Toward Zero Deaths Conference  
Thursday, October 26, 2017  

Pedestrian Crossing Safety  
Rectangular Rapid Flashing Beacons (RRFB)  

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Agenda  
• Background  
• Location  
• Concern  
• Issues  
• Solutions  
• Rectangular Rapid Flashing Beacon  
• Design  
• Data  
• Lessons Learned  
• Cost  
• Questions
Background

• Hospital Expansion
• Problem
  – Relocated Employee Parking
    • Need to cross 4-Lane Roadway
      – 9,600 AADT
      – 30 MPH Speed Limit

Location
Location

Concern

SAFETY
Issues

- Not an existing situation
- Need to cross 4-lane roadway
  - 9,600 AADT
- Will pedestrians use crosswalk
- Is there a need for 2 crosswalks
  - Midblock
- Sight distance for drivers
  - Roadway
  - At crosswalk

Solution Options

- Standard crossing protection
  - Marked crosswalk
  - Signing (standard / LED border)
  - Flashing beacons
- Traffic Signal (HAWK)
- Rectangular Rapid Flashing Beacon (RRFB)
- In-pavement flashers
Solution Concerns

• Standard crossing protection
  – Is it enough?
• Traffic Signal (HAWK)
  – Desirable to have more than one crossing location
  – Pedestrian delay
• Rectangular Rapid Flashing Beacon (RRFB)
  – What?

What is a Rectangular Rapid Flashing Beacon?

• A dual flasher that uses an irregular flash pattern that is similar to emergency flashers on police vehicles
Rectangular Rapid Flashing Beacon

Are RRFBs Effective?

- Study data complied from Florida, Illinois, and Washington DC
  - Yielding compliance increased from 18% to 81%
Design

- 2 Crosswalks
- Advance pedestrian crossing signs
- Pedestrian crossing signs (right side & median)
- Pedestrian actuated RRFB below pedestrian crossing signs
- “STOP Here for Pedestrian” signs in advance of crosswalk
- Stop bars
- In-pavement flashers

Crosswalk Locations
Installation

Installation
Crossing Video

Pedestrian Crossing Observations

• Tuesday, August 19, 2014, 11:50 AM – 12:50 PM
• Wednesday, August 27, 2014, 2:38 PM – 3:38 PM

• Tuesday, September 15, 2015, 11:30 AM – 1:00 PM
• Wednesday, September 30, 2015, 2:02 PM – 3:11 PM

• Tuesday, August 8, 2017, 11:30 AM – 1:00 PM
• Tuesday, August 8, 2017, 2:00 PM – 3:05 PM
Pedestrian Crossing Data

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Observed Crossings</td>
<td>185</td>
<td>107</td>
<td>94</td>
</tr>
<tr>
<td>- Pushed Button</td>
<td>82%</td>
<td>85%</td>
<td>90%</td>
</tr>
<tr>
<td>- Didn't Push Button</td>
<td>16%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>- Didn't Use Crosswalk</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Vehicles Present During Crossing</td>
<td>72%</td>
<td>85%</td>
<td>83%</td>
</tr>
<tr>
<td>Vehicles Stopped for Pedestrians</td>
<td>96%</td>
<td>95%</td>
<td>99%</td>
</tr>
</tbody>
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Lessons Learned

- Pedestrians need to be aware
- MUTCD Interim Approval – Inform MnDOT of location
- Installed in other locations
- Drivers will stop unnecessarily for the “STOP for Pedestrian” signs
Cost

• System described
  – With concrete crosswalks
  – $65,000 per crosswalk

• Similar location
  – No concrete or in-pavement flashers
  – $25,000 per crosswalk

Questions?