

Chaovarid Boonchui 2014: Travel Time Estimation Using GPS for Kanchanapisek (Bangplee - Suksawat) Expressway. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Mr. Saroch Boonsiripant, Ph.D. 137 pages.

Travel Time is one of the most important factors for the trip planning. Fixed-point traffic sensor is widely used to collect traffic data required to estimate travel time. However, installation and maintenance costs of such sensors are high. Currently, communication technology is developing rapidly and is suitable for transportation applications. Global Positioning System (GPS) is useful to evaluate travel time, especially for freight transportation. This research obtained GPS data from the instrumented trucks to estimate travel time. GPS data analyses such as data availability, quality, and travel time reliability were conducted in this study. The results from this method was validated with the actual travel time derived from the Manual Toll Collection System (MTC) data of Kanchanapisek (Bangplee - Suksawat) expressway. The results of this research showed that travel time estimation from GPS data yielded Mean Absolute Percentage Error (MAPE) of less than 10% during uncongested traffic condition. It was also found that the increase in number of trips and penetration rate of trucks improves the accuracy of the estimation. In addition, Buffer Time Index (BI) and Travel Time Index (TI) derived from the GPS data showed that BI And TI of Kanchanapisek expressway is high during AM peak and PM peak. The BI and TI estimated from the MTC data also represented a similar trend.

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