Evaluation of Impacts from Deployment of an Open Road Tolling Concept for a Mainline Toll Plaza

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OVERVIEW

Implementation of open road tolling (ORT) can provide better performance for a toll collection facility than a conventional toll plaza design. Improvements have been sought to decrease toll transaction times so drivers experience reduced delays or none at all. Though ITS technology such as automatic vehicle identification (AVI) in the form of electronic toll collection (ETC) was a concept that has revolutionized toll collection, with the ever increasing traffic volumes on toll facilities, more innovative methods such as ORT are being deployed. Agencies around the world have implemented ORT and some have integrated express (high speed) ETC lanes in their normal plaza design. A mainline toll plaza in Orlando, Florida was renovated following an ORT design concept. The plaza was expanded to include express ETC lanes separated from the cash payment lanes by a barrier. Data was collected prior to construction, during construction, and after construction was completed. The analysis showed average reduced delays for manual cash customers by 49.8%, for Automatic Coin Machine (ACM) customers by 55.3%, and increased the speed by 57% in the express ETC lanes. To further evaluate the benefits forecast scenario results from a toll plaza micro simulation model (TPSIM) were analyzed with positive conclusions. An analysis of crash data resulted in a 22% drop in total crashes at the plaza and 26% drop in the plaza's area of influence. This case study provided conclusive results that implementation of ORT compared to a conventional toll facility is beneficial for improving toll collection.

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