

Placement Characteristics of Major Stream Vehicular Traffic at Median Openings

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Abstract : Median openings are provided in raised median of multilane roads to facilitate U-turn movement. The U-turn movement is a highly complex and risky maneuver because U-turning vehicle (minor stream) makes 180° turns at median openings and merge with the approaching through traffic (major stream). A U-turning vehicle requires a suitable gap in the major stream to merge, and during this process, the possibility of merging conflict develops. Therefore, these median openings are potential hot spot of conflict and posses concern pertaining to safety. The traffic at the median openings could be managed efficiently with enhanced safety when the capacity of a traffic facility has been estimated correctly. The capacity of U-turns at median openings is estimated by Harder's formula, which requires three basic parameters namely critical gap, follow up time and conflict flow rate. The estimation of conflicting flow rate under mixed traffic condition is very much complicated due to absence of lane discipline and discourteous behavior of the drivers. The understanding of placement of major stream vehicles at median opening is very much important for the estimation of conflicting traffic faced by U-turning movement. The placement data of major stream vehicles at different section in 4-lane and 6-lane divided multilane roads were collected. All the test sections were free from the effect of intersection, bus stop, parked vehicles, curvature, pedestrian movements or any other side friction. For the purpose of analysis, all the vehicles were divided into 6 categories such as motorized 2W, autorickshaw (3-W), small car, big car, light commercial vehicle, and heavy vehicle. For the collection of placement data of major stream vehicles, the entire road width was divided into sections of 25 cm each and these were numbered seriatim from the pavement edge (curbside) to the end of the road. The placement major stream vehicle crossing the reference line was recorded by video graphic technique on various weekdays. The collected data for individual category of vehicles at all the test sections were converted into a frequency table with a class interval of 25 cm each and the placement frequency curve. Separate distribution fittings were tried for 4- lane and 6-lane divided roads. The variation of major stream traffic volume on the placement characteristics of major stream vehicles has also been explored. The findings of this study will be helpful to determine the conflict volume at the median openings. So, the present work holds significance in traffic planning, operation and design to alleviate the bottleneck, prospect of collision and delay at median opening in general and at median opening in developing countries in particular.

Keywords : median opening, U-turn, conflicting traffic, placement, mixed traffic

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