

ABSTRACT

OVERVIEW THE EFFECT OF SHOCK WAVES AT RAILROAD CROSSING ON OPEN RAILWAY GATE CONDITIONS (Case Study Urip Sumoharjo-Kimaja Road Segment)

By

SULTHAN ADITIA PRIMO

The intersection of a plot of railroad crossings and highways causes delays that can cause queues. This research is located at the intersection of a railroad crossing on Jalan Urip Sumoharjo, Bandar Lampung. The shock wave caused by this crossing causes the vehicle to slow down or delay. This study aims to determine the amount of delay with a shock wave approach based on the ekr value obtained from the headway ratio method.

The calculation of the shock wave value is based on the Greenshield linear model. Based on the headway ratio analysis, the equivalent value of light vehicles (ekr) for motorcycles (SM) is 0.60. The results of the morning observation showed an increase in travel time from 25.47 seconds to 31.29 seconds due to the queue of vehicles. In the calculation, the maximum shock wave value is $\omega_{ab} = -2.34$ km/hour, $\omega_{cb} = -8.48$ km/hour, and $\omega_{ac} = 6.99$ km/hour with a queue length of 13.5 m and a normalization time of 17.03 seconds. While the calculation results for afternoon observations obtained $\omega_{ab} = -14.92$ km/hour, $\omega_{cb} = -14.46$ km/hour, and $\omega_{ac} = 24.40$ km/hour with a queue length of 18 m and a normalization time of 17.73 seconds.

Keywords : Shock Wave, Headway Ratio, Greenshield Model, Delay, Queue Length

ABSTRAK

TINJAUAN PENGARUH GELOMBANG KEJUT DI PINTU PERLINTASAN KERETA API PADA KONDISI PINTU TERBUKA (Studi Kasus Segmen Jalan Urip Sumoharjo-Kimaja)

Oleh

SULTHAN ADITIA PRIMO

Persimpangan sebidang perlintasan kereta api dan jalan raya menyebabkan terjadinya tundaan yang dapat menimbulkan antrian. Penelitian ini berlokasi di persimpangan sebidang perlintasan kereta api pada Jalan Urip Sumoharjo, Bandar Lampung. Gelombang kejut akibat adanya perlintasan ini menyebabkan kendaraan menurunkan kecepatan atau tundaan. Penelitian ini bertujuan untuk mengetahui besarnya tundaan dengan pendekatan gelombang kejut berdasarkan nilai ekr (ekivalen kendaraan ringan) yang didapat dari metode rasio *headway*.

Perhitungan nilai gelombang kejut berdasarkan model linier *Greenshield*. Berdasarkan analisis rasio *headway* didapatkan nilai ekivalen kendaraan ringan (ekr) untuk sepeda motor (SM) sebesar 0,60. Hasil penelitian pada pengamatan pagi menunjukkan peningkatan waktu tempuh dari 25,47 detik menjadi 31,29 detik akibat adanya antrian kendaraan. Pada perhitungan diperoleh nilai gelombang kejut maksimum $\omega_{ab} = -2,34 \text{ km/jam}$, $\omega_{cb} = -8,48 \text{ km/jam}$, dan $\omega_{ac} = 6,99 \text{ km/jam}$ dengan panjang antrian 13,5 m dan waktu penormalan 17,03 detik. Sedangkan hasil perhitungan untuk pengamatan sore diperoleh $\omega_{ab} = -14,92 \text{ km/jam}$, $\omega_{cb} = -14,46 \text{ km/jam}$, dan $\omega_{ac} = 24,40 \text{ km/jam}$ dengan panjang antrian 18 m dan waktu penormalan 17,73 detik.

Kata kunci : Gelombang Kejut, Rasio *Headway*, Model *Greenshield*, Tundaan, Panjang Antrian