

ABSTRACT

IMPROVING THE PERFORMANCE OF CIATER ROUNDABOUT WITH SIGNALIZED INTERSECTION USING PTV VISSIM STUDENT VERSION 8 SOFTWARE

Ciater Roundabout is one of the locations experiencing traffic congestion issues in South Tangerang city, Indonesia. Therefore, efforts need to be made to improve the performance of the signalized intersection at Ciater Roundabout. The performance of the signalized intersection involves the ability to regulate traffic, control traffic flow, and provide quality service. To enhance the performance of the signalized intersection, optimization of the signalized intersection is necessary. The objective of this study is to determine the performance of the signalized intersection using the Manual of Indonesian Road Capacity Calculation and provide solutions to improve the performance of Ciater Roundabout with a signalized intersection. It is found that in the existing condition of Ciater Roundabout with a signalized intersection, the critical ratio values are greater than one, indicating that the intersection is oversaturated. The degree of saturation values in the morning peak hour are as follows: North arm 0.954, South arm 2.577, East arm 1.802, and West arm 1.802. According to the Manual of Indonesian Road Capacity Calculation, this condition is considered as oversaturated. In order to improve the performance of Ciater Roundabout, the researcher proposes solutions to reduce the degree of saturation values by widening the road on the north arm from 2.35 meters to 5 meters and changing the existing four-phase signal timing to two-phase signal timing. Adjustments are also made for the afternoon condition. The results of these changes show that the critical ratio values decrease to 0.643 in the morning, 0.818 in the afternoon, and 0.868 in the evening. The degree of saturation values in the morning condition are as follows: North arm 0.410, South arm 0.721, East arm 0.567, and West arm 0.535. These reductions are achieved by changing to a two-phase signal timing.

Keywords: *Improving the Performance of Ciater Roundabout, Manual of Indonesian Road Capacity Calculation, Critical Ratio, Degree of Saturation Value, Solutions to Reduce Degree of Saturation Value, Ciater Roundabout in South Tangerang City.*

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