Intersection Warning System (IWS)

2009 National Rural ITS Conference
Seaside, OR

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Problem

Safety at unsignalized intersections is a major concern. Intersection collisions are one of the most common types of crash, and in the United States, they account for nearly **2 million accidents and 6,700 fatalities every year**. However, a fully signalized intersection can sometimes be hard to justify in rural areas, due to the cost of installation, maintenance, and added delays to traffic on the major through streets...

FHWA-RD-99-103
Problem

November 11th, 2008
1:52pm
Project Inception

- SEH Inc.
- Network Transportation Technologies, LLC (NTT)
- Hennepin County, Minnesota
- Mn/DOT Innovative Ideas Program
Project Goal

Develop a low-cost, readily deployable, low maintenance system that can be used to improve safety at low volume, non-signalized intersections.
Project Team

- Mn/DOT – OTST
- Mn/DOT Metro District
- US DOT - FHWA
- Hennepin County
- Olmsted County
- SEH / NTT
- Hardware (Banner Engineering)
- Independent Evaluation Consultant
Project Deliverables

- Concept of Operations
- System Requirements
- System Design
- Experimental Waiver
- Laboratory Test
- Field Operational Test
### Project Time Line

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**2008**

**2009**
Rural ITS Toolbox
Concept

Warning Sign Node at Intersection

Solar Array 29x25x1.5

Speed Radar & Radio

Presence Detection Radar

Detection Node @ Advance Warning Sign

Battery/Battery Box
Laboratory Test
Controller
Controller Cabinet Electronics
Field Test
CR 47 and Lawndale Lane

4-way Intersection with thru Main and two STOP signs. Shown with active warning on one side only.
Solar Panel & Controller Cabinet
Getting Ready
(Shadow Mode)
The Unveiling
Going Live

LOOK FOR TRAFFIC
CR 47 West Detector Node
Looking East
IWS Sample Data
IWS In Operation
Evaluation Test Plans

- Safety Impacts
- Owner Satisfaction
- User Perception
- Performance
Safety Impacts

- 54% reduction in the number of “conflicts”
- Reduction from 3.9 to 1.8 conflicts per 1000 vehicles
Owner Satisfaction

- Reliable and effective at warning drivers of approaching cross-street traffic
- Easy to install and maintain
- Relatively low fixed cost
- Transferable
User Perception

- 94.2% were aware of the sign
- 88.5% understood the meaning of the sign
- 79.4% had improved awareness of approaching traffic
- 65.2% are more likely to stop when sign is flashing
- Half of survey respondents indicated they pay more attention when the sign is flashing
Performance

- Operated with a 98.6% uptime
- Experienced 3 outages during the 6 month test period
- Worked well in all weather conditions
Bottom-line

- IWS is an effective method to increase safety at rural intersections
- IWS was accepted by motorists
- IWS performed reliably and increased safety at the field test site
Lessons Learned

- FCC approvals
- Engineering study
- Positioning of solar panels
- Consider radar mounting and alignment issues
- Monitor and adjust
Current Status

• Official field test completed on April 30, 2009 with the final report due by the end of June 2009

• Mn/DOT transferred ownership to Hennepin County at the end of the field test

• Hennepin County signed a one-year contract for operations and maintenance
Questions / Contacts

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