INTISARI

Simpang Kentungan merupakan simpang bersinyal terdapat 4 lengan yang berlokasi di Jalan Kaliurang dan Jalan Padjajaran, Sleman, D.I Yogyakarta. Kini Kentungan sudah tidak asing lagi dengan ramainya arus kendaraan sehingga terjadi kepadatan hingga kemacetan panjang. Di bagian Barat dan Timur Simpang Kentungan saat ini telah terjadi pembangunan *underpass* sebagai upaya penanganan kelancaran lalu lintas sehingga perlu dilakukan analisis kinerja simpang pada kegiatan lalu lintas setelah adanya *underpass*.

Data yang digunakan untuk analisis kinerja simpang bersinyal meliputi volume lalu lintas, waktu sinyal, kondisi geometri, dan kondisi lingkungan kemudian data diperlukan sebagai analisis kinerja simpang yang terdiri dari waktu siklus, kapasitas, derajat kejenuhan, panjang antrian dan tundaan. Analisis kinerja simpang dikerjakan denga metode MKJI 1997 menggunakan *software* KAJI. Analisis dilakukan dengan membuat perhitungan dan membandingkan kinerja simpang bersinyal antara keadaan sebelum dan sesudah ada operasional/penerapan bangunan *underpass*.

Hasil penelitian kinerja Simpang Kentungan dinyatakan bahwa kondisi setelah dioperasikannya *underpass* berdampak baik terdapat kelancaran lalu lintas. Dari analisis yang telah dilakukan terdapat perbedaan nilai kinerja simpang dalam keadaan sebelum dan sesudah dioperasikannya *underpass* pada jam sibuk siang yaitu waktu siklus masing-masing sebesar 225 detik dan 158 detik, kapasitas di lengan Utara, Timur, Selatan, dan Barat pada masing-masing keadaan sebesar 460 smp/jam, 622 smp/jam, 968 smp/jam, dan 995 smp/jam (sebelum) dan 650 smp/jam, 753 smp/jam, 783 smp/jam, dan 877 smp/jam (sesudah), lalu nilai derajat kejenuhan masing-masing lengan sebesar 2,17, 1,92, 1,07, 1,54 (sebelum) dan 1,43, 0,46, 1,33, dan 0,53 (setelah) kemudian panjang antrian masing-masing keadaan sebesar 1.398 m, 1.396 m, 445 m, dan 1419 m (sebelum) dan 786 m, 140 m, 769 m, dan 164 m (sesusah) sehingga nilai tundaan untuk masing-masing keadaan sebesar 2.411 det, 1.943 det, 436 det, dan 1257 det (sebelum) dan 831 det, 144 det, 655 det, dan 122 det (sesudah).

Kata kunci : Simpang bersinyal, *Underpass*, Waktu siklus, Kapasitas simpang, Derajat kejenuhan, Panjang antrian, dan Tundaan.

ABSTRACT

The Kentungan intersection is an intersection with 4 arms located on Jalan Kaliurang and Jalan Padjajaran, Sleman, D.I Yogyakarta. Now Kentungan is no stranger to the busy flow of vehicles, resulting in congestion and long traffic jams. In the western and eastern parts of the Kentungan intersection, underpasses have been built as an effort to smooth traffic, so it is necessary to analyze the intersection performance in traffic activities after the underpass was established.

The data used to analyze the performance of signaled intersections include traffic volume, signal time, geometric conditions, and environmental conditions. Then the data is needed as an analysis of intersection performance consisting of cycle time, capacity, degree of saturation, queue length and delay. The intersection performance analysis was carried out using the MKJI 1997 method using the KAJI software. The analysis is carried out by making calculations and comparing the performance of signaled intersections between the conditions before and after the operation / implementation of the underpass building.

The results of the research on the performance of the Kentungan intersection stated that the condition after the operation of the underpass had a good impact on traffic smoothness. From the analysis that has been carried out, there is a comparison of the intersection performance values in the state before and after the underpass during the afternoon rush hour, namely the cycle time of 225 seconds and 158 seconds respectively, the capacity in the North, East, South and West arms in each situation. amounting to 460 pcu / hour, 622 pcu / hour, 968 pcu / hour, and 995 pcu / hour (before) and 650 pcu / hour, 753 pcu / hour, 783 pcu / hour, and 877 pcu / hour (after), then the value of the degree of saturation of each arm is 2.17, 1.92, 1.07, 1.54 (before) and 1.43, 0.46, 1.33, and 0.53 (after) then the queue length of each conditions of 1,398 m, 1,396 m, 445 m, and 1419 m (before) and 786 m, 140 m, 769 m, and 164 m (as difficult) so that the value of delay for each situation is 2,411 seconds, 1,943 seconds, 436 seconds , and 1257 seconds (before) and 831 seconds, 144 seconds, 655 seconds, and 122 seconds (after).

Keywords: Signalized intersections, Underpass, cycle time, intersection capacity, degree of saturation, queue length, and delay.