

## Evaluasi Desain Lajur Pendakian di Jalan Bebas Hambatan = Design Evaluation of Climbing Lane on Freeway

Citra Ayu Civilia, author

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### Abstrak

Kondisi geometrik jalan di pulau jawa memiliki keberagaman kondisi geometri tidak halnya pada pembangunan jalan tol. Seperti yang terjadi pada jalan Tol Cipularang dan Tol Semarang – Solo di mana pembangunan harus membelah bukit karena melalui rangkaian pengunungan Ungaran. Dengan kondisi jalan tol dengan jalan yang tentunya memiliki jalan yang menanjak dan menurun dengan rute yang cukup panjang. Hal tersebut tentunya mempengaruhi laju kendaraan yang melewati ruas jalan tol tersebut, khususnya kendaraan dengan dimensi dan volume yang besar. Penurunan kecepatan pada kendaraan tersebut dapat mempengaruhi kinerja jalan tol yang apabila dibiarkan akan menimbulkan antrian dan kemacetan yang cukup panjang. Data kecepatan kendaraan diperoleh dengan menggunakan metode spot speed area kemudian menghitung volume kendaraan yang melewati rute tersebut. Data kecepatan dan volume kendaraan diolah untuk mendapatkan faktor jam sibuk untuk menentukan jam tersibuk. Pemodelan tiga skenario dilakukan dengan menggunakan simulasi mikroskopik untuk mendapatkan desain jalur pendakian yang paling optimal. Simulasi lalu lintas terbaik ditunjukkan pada skenario Austroads dengan merubah panjang taper, serta merubah titik awal pendakian menurut ketentuan DMRB. Sehingga, mendapatkan rekomendasi perbaikan jalur pendakian yang dapat menghasilkan karakteristik lalu lintas yang lebih baik.

.....Geometric conditions of roads on the island of Java have a variety of geometric conditions, which is not the case for the construction of toll roads. As happened on Cipularang Toll Road and Semarang - Solo Toll Road where construction had to split a hill because it went through a series of Ungaran mountains. With the condition of toll road with roads that of course have uphill and downhill roads with quite a long route. This certainly affects the speed of vehicles passing through the road, especially vehicles with large dimensions and volumes. Vehicle speed can affect toll road performance which, if left unchecked, will cause long queues and traffic jams. Therefore, there is a limit to the maximum permissible ramp or critical length with a certain slope. Due to roads with such long and steep ascending, namely with the current climbing lane, a high accident rate is still indicated, so it is necessary to evaluate a good design for vehicles that cannot control their speed at both situations of ascending and descending. Vehicle speed data is obtained using the spot speed area method, and then traffic volume of vehicles passing that route segment is calculated. Vehicle speed and volume data is simulated and analyzed to obtain the peak hour factor and to determine the busiest hours. Three scenarios of modeling were carried out by using Vissim to get the most optimal design of climbing lane. Best traffic simulation showed in Austroads simulating scenario by changing the taper length, as well as changing the starting point of the ascent according to the DMRB provisions. In conclusion some recommendations are proposed for improving climbing lane that can produce better traffic performance as expected.