Converting Four-Lane Undivided Roadways to a Three-Lane Cross Section: Factors to Consider

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ABSTRACT

Four-lane undivided roadways in urban areas can experience a degradation of service and/or safety as traffic volumes increase. In fact, the existence of turning vehicles on this type of roadway has a dramatic effect on both factors. In many cases, the solutions identified for these problems would be the addition of some type of median, the implementation of an access management plan, and/or the construction of turn lanes at major intersection or driveway locations. The mobility and safety benefits, and the cost and right-of-way impacts of these types of actions have been proven. An alternative approach, in some cases, is the conversion of the four-lane undivided roadway to a three-lane cross section with a two-way left-turn lane (TWLTL). This paper discusses a number of factors that should be considered before this type of conversion. Some of the factors discussed include roadway function; total traffic volume; turning volumes and patterns; weaving, speed, and queues; accident type and patterns; pedestrian and bike activity; and right-of-way availability and cost. A qualitative discussion of each factor and the changes it may experience due to a conversion are documented. Anecdotal information about the before-and-after experiences of several case studies is also presented. The discussion presented supports the conclusion that in certain instances the conversion of a four-lane undivided roadway to a three-lane cross section with a TWLTL should be considered a viable alternative to mitigate operational and/or safety problems.