ABSTRACT

The highway is an essential part of land transportation that plays a crucial role in connecting one place to another. The growth of the population and vehicle ownership will drive an increase in the activities of the population itself. Urban activities can arise from the presence of attractive areas and generation areas that increase traffic demand. The rapid development of the city of Medan requires attention and assessment of the conditions at intersections, especially in urban areas where space availability is very limited. Therefore, traffic management is very important, and it is necessary to understand the characteristics of volume and capacity on road segments, as well as the relationship between queue length and delay at intersections.

Primary data were obtained from field surveys conducted at the selected intersection of Jl. Abdul Hamid – Jl. Sampul – Jl. Pabrik Tenun, while secondary data consisted of theories and calculations from the site plan and PKJI 2014 related to this case study. Data analysis included calculations of queue values, delays, and queue lengths, as well as the degree of saturation at the approaches to the intersection, with data collected over three days on traffic volume using the PKJI 2014 method (Indonesian Capacity Guidelines 2014). The results of this survey indicate the degree of saturation, queue lengths, and traffic delays at Jl. Abdul Hamid – Jl. Sampul – Jl. Pabrik Tenun, with saturation values of 0.90; queue lengths of 57.03 m, 45.57 m, 128.63 m, and 136.79 m, and traffic delays of 76.02 sec/vehicle, 83.50 sec/vehicle, 58.92 sec/vehicle, and 56.69 sec/vehicle, with traffic volumes of 890 vehicles/hour, 1011 vehicles/hour, 1146 vehicles/hour, and 1223 vehicles/hour.

***Keywords**: Indonesian Highway Capacity Manual 2014 (IHCM 2014), Intersection Performance, Traffic Signal (APILL), Traffic Analysis*