

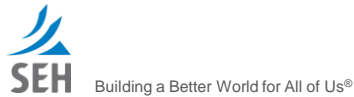
Toward Zero Deaths Conference

Thursday, October 26, 2017

Pedestrian Crossing Safety

Rectangular Rapid Flashing Beacons (RRFB)

Tom Sohrweide, PE, PTOE
SEH Inc.



Agenda

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

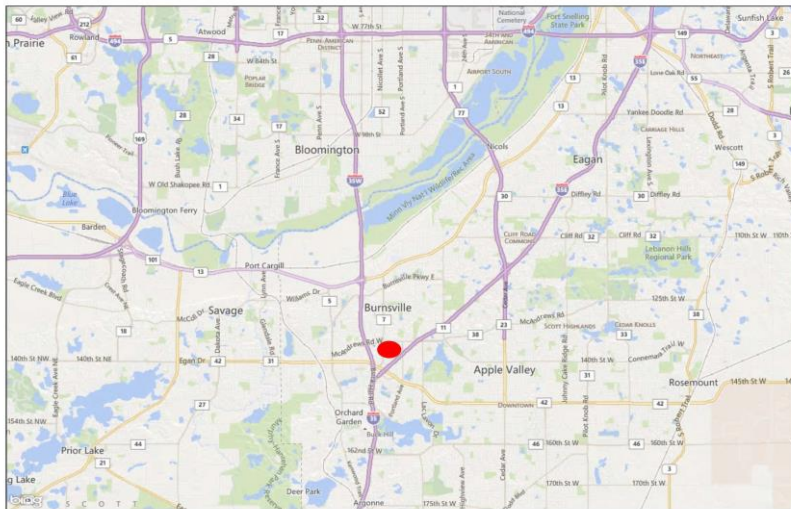


Background

- 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 compiled from Florida, Illinois, and Washington DC
 - Yielding compliance increased from 18% to 81%

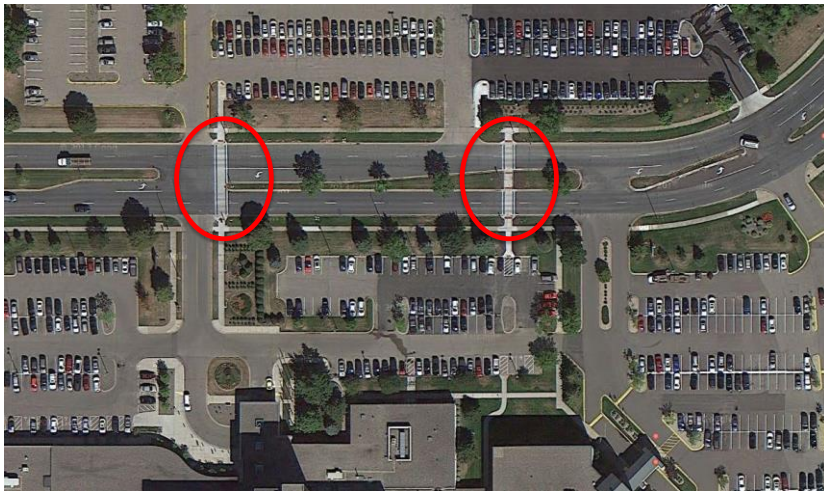


Design

- 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

	2014	2015	2017
No. of Observed Crossings	185	107	94
- Pushed Button	82%	85%	90%
- Didn't Push Button	16%	15%	10%
- Didn't Use Crosswalk	2%	0%	0%
Vehicles Present During Crossing	72%	85%	83%
Vehicles Stopped for Pedestrians	96%	95%	99%



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?

