

2017 GRADE CROSSING RESEARCH NEEDS WORKSHOP

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Another/Second Train Coming Sign

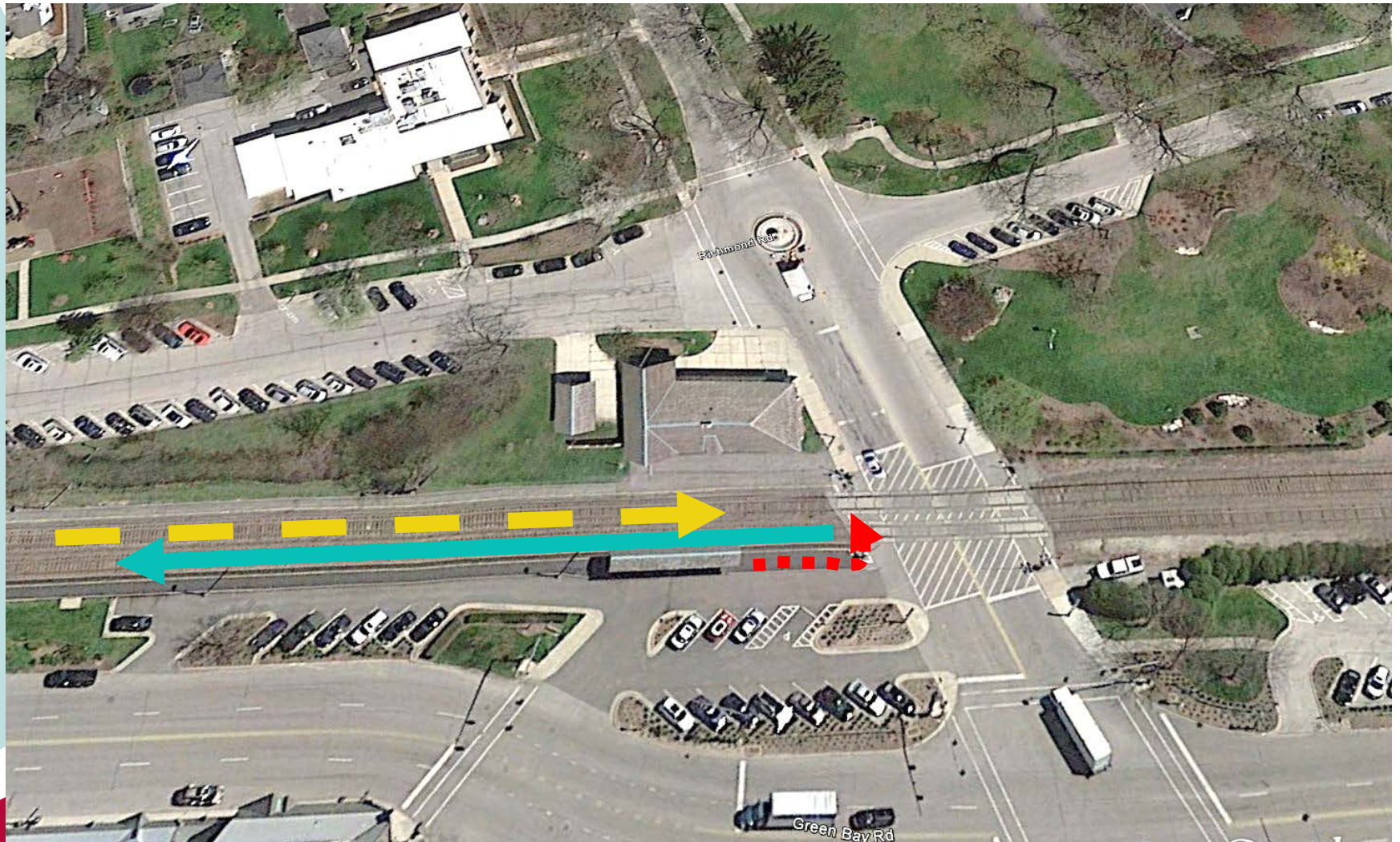
Research Proposal Outline

Session 5 – Hazard Management
August 16, 2017
St. Louis, MO

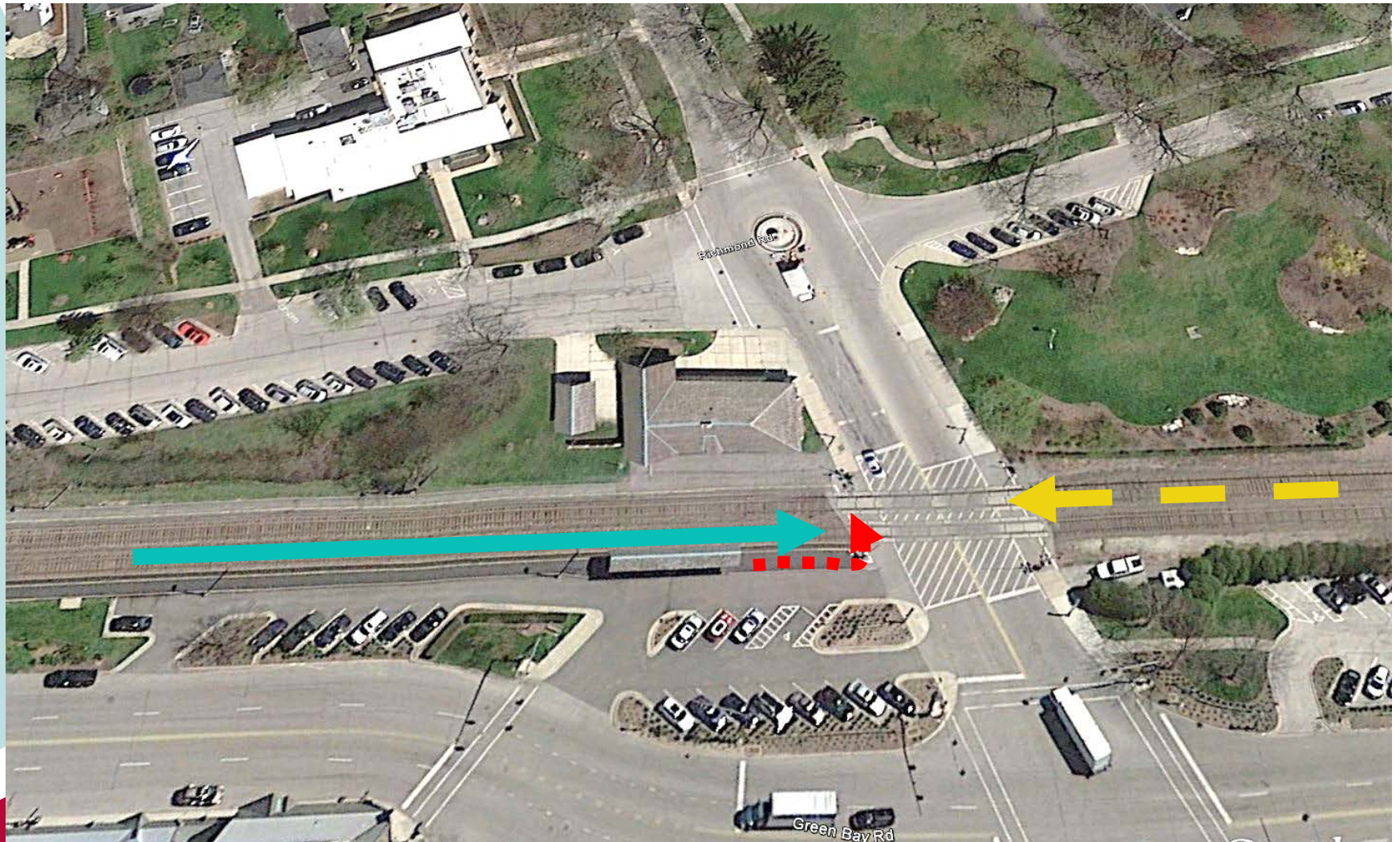
Topics

- Problem Definition
- Examples of Signs
- Prior Research
- NCUTCD Proposal
- Problem Statement Thesis
- Research Approach & Scope

Problem Definition



Problem Definition



The background features a large, rounded red shape on the right side, which contains the text. To its left, there are teal and dark grey shapes, all separated by white space. The overall design is minimalist and modern.

Example Signs

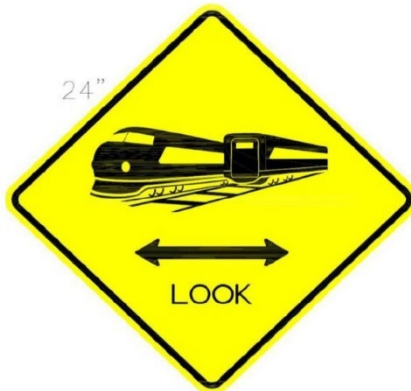
Passive



TRAINS MAY APPROACH
FROM BOTH DIRECTIONS



Passive Signs





Active Signs

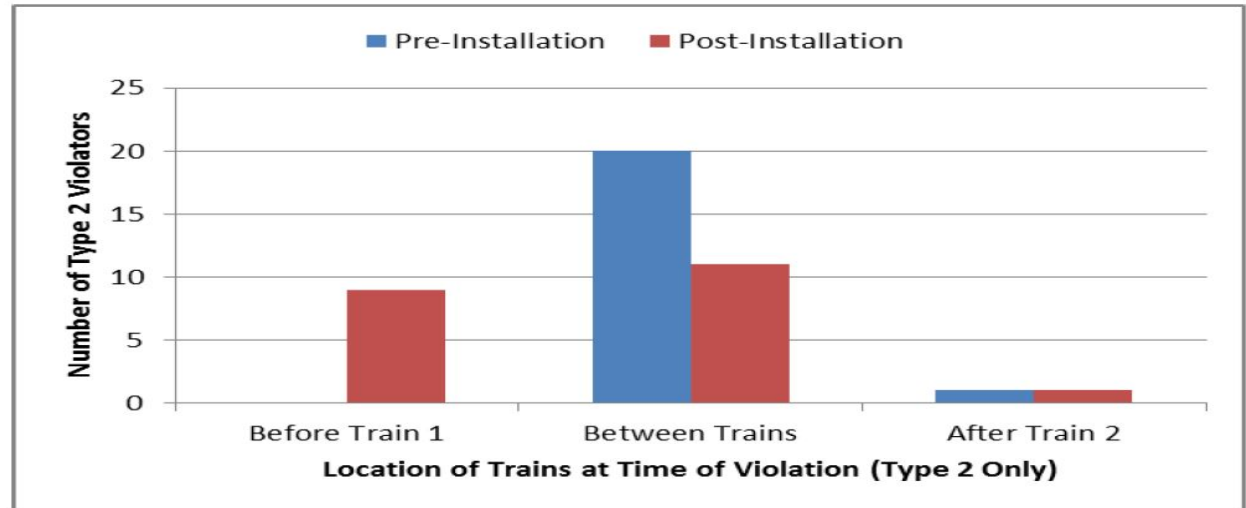


The background features abstract, rounded geometric shapes in teal, dark grey, and red, separated by white space. The red shape is the largest and occupies the right side of the frame.

Prior Research

DOT/FRA/ORD-14/21 (July 2014)

Effect of an Active Another Train Coming Warning System...”



Pedestrians Crossing Ahead of LRT Train	Result
Significantly reduces the number of times when a pedestrian violates the crossing during second train events?	“NO”
Reduces the overall number of pedestrians who violate the crossing during second train events?	“NO”
Systematically lowers all types of violation (gates ascending, descending or horizontal)?	“NO”
Lowers the number of horizontal violations to the same degree regardless of the location of the train?	“NO”

TCRP Research Results Digest (November 2002)

Second Train Coming Warning Sign Demonstration Projects



Pedestrians Crossing Ahead of LRT Train	Before and After Results
<= 15 Seconds Ahead	Reduced by 14%
<= 6 Seconds Ahead	Reduced by 32%
<= 4 Seconds Ahead	Reduced by 73%

Comprehension	Pct
Train Coming	25
Don't Cross the Tracks	21
Stop/Wait	20
Caution/Danger	18
More than One Train Coming	4
Look Both Ways	3
Slow Down	1
Other	5
Don't Know	3

Are We There Yet?



MUTCD Proposal

Out for Sponsor Comments (July 2017)



**ANOTHER
TRAIN
COMING**

Example 1

Option:

If a diagnostic team determines that there is a need to warn crossing users at a multi-track crossing that additional trains may be on approach to the crossing, supplemental warning devices may be installed. Factors that may be considered in the determination include pedestrian utilization and collision history, train volumes, speeds and operations, and the presence of a nearby station or transit center.

The LOOK sign (R15-8) may be used at passive crossings as provided for in Section 8B.17.

An ANOTHER TRAIN COMING (Example 1) train-activated blank-out warning sign may be used to warn of the approach of another train. The sign may be flashed when activated, and may be supplemented with an audible sound which is distinguishable from a normal railroad crossing bell, or with a verbal message.

The ANOTHER TRAIN COMING sign may be mounted on a flashing light support below the flashing lights, on a separate support adjacent to the flashing lights, or on the back side of a flashing light support on the left side of the grade crossing. If there are no flashing lights, the sign may be installed where flashing lights would otherwise be located, or at a location determined by the diagnostic team to have adequate visibility which may include mounting on traffic signal infrastructure.

PROBLEM STATEMENT THESIS:

- 1. Active Sign Necessary**
- 2. Minimize Complexity**
 - a. Simple Icon**
 - b. Graphic (Arrow)**
- 3. Modulation of Audible is Required**
- 4. Sign May Increase “Calibrated Risk” Behavior**
- 5. Systemwide Deployment to Condition Users**

- 1. Develop Graphic Concept / Images**
- 2. Develop Complementary Audibles**
- 3. Laboratory Testing of Comprehension**
- 4. Field Test Most Promising Options**

Potential Research
Approach & Scope