

عنوان مقاله:

Optimization of Delay Time at Signalized Intersections using Direction -Wise Dynamic PCE Value

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نویسندگان:

Birol Roy - Graduate Research Assistant, Department of Civil Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Sumaiya Afrose Suma - Lecturer, Department of Civil Engineering, Bangladesh University of Engineering and Technology, Dhaka,, Bangladesh

MD Hadiuzzaman - Professor, Department of Civil Engineering, Bangladesh University of Engineering and Technology, Dhaka,, Bangladesh

Saurav Barua - Assistant Professor, Department of Civil Engineering, Daffodil International University (DIU), Dhaka, Bangladesh

SK. Mashrur - Assistant Professor, Department of Civil Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

خلاصه مقاله:

The study worked on direction-wise dynamic Passenger Car Equivalent (PCE) model to optimize delay at signalized intersection under heterogeneous traffic condition. Static PCE values are usually practiced to transform heterogeneous traffic into homogeneous stream. However, the PCE values are dynamic due to variation in vehicle composition. Video sensors were used to count direction-wise classified vehicle at various signalized intersections for this research. The adaptive PCE values were compared with the PCE values used in the manual of Roads and Highway Department (RHD), Bangladesh. Furthermore, Synchronous regression method was performed to estimate saturation flow. Field total delay was estimated from queuing diagram considering residual queue, arrival and saturation flow rate. After that, signal timing was adjusted by optimization of total delay. RHD manual based PCE was observed to be underestimated comparing to direction-wise dynamic PCE in case of field delay and optimized delay by 6.79% and 27% respectively. Turning vehicles occupy more space and time and influence operation of signalized intersection. Hence, conventional PCE estimation failed to comply with actual scenario, and consequently, could optimize signal timing inaccurately. This study can be used as a framework to calibrate practiced PCE values in the .road capacity manual and design traffic signal

کلمات کلیدی:

Direction-wise dynamic PCE, Right-turning vehicle, Heterogeneous traffic, isolated signal optimization, delay

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