



Evaluation of Arterial Corridor Improvements and Traffic Management Plans in Florida

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Current Situation

During the daily commute to work or school or the trip to a shopping or entertainment destination, drivers note how many lights they stop for, how heavy traffic is, and other informal measures of roadway efficiency. For each of these, traffic engineers have formal equivalents, and for both drivers and engineers, the time a trip takes – travel time – is often the most important and immediate experience of the efficiency of roadways. The timing of traffic signals is an important factor in travel time, which has become increasingly sophisticated as engineers have developed new ways of analyzing road networks and deploying new technologies that can automatically adjust signal timing to optimize traffic flows. The Florida Department of Transportation (FDOT) intends to test one of these promising technologies, adaptive signal control technologies (ASCT), at several locations in Florida to evaluate the conditions in which they are most effective.



The intersection of Mayport Rd and Atlantic Blvd joins two major arterial roads in Duval County.

Research Objectives

University of Florida researchers examined the effectiveness of ASCT in one of several pilot locations where ASCT is being implemented.

Project Activities

The research team conducted a literature review and an overview of industry practice on Regional Traffic Operations Programs (RTOP). This task proved especially valuable in focusing the goals and further tasks of the overall project.

The test area that the research team evaluated is in Duval County. It includes Mayport Road from Wonderwood Drive (SR-116) in the north to Atlantic Boulevard in the south and eastward along Atlantic Boulevard to Seminole Road. In total, the study corridor spans 4.1 miles in length with 14 signalized and 5 unsignalized intersections. These roads carry high levels of commuter traffic to the Mayport Naval Station, Kathryn Abbey Hannah Park, and Neptune Beach.

ASCT was implemented on the study corridor in March 2019. Traffic data were collected when the ASCT was operating and when it was not. Travel time was collected using an instrumented vehicle during morning and afternoon rush hours and during a midday, off-peak period. Turning movement counts and queue lengths were collected manually at the two critical intersections: Mayport Road at Wonderwood Drive and Atlantic Boulevard at SR-A1A.

Five performance measures were calculated and compared for the “Off” and “On” periods: for the corridor, link/route travel time and delay at intersections; and at critical intersections, queue length, queue-to-lane storage ratio, and passenger car equivalent flows. Overall, ASCT was found to improve traffic flows by improving travel times and reducing queue lengths at key locations.

Project Benefits

This project demonstrates that under the right conditions adaptive signal control technologies (ASCT) can improve the efficiency of roadways.

For more information, please see www.fdot.gov/research/.