A003 ENGR

Travel Time impacts from converting HOV to HOT lanes in Nashville Metropolitan Area during Morning Rush Hours

Abstract:

Due to traffic congestion in many cities within the United States and around the world, there have been a need to come up with strategies to overcome this challenge. The introduction of High Occupancy Vehicle (HOV) lanes by converting existing lanes into managed lanes which encouraged car pooling have been considered an effective strategy. In Tennessee, HOV lanes have been introduced along some key highways including I-24, I-40, I-65 in Nashville metropolitan area as well as along I-40 and I-55 in Memphis area. However, due to lack of enforcement, these HOV lanes are underutilized, and many Single Occupancy Vehicles (SOV) tend to use them even during peak hours when intended only for HOV vehicles. This study analyses the feasibility of converting the existing HOV lanes into HOT lanes with the expectation that the conversion might be the solution for high congestion experienced along those highways. HOT lanes allow SOVs to use the lanes at a given toll rate. This study analyses both HOV and HOT operation in Nashville Metropolitan area focusing on morning peak hours through simulation using Vissim and Visum software considering six different scenarios; HOV no enforcement, HOV enforced, All General-Purpose lanes, HOT limited access, HOT multiple access and HOT with access points at all major interchanges.