STUDI PENGARUH PENUTUPAN PINTU PERLINTASAN KERETA API DI JALAN CINEHEL TERHADAP TUNDAAN DAN KONSUMSI BAHAN BAKAR KENDARAAN

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ABSTRAK

Perlintasan sebidang kereta api merupakan titik konflik lalu lintas yang berpotensi menimbulkan permasalahan operasional jalan akibat penutupan pintu perlintasan saat kereta melintas. Jalan Cinehel merupakan jalan kota dengan fungsi ruas kolektor (kelas jalan II) yang melayani pergerakan dua arah dengan lebar perkerasan 5 meter. Kondisi tersebut menyebabkan terhentinya arus lalu lintas sementara, terbentuknya antrean kendaraan, serta peningkatan tundaan, khususnya pada ruas jalan dengan geometrik terbatas. Penelitian ini bertujuan untuk menganalisis tundaan kendaraan serta dampaknya terhadap konsumsi bahan bakar minyak (BBM) akibat penutupan pintu perlintasan kereta api di Jalan Cinehel. Data diperoleh melalui survei lalu lintas pada beberapa kejadian penutupan palang dengan memperhatikan karakteristik geometrik jalan, volume lalu lintas, dan panjang antrean kendaraan. Berdasarkan analisis kinerja jalan, kapasitas ruas diperoleh sebesar 13453smp/jam dengan derajat kejenuhan (DJ) sebesar 0,71 yang menunjukkan tingkat pelayanan jalan berada pada *Level of Service* (LOS) D. Hasil survei menunjukkan bahwa nilai Lalu Lintas Harian Rata-rata (LHR) pada ruas studi sebesar 1893 smp/jam. Panjang antrean rata-rata yang terbentuk pada setiap satu kali kejadian penutupan pintu perlintasan adalah 40 meter. Antrean tersebut terjadi akibat terputusnya arus lalu lintas selama palang tertutup dan adanya waktu pemulihan arus setelah palang dibuka kembali, terutama pada ruas dua arah dengan lebar jalan yang terbatas. Dampak tundaan kendaraan terhadap konsumsi BBM dianalisis menggunakan metode Biaya Operasional Kendaraan (BOK). Berdasarkan hasil perhitungan, diperoleh konsumsi BBM sebesar 0,06 liter/smp. Hasil ini menunjukkan adanya peningkatan konsumsi BBM akibat kondisi kendaraan berhenti (*idle*) dan pergerakan *stop-and-go* selama proses penutupan pintu perlintasan kereta api di Jalan Cinehel.

Kata Kunci: Perlintasan Sebidang, Tundaan, Panjang Antrean, Bahan Bakar Minyak (BBM), Biaya Operasional Kendaraan (BOK).

A STUDY ON THE IMPACT OF RAILWAY CROSSING CLOSURES ON VEHICLE DELAY AND FUEL CONSUMPTION AT CINEHEL ROAD

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ABSTRACT

Railroad crossings are traffic conflict points that have the potential to cause road operational problems due to the closure of crossing gates when trains pass. Cinehel Road is a city road with a collector function (class II road) that serves two-way traffic with a pavement width of 5 meters. This condition causes temporary traffic stoppages, the formation of vehicle queues, and increased delays, especially on road sections with limited geometry. This study aims to analyze vehicle delays and their impact on fuel consumption due to the closure of railroad crossings on Jalan Cinehel. Data was obtained through traffic surveys on several crossing closure incidents, taking into account road geometric characteristics, traffic volume, and vehicle queue length. Based on road performance analysis, the section capacity was obtained at 1345.72 vehicles/hour with a degree of saturation (DJ) of 0.75, indicating that the road service level was at Level of Service (LOS) D. The survey results showed that the Average Daily Traffic (ADT) value on the study section was 1618.79 vehicles/hour. The average queue length formed during each crossing gate closure event is 40 meters. The queue occurred due to the interruption of traffic flow while the barrier was closed and the time required for traffic to recover after the barrier was reopened, especially on two-way roads with limited width. The impact of vehicle delays on fuel consumption was analyzed using the Vehicle Operating Cost (VOC) method. Based on the calculations, fuel consumption was found to be 0.06 liters/smp. These results indicate an increase in fuel consumption due to vehicles idling and stop-and-go traffic during the closing of the railroad crossing on Cinehel Road.

Keywords: level crossings, delays, long queus, fuel oil (BBM), vehicle operating costs (VOC).