Field Evaluation of a SynchroGreen Adaptive Signal System

Abstract:
This paper quantitatively evaluated and compared the field performance of the SynchroGreen adaptive signal control to the performance of the conventional Time-Of-Day (TOD) signal timing patterns. The evaluation was conducted in terms of the signal parameters such as cycle length and phase splits and the traffic performance measures such as travel times, volumes, occupancy rates, and spot speeds. A SynchroGreen system was recently deployed at nine intersections on Glades Rd in Boca Raton, Florida. ATMS database, BlueTOAD database, and Sensys database operated by the City of Boca Raton Traffic Management Center were used to collect the data. Findings from the analysis of signal timings showed that the SynchroGreen was able to effectively cope with variations in traffic demand, both on hourly and daily levels. Regarding the traffic performance measures, SynchroGreen reduced travel times in the range of 2.4% and 8.6% in three out of four considered segments. In addition, the average occupancy rates and the spot speeds at the few instrumented intersections have improved, thus indicating that SynchroGreen performed well. However, not many of the improved performances were statistically significant. Further research is necessary to investigate how SynchroGreen performs in high-traffic conditions and during special events.

Stichworte:
Synchrogreen, traffic signal control, occupancy, travel time, traffic management center
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