

Traffic Signal Optimization Project Results

City Council

June 11, 2019



Background

- March 27, 2018 - Council approved an agreement with Kimley-Horn for a Town-wide Traffic Signal Optimization Project
- Goal: To reduce delay, stops, and travel time along the major corridors
- Since last update in 2009-2010:
 - Traffic increased by 7%
 - Traffic on Arapaho Road increased as a new east/west route
 - IH 635 was reconstructed
 - Dallas North Tollway expanded to 4 lanes
 - State and Federal standards changed

Project Scope

- To provide optimized traffic signal timing plans at 38 intersections during the morning, midday, afternoon, late night, and weekend peak periods
- To provide recommendations for minor intersections and signal improvements
- To develop, implement, and fine-tune newly optimized signal timing plans

Project Area

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- 38 signalized intersections – including the pedestrian signal on Belt Line Road (Redding Trail)
- Five major travel corridors
 - Belt Line Road
 - Midway Road
 - Addison Road
 - Arapaho Road
 - Spring Valley Road

Initial Significant Field Observations

- Traffic backs up and blocks railroad tracks on Marsh Lane and Addison Road during the 7:00 am to 8:30 am peak period
- Heavy pedestrian traffic crossing Belt Line Road during the 12:00 pm to 1:30 pm peak period
- Belt Line Road and Quorum Road to Dallas North Tollway is over capacity during the 4:45 pm to 6:15 pm peak period
- Marsh Lane and Arapaho Road westbound right turn lane is over capacity during the 4:45 pm to 6:15 pm peak period
- Belt Line Road and Surveyor Boulevard is significant choke point in both directions during 4:45 pm and 6:15 pm peak

Travel Time Test Run Routes

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- Belt Line Road
 - From Marsh Lane to Dallas Parkway
- Arapaho Road
 - From Marsh Lane to Dallas Parkway
- Addison Road
 - From Sojourn Drive to Belt Line Road
- Midway Road
 - From Keller Springs Road to Spring Valley Road
- Runs were made before and after signal improvements were made

Study Recommendations

- Install flashing yellow arrows at 6 intersections
 - Five have been installed
 - One pending
 - Others will be included with Midway Road reconstruction project
- Restripe Edwin Lewis to provide a dedicated right turn lane and allowing more time for north and south bound Quorum Drive traffic movements
- Continue signal timing coordination updates, internally and with adjacent municipalities
- Timing plan updates should be done every 3-5 years
- The start of the DART Cotton Belt will necessitate retiming on Addison Road at Arapaho Road and Lindbergh Road

Results of Signal Timing Optimization Project

- Belt Line Road –
 - Travel time reduced by 32%
 - Stops reduced by 59%
 - Speed increased by 56% (nearly to the posted speed)
 - Delay improved by more than 62%
- Morning Peak delay was reduced by 71 seconds
- Afternoon Peak delay was reduced by 200 seconds, more than 3 minutes

Results of Signal Timing Optimization Project

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- Midway Road –
 - Travel time reduced by 18%
 - Stops reduced by 39%
 - Speed increased by 22% (nearly to the posted speed)
 - Delay improved by more than 34%
- Arapaho Road
 - Able to maintain signal cycle timing length with longer pedestrian crossing standards and no delays to vehicles

Annual Benefits of Signal Optimization

- Changes made to Belt Line Road and Midway Road will result in delay savings of:
 - More than 673,000 vehicle hours per year
 - More than 76 years of vehicle delay annually
 - More than \$19 million annually in driver delay savings

Next Steps

- Install remaining Flashing Yellow Arrow at Quorum and Arapaho
- Restripe Edwin Lewis to add dedicated right-hand turn lane per recommendation
- Plan retiming study after DART Cotton Belt is operational
- Reassess system timing every 3-5 years to account for changes in traffic patterns and volume

Questions / Discussion

The logo for Addison-Wesley, featuring the word "ADDISON" in a bold, blue, sans-serif font. The text is centered within a white circle, which is itself set against a blue background. The blue background is part of a larger graphic element on the right side of the slide, which includes diagonal white lines and a grey triangle in the top right corner.

ADDISON