Research Program Spotlight

Effectiveness of a HAWK Beacon Signal in Decreasing Delay to Drivers at Mid-Block Pedestrian Crossings

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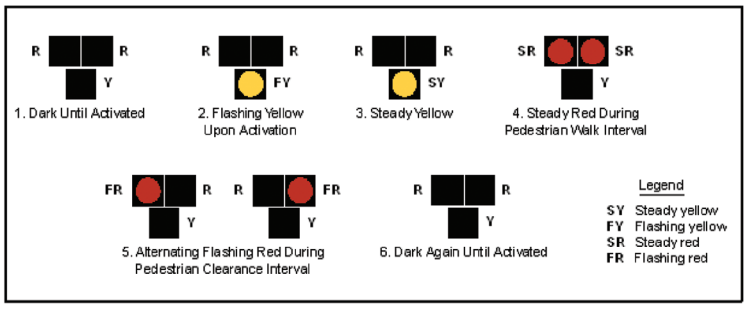
Pedestrian signals, particularly at signalized, mid-block crossings, cause unnecessary delay to a driver. In many cases at a mid-block signal, a pedestrian pushes the button and then quickly crosses the street as soon as the walk signal appears and drivers still face several seconds of RED and by law must remain stopped. On a busy street a queue of vehicles waiting after all pedestrians have crossed can amount to hundreds of hours of excessive delay per year. The High intensity Activated cross WalK (HAWK) beacon signal, which is now proposed to be called a "Pedestrian Hybrid Signal" by FHWA in the next MUTCD (2009 version), has been proven to be effective in decreasing this excessive delay by its different sequence of signal operation.

The City of Lawrence was interested in experimenting with a HAWK beacon signal at a mid-block crossing on 11th street. A signalized mid-block on Massachusetts Street, Lawrence, Kansas was selected as a comparison site for comparing the operation to the HAWK beacon on 11th street. Handouts were prepared and distributed to the people of Lawrence for better understanding of the different phases of a HAWK beacon. A sample survey was also conducted at the 11th street site from the drivers of Lawrence to the get their opinion of the HAWK. Cameras were used to record video data at both of these sites and parameters like excessive delay to drivers (defined as the time drivers were required to remain stopped after all pedestrians had crossed), pedestrian characteristics and vehicle characteristics were analyzed from the video data. Determining excessive delay was the main objective of this study. Emphasis was given to comparing excessive delay for the HAWK versus the traditional mid-block pedestrian signal on Massachusetts Avenue.

HAWK beacon signal on 11th Street, Lawrence, Kansas



Sequence of the HAWK beacon signal operation

The results from the study have shown that the average, excessive delay to vehicles at the HAWK (0.94 seconds) is statistically less than the excessive delay at the signalized, mid-block (10.1 seconds). An independent sample t-test has shown that there is a statistically significant difference between the delays, indicating that the HAWK at mid-block crossings reduces traffic delay compared to a traditional, signalized, mid-block pedestrian signal. A second HAWK has been installed and is in operation in Lawrence.

HAWK Presentations

Ranjit Godavarthy, a graduate student working on this project, has presented the result of this research as a poster at the 2009 NSF CMMI Research and Innovation Conference at Hawaii, at the 2009 Midwestern ITE District's 43rd Annual Conference in Wisconsin Dells, Wisconsin, and at MOVITE-2008 in Omaha, Nebraska. He has also presented a paper on this research at the 2009 Mid-Continent Transportation Research Symposium in Ames, Iowa in August and at the ITE 2009 Annual Meeting and Exhibit in San Antonio, Texas in August. He was awarded a grant from NSF and the K-State UTC to travel to Hawaii and present his research at the NSF CMMI 2009. This research was awarded 2nd place among student poster presentations at MOVITE-2008.

Ranjit Godavarthy at NSF CMMI 2009, Hawaii