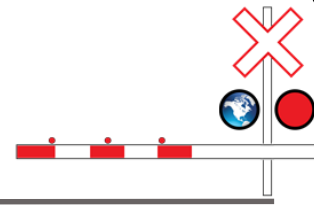




2014 Global Level Crossing
Safety & Trespass Prevention Symposium
Urbana, IL – University of Illinois



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

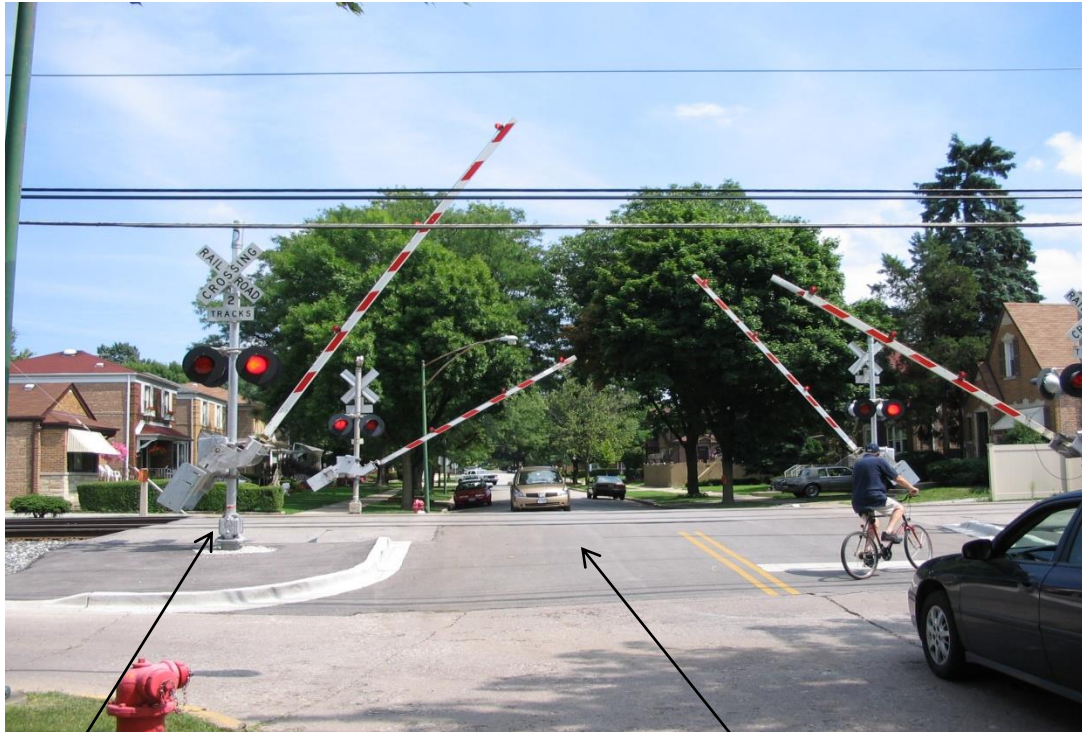
Dylan Horne, North Carolina State

Level Crossing 3D Obstacle Detection

Riccardo Dallara, Selectra Vision – Ferrara Italy



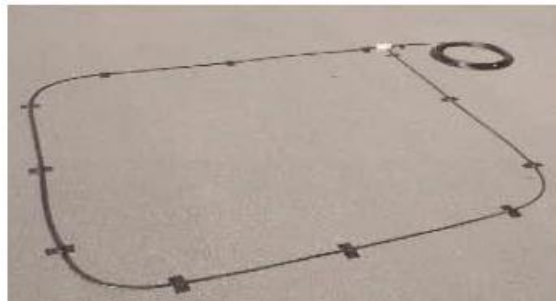
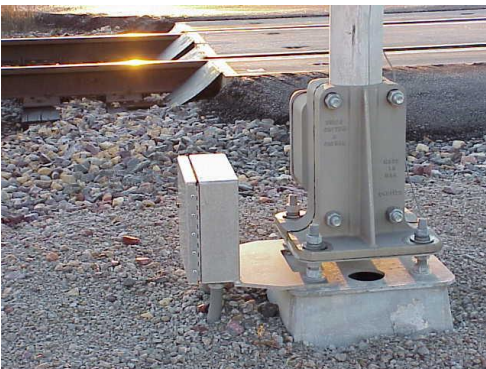
ILLINOIS FOUR QUADRANT GATES – BASIC COMPONENTS



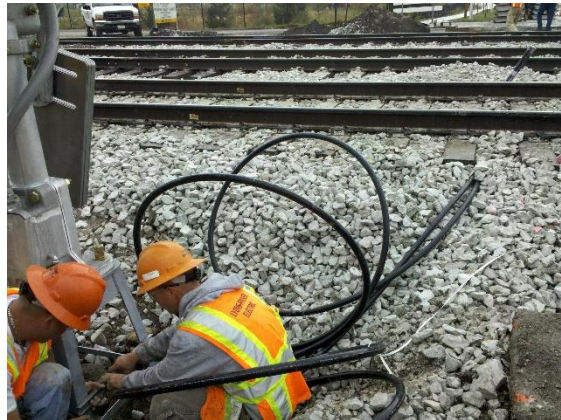
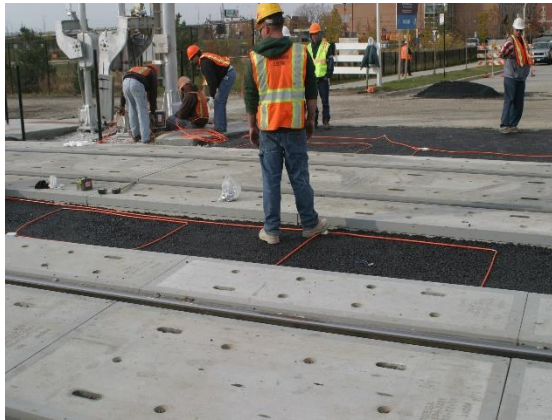
JUNCTION

INDUCTANCE LOOP

EXIT GATE CONTROL



ILLINOIS FOUR QUADRANT GATES – INDUCTANCE LOOP INSTALLATION



ILLINOIS FOUR QUADRANT GATES – NO VEHICLE DETECTED



ILLINOIS FOUR QUADRANT GATES – VEHICLE DETECTED



ILLINOIS FOUR QUADRANT GATES – VEHICLE DETECTED

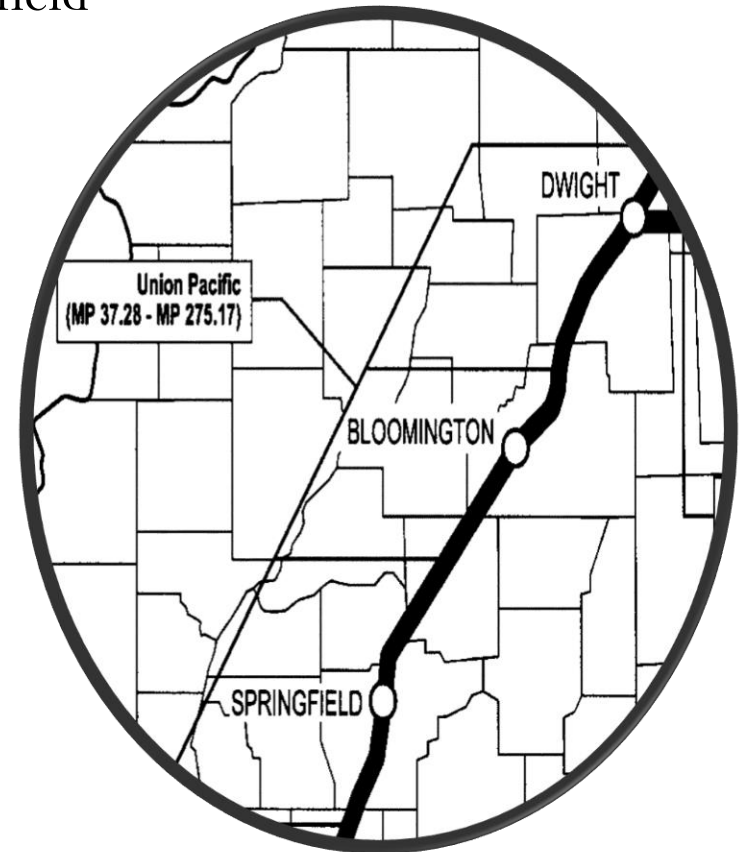


ILLINOIS FOUR QUADRANT GATES – HISTORY

- 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

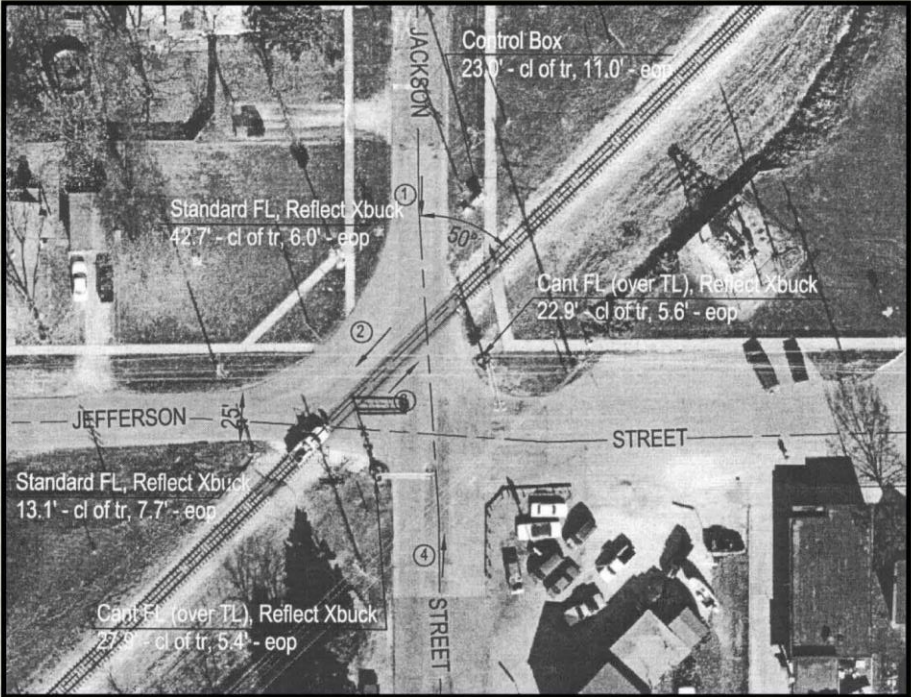
- Union Pacific RR - South of Joliet to Springfield
- Crossings w/ Train Speeds Over 79 mph
- 69 Locations with Four Quadrant Gates
- Mainly SINGLE TRACK



HSR CROSSINGS

Jackson Street/Jefferson Street at UPRR – Year 2001

BEFORE



HSR CROSSINGS

SOLUTION – West Leg Realignment to allow for Four Quadrant Gates

AFTER



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)



Village of Hinsdale Project

- Before Construction



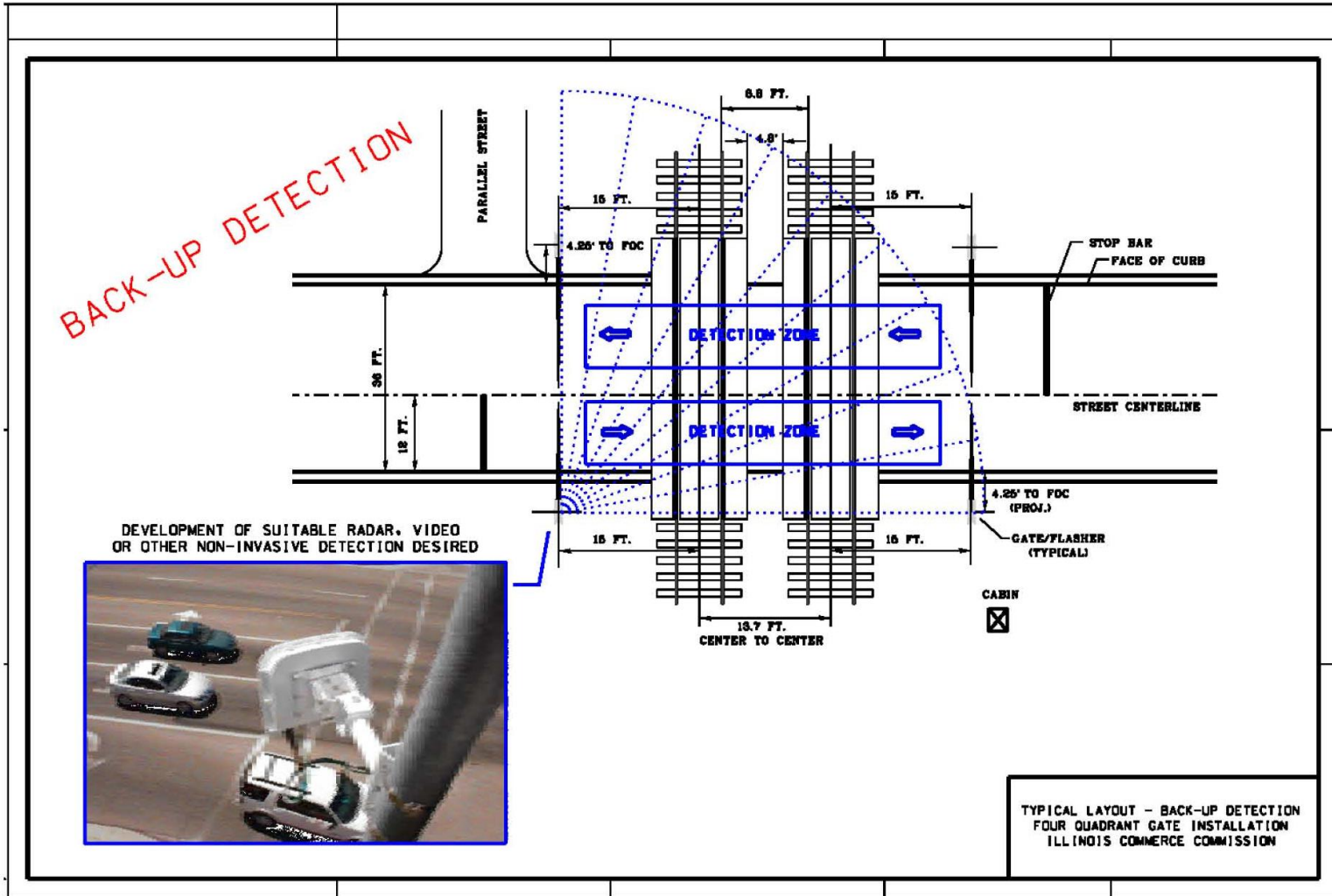
Village of Hinsdale Project

- During Construction



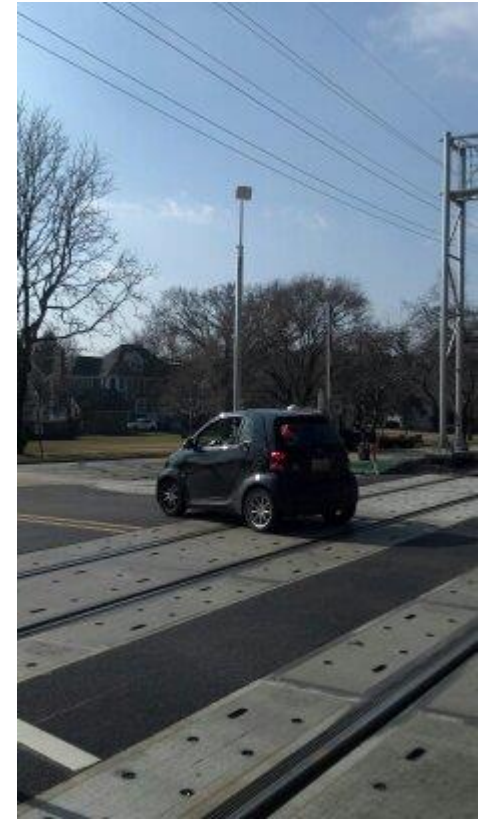
Village of Hinsdale Project

- RADAR BACK-UP DETECTION



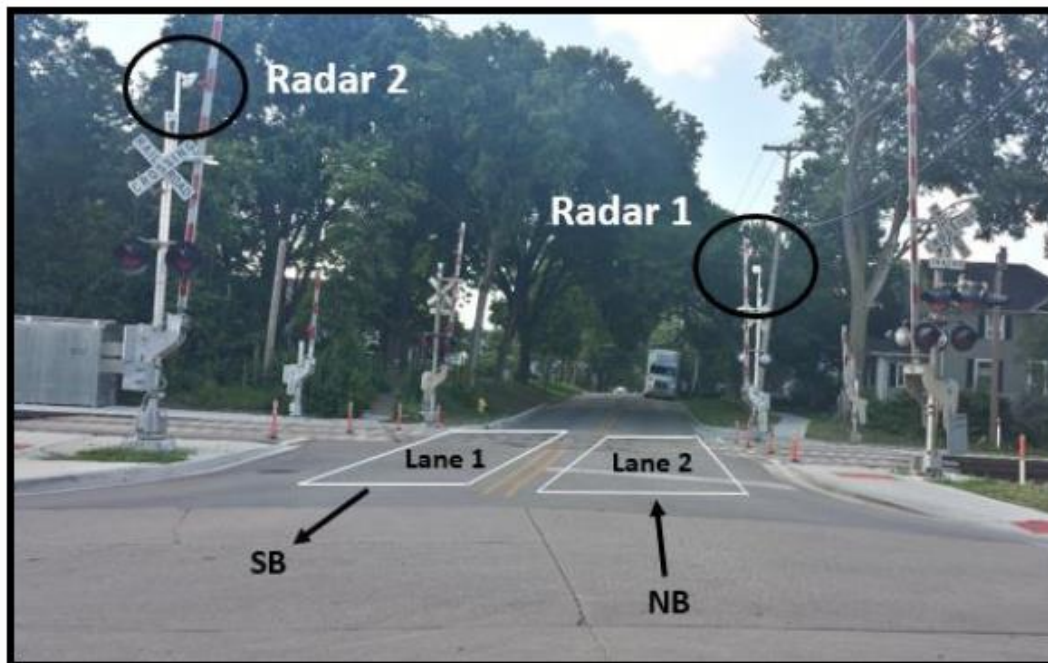
Village of Hinsdale Project

- RADAR TESTING - BACK-UP DETECTION



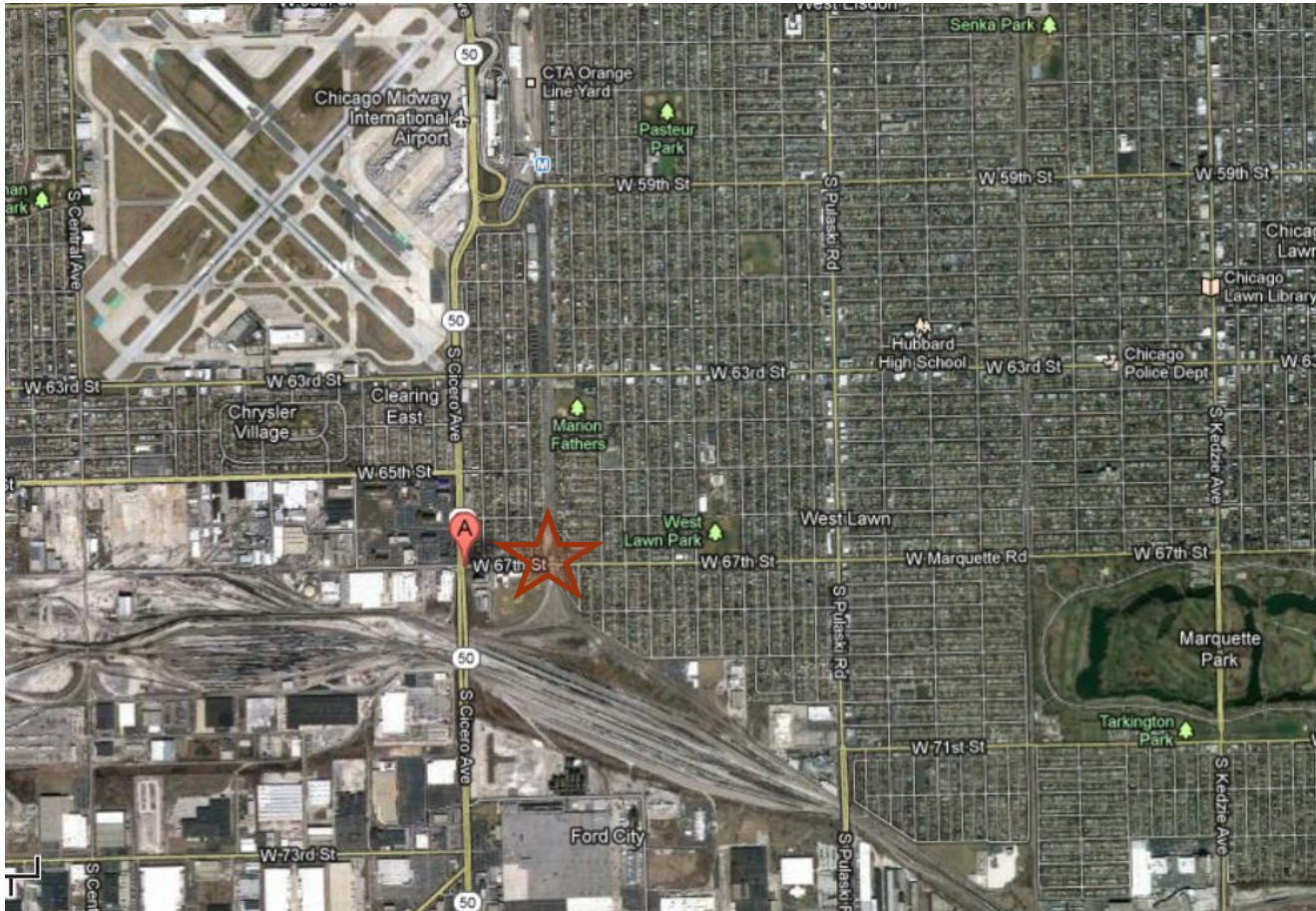
UPDATE – 2013 Winter Data to Be Studied

- 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

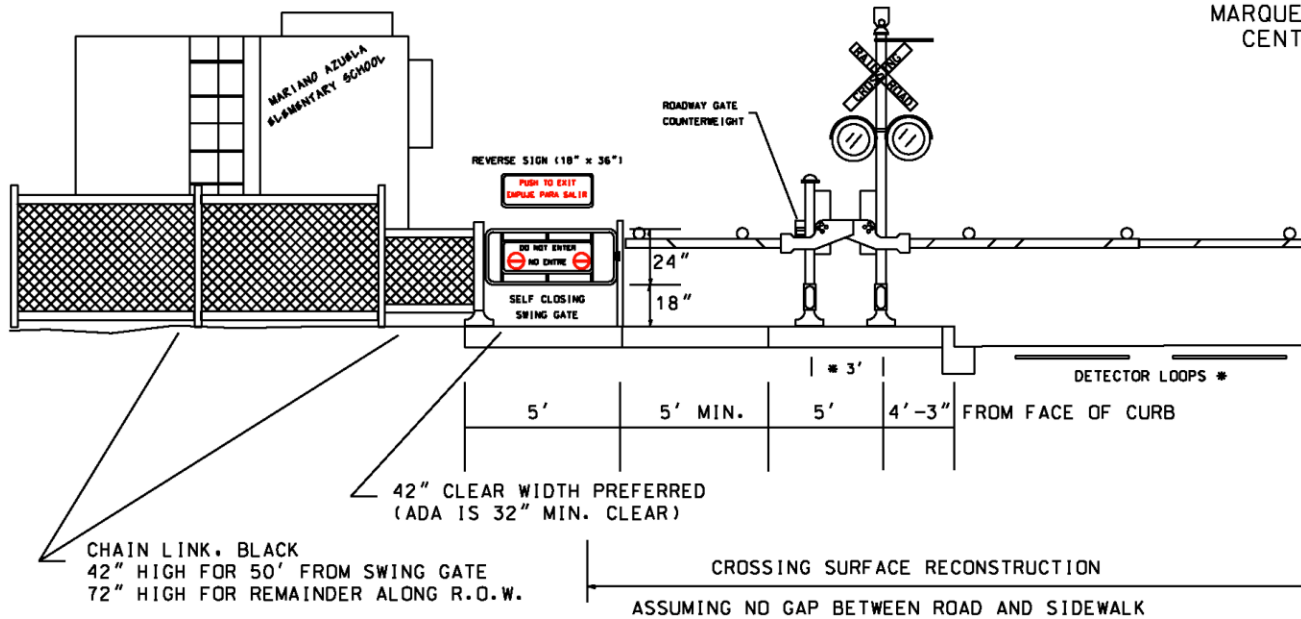
- Marquette Road at Belt Rail Company – City of Chicago



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

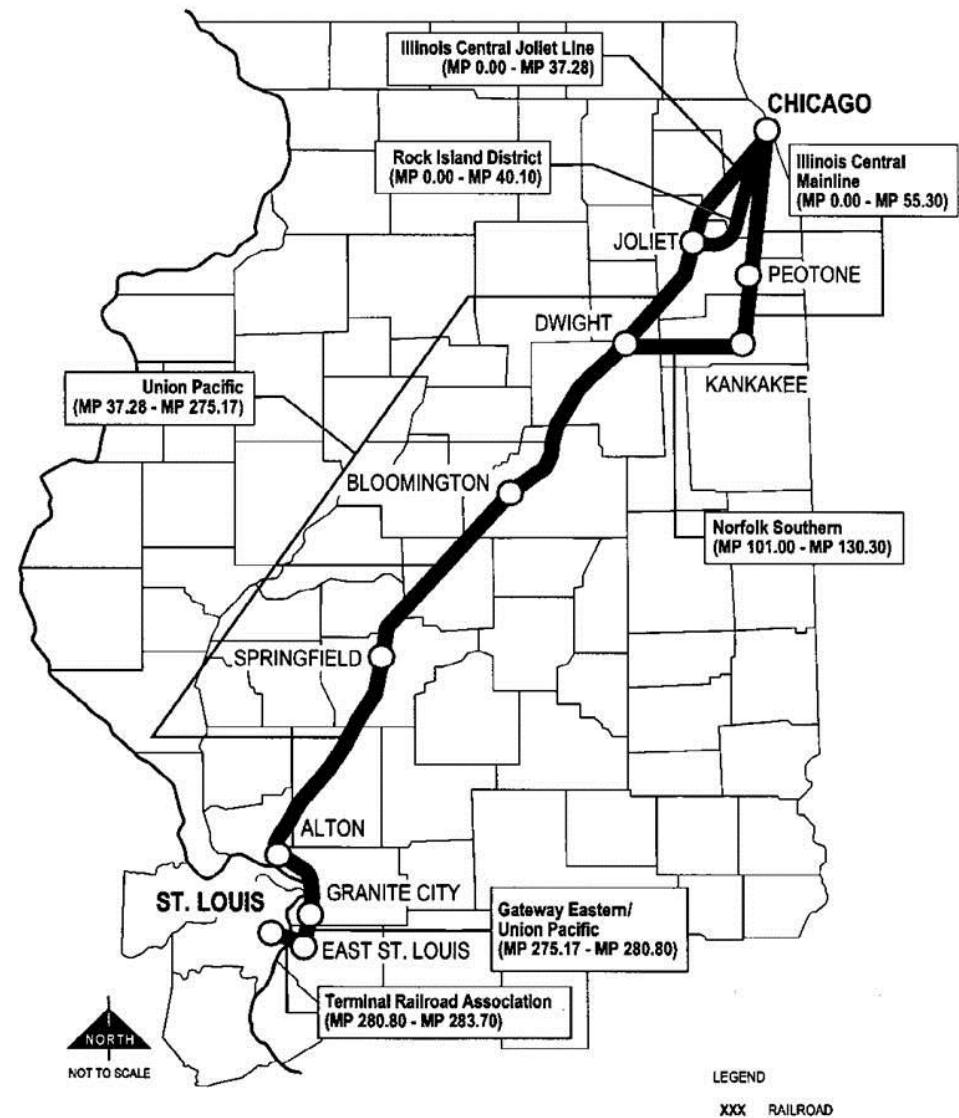
- Forward Looking Infrared – Thermal Vehicle Detection



2012 - High Speed Rail

- 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

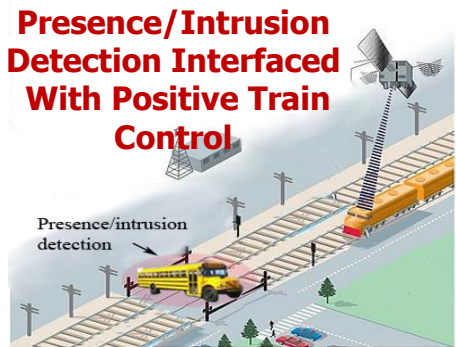




Existing



Four Quadrant Gate System



P
U
B
L
I
C

G
R
A
D
E

C
R
O
S
S
I
N
G
S

Recommended High-Speed Rail Crossing Safety Systems



P
E
D
E
S
T
R
I
A
N
S



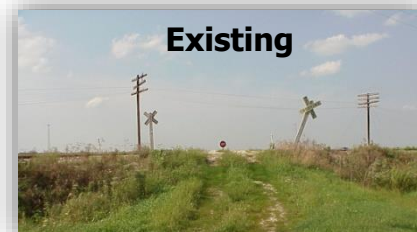
Existing



Ped Gates & Fencing

P
R
I
V
A
T
E

F
A
R
M



Existing



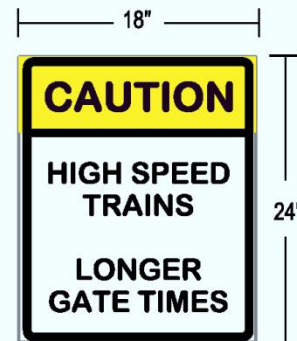
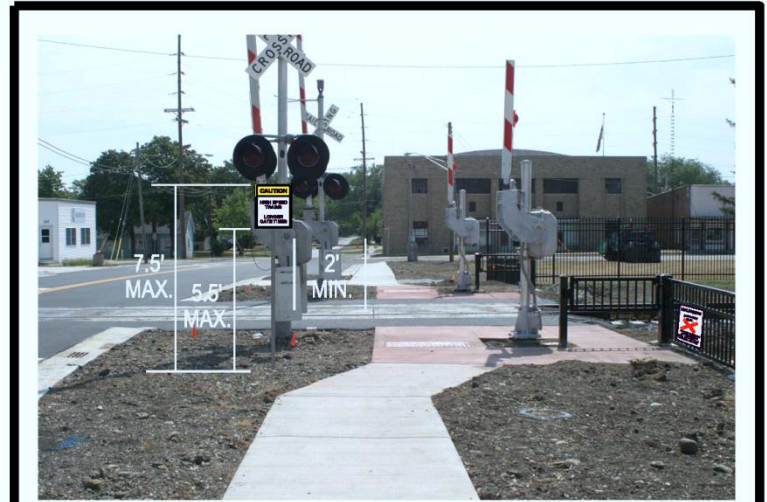
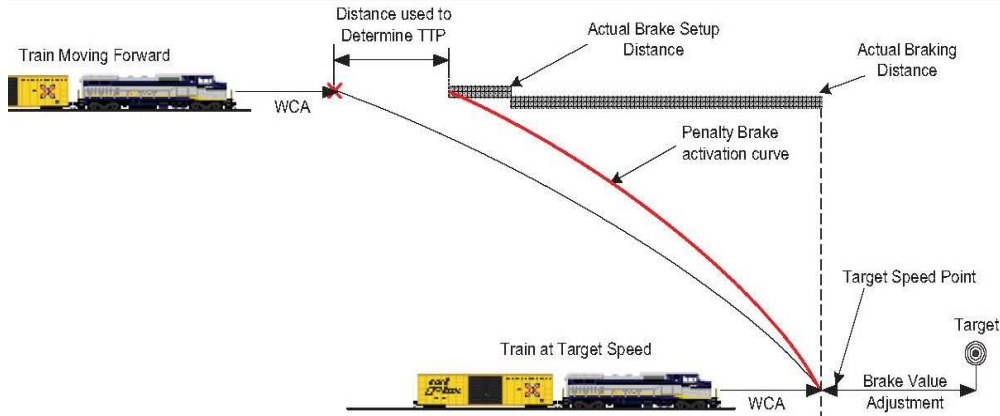
Vehicle - Detection Interface With Positive Train Control

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

Train Speed Reduced To 20 MPH or Less

WITH CONTINUOUS VEHICLE CALL

2012 - High Speed Rail



**PEDESTRIAN SIGNS
UNION PACIFIC RAILROAD
CHICAGO TO ST. LOUIS 110 MPH CORRIDOR
SEPTEMBER 11, 2012 - ICC**

Why Four Quadrant Gates



Why Four Quadrant Gates



WHY VEHICLE DETECTION?



Contact Information

Brian Vercruysse
Senior Rail Safety Specialist
Illinois Commerce Commission
527 East Capitol Avenue
Springfield, Illinois 62701
(312) 636-7760
bvercruy@icc.illinois.gov