Vehicle/Obstacle Detection

History of Four Quadrant Gates in Illinois
Brian Vercruysse, Illinois Commerce Commission

Radar Vehicle Detection for Four Quadrant Gate Crossings
Tom Hilleary, Island Radar
Dylan Horne, North Carolina State

Level Crossing 3D Obstacle Detection
Riccardo Dallara, Selectra Vision – Ferrara Italy
ILLINOIS FOUR QUADRANT GATES – BASIC COMPONENTS

- Junction
- Inductance Loop
- Exit Gate Control
ILLINOIS FOUR QUADRANT GATES – INDUCTANCE LOOP INSTALLATION
ILLINOIS FOUR QUADRANT GATES – NO VEHICLE DETECTED
<table>
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<tr>
<th>Year</th>
<th>Description</th>
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| 2001 | 69 Union Pacific Crossings  
Proposed 110 MPH Corridor with Mostly Single Track Crossings  
Inductance Loops (RR Special) & Exit Gate Management System |
| 2004 | 10 CSX/Chicago Crossings  
Urban Setting with Higher Roadway/Train Volumes |
| 2010 | BNSF/Hinsdale Triple Track Crossing  
Metra Commuter Territory, 180 trains/day (Freight/Passenger)  
Testing of Island Radar/Wavetronix System (Ongoing) |
| 2011 | Belt Railway/Chicago Triple Track Crossing  
High Vehicle and Pedestrian Volumes  
Testing of Four Quadrant Gates/Pedestrian Treatments Design |
| 2012+ | IDOT/Union Pacific 110 mph Corridor, Chicago to St. Louis  
200+ Four Quadrant Gate Installations by 2016  
Vehicle Detection Integrated into Train Control System |
| Next | UP/Lombard – Metra Corridor with Traffic Signal Interconnect  
FLIR Vehicle Detection Study at Belt Railway |
2001 – Illinois (IDOT) High Speed Rail

- Union Pacific RR - South of Joliet to Springfield
- Crossings w/ Train Speeds Over 79 mph
- 69 Locations with Four Quadrant Gates
- Mainly SINGLE TRACK
SOLUTION – West Leg Realignment to allow for Four Quadrant Gates

AFTER

L • Grundy Co. • Gardner

W Jefferson St

N Jackson St
2004 - City of Chicago

- City of Chicago – CSX Beverly Area
  - Desire to Create a Quiet Zone
  - Retain Access
  - Demonstration Project - Four Quadrant Gates at 10 Crossings
  - 2 TRACK CROSSINGS
UPDATE - City of Chicago/CSX

- **TIME FOR MAINTENANCE!**
- Eight Crossing Surfaces Reconstructed
- New Inductance Loops
2010 - Village of Hinsdale Project

- Four Quadrant Gate Demonstration – 3 TRACKS/COMMUTER
- Back-up Radar Detection Test (Addendum Study Underway)
- Approximately $520,000 (Roadway, 4 Quad, Back-up Detection)

Construction Complete:
Monroe - May 2012
Village of Hinsdale Project

- Before Construction
• During Construction
• RADAR BACK-UP DETECTION
Village of Hinsdale Project

- RADAR TESTING - BACK-UP DETECTION
UPDATE – 2013 Winter Data to Be Studied

- University of Illinois - Comprehensive Study of Radar System (Illinois Center for Transportation) – 2012/2013
- Favorable Weather Conditions
- Adverse Weather Conditions: Rain, Wind, Fog, Snow, Sleet
- Addendum Study of Adjustments for Heavy Snow Conditions
2011 – BRC/Chicago Project

- Marquette Road at Belt Rail Company – City of Chicago

New K-8 School
Lead into Yard
2011 – BRC/Chicago Project

- Marquette Road at Belt Rail Company – City of Chicago

Pedestrian Treatments
Four Quadrant Gates
2011 – BRC/Chicago Project

**During Construction**

**2011 Work Complete**
UPDATE – BRC Project

- Forward Looking Infrared – Thermal Vehicle Detection
**Proposed High Speed Rail Corridor**

- S/O Joliet to Godfrey (near Alton)
- 200+ Locations with Four Quadrant Gates
- Advance Signal Starts – GE ITCS
- 110 mph Max Speed
- Warning Times Increased
Recommended High-Speed Rail Crossing Safety Systems

Four Quadrant Gate System

Existing

Presence/Intrusion Detection Interfaced With Positive Train Control

Pedestrian Gate System

Existing

Train Speed Reduced To 20 MPH or Less

WITH CONTINUOUS VEHICLE CALL (Stalled/Stopped Vehicle on Tracks)

Vehicle - Detection Interface With Positive Train Control

WITH CONTINUOUS VEHICLE CALL
2012 - High Speed Rail
Why Four Quadrant Gates
Why Four Quadrant Gates
WHY VEHICLE DETECTION?
Contact Information

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