ABSTRACT

The closure of the railway crossing on Ibrahim Adjie Road, Tasikmalaya City, causes traffic flow to stop and creates vehicle queues that can affect road segment performance. This study aims to determine traffic characteristics and road performance and to analyze the impact of railway crossing closure on queue formation, recovery time, and vehicle delay. The study was conducted through surveys of traffic volume, speed, density, and side friction over a seven-day observation period. The relationships among traffic volume, speed, and density were analyzed using the Greenshields method, while the impact of railway crossing closure on queue movement was analyzed using the Shockwave method.

The results showed that the peak traffic volume was 2,144 pcu/hour, with the lowest average speed of 14.03 km/hour and the highest density of 152.81 pcu/km. The road capacity was 3,683.70 pcu/hour, with a degree of saturation of 0.58 and a level of service of LOS C. Based on the Greenshields method, the free-flow speed (Vf) was 20.69 km/hour, jam density (Dj) was 489.22 pcu/km, maximum flow (Qm) was 2,530.53 pcu/hour, density at maximum flow (Dm) was 244.61 pcu/km, and speed at maximum flow (Vm) was 10.35 km/hour. The Shockwave analysis showed that the queue length ranged from 282–523 meters, the recovery time ranged from 3.28–6.54 minutes, and vehicle delay ranged from 2.12–3.68 minutes. These results indicate that the longer the railway crossing closure duration, the greater the queue and delay, as well as the longer the time required for traffic conditions to return to normal. Therefore, railway crossing closure affects traffic flow and road performance on Ibrahim Adjie Road, Tasikmalaya City.

Keywords: *railway crossing, road performance, Greenshields, Shockwave, queue, delay.*