks on the approach, equivalent left-turn storage length, approach grade, paved area of left-turn lane, expected posted speed limit, type of project (large or retrofit), material type (concrete or asphalt) and lighting. Recommendations were made to revise current NDOR left-turn lane geometrics to encourage drivers to decelerate in the left-turn taper rather than in the through passing lane.			
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DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of NDOR, the Federal Highway Administration, or the University of Nebraska-Lincoln. This report does not constitute a standard, specification, or regulation. Trade or manufacturer's names, which may appear in this report, are cited only because they are considered essential to the objectives of this report. The U.S. government and the State of Nebraska do not endorse products or manufacturers.

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