INTERSECTION TRAFFIC CONTROL COMMITTEE

Plymouth Flashing Yellow Arrow Prioritization Study
Meeting Minutes
April 6th, 2016

ATTENDEES

<table>
<thead>
<tr>
<th>Name</th>
<th>Agency</th>
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<tbody>
<tr>
<td>Matt Allwood</td>
<td>Traffic Control Corp.</td>
</tr>
<tr>
<td>Jacob Bongard</td>
<td>Bolton and Menk</td>
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<tr>
<td>Chad Braun</td>
<td>Carver County</td>
</tr>
<tr>
<td>Luke James</td>
<td>SRF</td>
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<tr>
<td>Sean Jenkins</td>
<td>City of Bloomington</td>
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<tr>
<td>Jerry Kotzenmacher</td>
<td>MnDOT</td>
</tr>
<tr>
<td>Tyler Krage</td>
<td>Alliant Engineering</td>
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<tr>
<td>Jon Krieg</td>
<td>Hennepin County</td>
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<tr>
<td>Phillip Kulas</td>
<td>SRF</td>
</tr>
<tr>
<td>Ken Levin</td>
<td>Hennepin County</td>
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<tr>
<td>Roger Plum</td>
<td>SEH</td>
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<tr>
<td>Scott Poska</td>
<td>SRF</td>
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<tr>
<td>Jan Rybar</td>
<td>Dakota County</td>
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<tr>
<td>Molly Stewart</td>
<td>SRF</td>
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<tr>
<td>George Stuempfig</td>
<td>SRF</td>
</tr>
<tr>
<td>Sarah Tracy</td>
<td>Dakota County</td>
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MEETING LOCATION: SRF Consulting Group

I. Plymouth Flashing Yellow Arrow Prioritization Study
Scott Poska presented on the study conducted by SRF for the City of Plymouth. The study aided in identifying a Flashing Yellow Arrow (FYA) retrofit schedule for the city as well as a preferred sequencing for implementation.

Key steps in the study included the following:
- Identification of signal jurisdictions
- Data Collection
  - Study did not collect time-of-day operations and volumes, but did collect all existing signal information.
- Yes/No FYA Criteria Screening
  - Existing Phases and Lane Restrictions
  - Sight Distance Issues
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-Non-Overlapping Vehicle Paths  
-Crash History  
-Cost Estimates  
-Prioritization Factors  
-High priorities included Left turn delay reductions, coordination improvements, and left turn crash reduction. 
-Low priority factors included opposing thru-lane positions, opposing thru-lane speeds, and dual left turns.  
-Implementation Sequencing  
-Looked into consistency between signals as well as existing planned construction.  
-Lessons Learned  
-FYA not always feasible mainly due to sight distances  
-Time needed for adequate data collection was higher than expected  
-The study relied on heavy engineering judgement and case-by-case analysis, as every situation was different.

II. Questions and Comments  
-Change was difficult for some citizens after FYA switch, but the majority eventually got used to using them.  
-The sight distances were not necessarily always taken from the stop bar. In some cases they were taken from where the motorist would likely be waiting in the intersection. Judgement was used to reflect how motorists would best behave in each case.  
-Just because a signal is converted to FYA, doesn’t necessarily mean the public will always see FYA operation. FYA might only operate in off periods or late at night.  
-It has been noticed by some that estimates for retrofitting FYA at intersections comes in lower than contractors are assuming. Contractors come 20-30% higher at times. May want to take into account for planning purposes.  
-FYA balances safety vs efficiency, municipalities may want to validate that running FYA doesn’t cause any increase in crashes for the sake of increased efficiency.

III. Round Robin

Sean- Washington County and Wisconsin jurisdictions are starting to use FYA for right turns. May want to verify that existing signal controller would be able to handle complexities of operations.

Ken- Hennepin County is looking into delay options for FYA. Seems to mitigate motorists speeding to make left before mainline traffic.

www.nc-ite.org
Matt- Issues are occurring with video detection at temp signals. Usual operation is to post on luminaire, but luminaires can wobble, yielding poor detection. Potential solution is to mount cameras right onto wooden pole. However, mounting on pole may constrain advanced detection.

Jon- MnDOT ATMS is verified as Intellilight, local partnering of municipalities soon to follow.

Jerry-
- Policy on local artists painting on signal cabinets to be released soon.
- Ped station detail update is coming out soon, should include note as to date the detail was last modified.

NEXT MEETING:

Date: Wednesday, May 4th (8:00-10:00am)

Location: Dakota County Public Works
14955 Galaxie Ave
Apple Valley, MN 55124

Topics: Blue Line 7th Street Operations and Rail Crossings at Roundabouts

Minutes Submitted By: Tyler Krage
Plymouth FYA Evaluation and Prioritization Study

Scott Poska, P.E., PTOE

April 6, 2016

NCITE ITC Committee Meeting
Outline

• Study Purpose
• Data Collection
• Yes/No Screening
• Cost Estimating
• Prioritization Factors
• Sequencing
• Lessons Learned
Study Purpose

- City desired to have FYA at existing signals Citywide
- Study purpose:
  1. Identify what signals could be retrofitted
  2. Determine recommended sequencing plan
- CIP Funding for 2015-2017
Signal Owners

- City: 38
- MnDOT: 20
- Hennepin County: 12

Since 2012
Data Collection

- Record drawings
- Crash data
- Existing signal timings
- Existing controller/monitor models
- Cabinet load switch status
- Known geometric/operational constraints
- Historical changes to signal operation
Part 1: Yes/No Screening

- Existing Left Turn Phasing/Lanes?
- Adequate Sight Distance?
- Non-Overlapping Vehicle Paths?
- Historical Crash Problem?

- 57 Intersections Passed Screening (81%)
- 165 Movements Passed Screening (65%)
# Existing Phasing/Lanes

<table>
<thead>
<tr>
<th>Left Turn Lane</th>
<th>Phasing</th>
<th>FYA screening</th>
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<tbody>
<tr>
<td>Exclusive</td>
<td>Protected or Protected/Permissive</td>
<td>Consider FYA</td>
</tr>
<tr>
<td></td>
<td>Permissive</td>
<td>No FYA (unless crash issue)</td>
</tr>
<tr>
<td>Non-Exclusive</td>
<td>Permissive</td>
<td>No FYA</td>
</tr>
<tr>
<td>Varies</td>
<td>Split</td>
<td>Evaluate case by case</td>
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</table>
Sight Distance

- Green Book Case F
- Aerials/Street view
- Site visits

Vicksburg Lane at 36th Street
Non-Overlapping Vehicle Paths

TH 55 at Peony Lane
## Crash History

<table>
<thead>
<tr>
<th>3 Yr Left Turn Crash Total</th>
<th>Criteria</th>
<th>FYA screening</th>
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<tr>
<td>&lt; 6</td>
<td>n/a</td>
<td>Consider FYA</td>
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<tr>
<td>&gt; 6</td>
<td>Existing Protected/Permissive Phasing</td>
<td>Consider FYA</td>
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<tr>
<td></td>
<td>3-4 left turn crashes/3 years/per movement (“Borderline”)</td>
<td>Consider FYA (monitor crashes/limit FYA)</td>
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<tr>
<td></td>
<td>&gt; 4 left turn crashes/3 years/per movement</td>
<td>No FYA</td>
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Cost Estimate

- MnDOT FYA Assessment Form
  - Heads/Detection
  - Wire/Conduit
  - Mast Arms
- Cabinet Requirements and Costs
  - From TCC presentation in April 2015
Prioritization Factors

High Priority
- Potential to reduce LT delay
- Coordinated operation
- Potential to reduce LT crashes

Low Priority
- Opposing thru lanes
- Opposing thru speed <40mph
- Dual left turn lanes
- Opposing LT offset
Sequencing
Final Sequencing

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<td>3</td>
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<tr>
<td>11</td>
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<td>12</td>
<td>Black</td>
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Lessons Learned

• Engineering judgement
• FYA not feasible for every movement
• Data collection time
1 Year Later
Wrap-Up

- Questions?

Coming Soon…