

***SPATIAL ANALYSIS OF ROAD AND INTERSECTION  
PERFORMANCE IN BENGKALIS DISTRICT USING ArcGIS  
(Case Study: Gatot Subroto Street and Pramuka Street)***

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***Abstract***

*This research analyzes the performance of roads and intersections in Bengkalis District, specifically focusing on Gatot Subroto Street, Pramuka Street, and the intersections of Ahmad Yani 4, Antara 4, and Pramuka 4. With the increasing volume of vehicles, traffic congestion and delays have become major issues. The analysis is based on the degree of saturation (DS) and level of service (LOS). The results indicate that the road segment with the highest saturation degree is Gatot Subroto Street, with a value of 0.33, while Pramuka Street has a value of 0.27. The intersections are rated at service levels ranging from LOS A to C, with Antara 4 intersection showing LOS C on one of its arms, indicating the onset of congestion with a saturation degree of 0.62 and an average delay of 33.8 seconds per vehicle. Further analysis reveals that the zones with high vehicle density are concentrated around the intersections, with Antara 4 intersection having a distance of 54.49 meters classified as orange and 131.14 meters classified as blue. Pramuka 4 and Ahmad Yani 4 intersections also show significant distances for the blue classification, measuring 131.30 meters and 104.41 meters, respectively. Spatial mapping using ArcGIS visualizes areas with high traffic density, particularly at major intersections, and provides an interactive information system displaying the performance attributes of roads and intersections.*

**Keywords:** ArcGIS, Degree of Saturation, Intersection Performance, Level of Service, Road Performance.