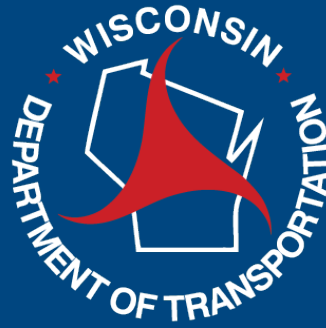


WisDOT Rail Crossing Safety Initiatives



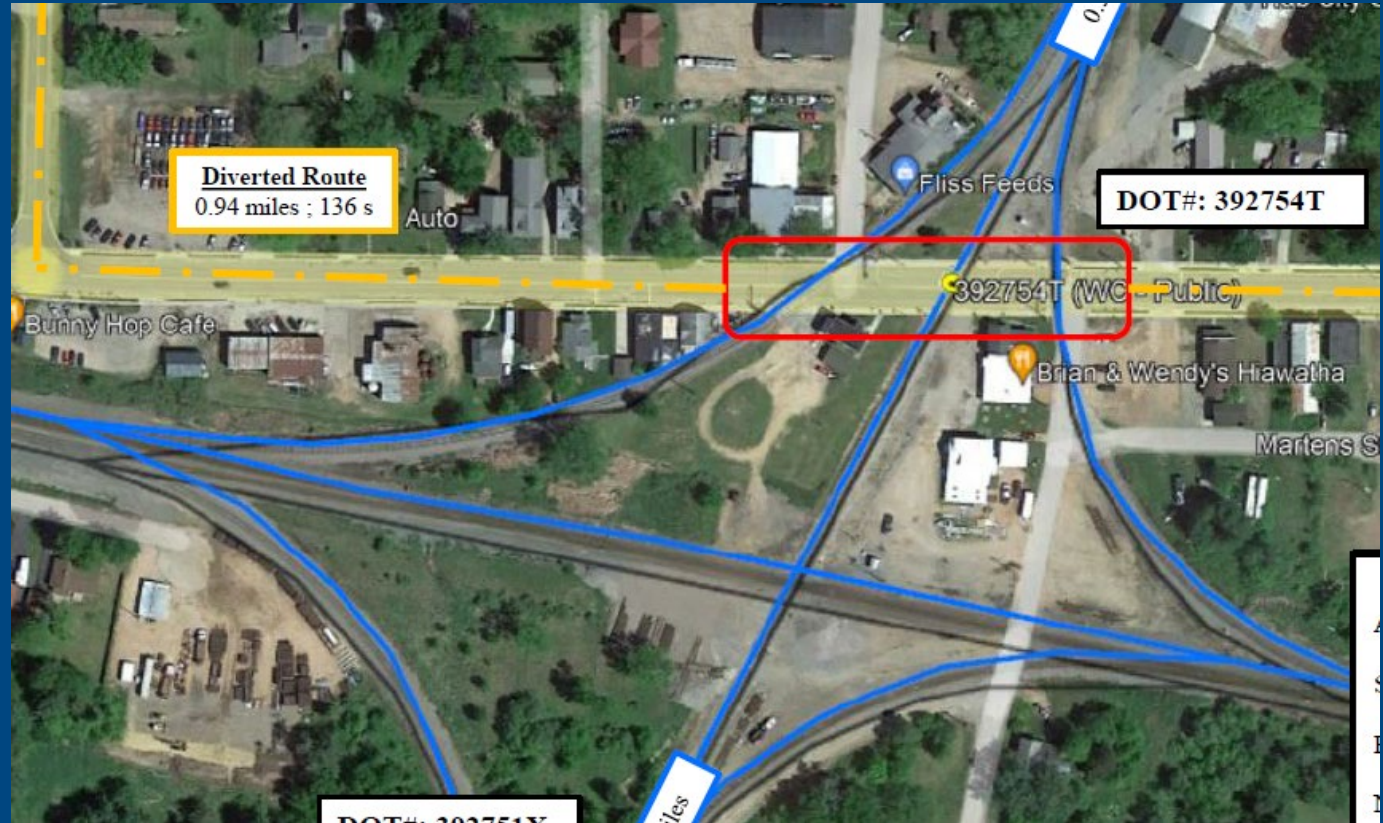
WisDOT Freight Rail Conference
November 8, 2023

Kris Sommers

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Safety, Rails and Harbors Section
Bureau of Transit, Local Roads, Rails and
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Three initiatives to discuss today....

1. Follow-up on Grade Crossing Safety Action Plan: Multi-crash crossings
2. Ped/bike rail safety plan
3. Wauwatosa/Waukesha corridors safety study (CRISI grant)



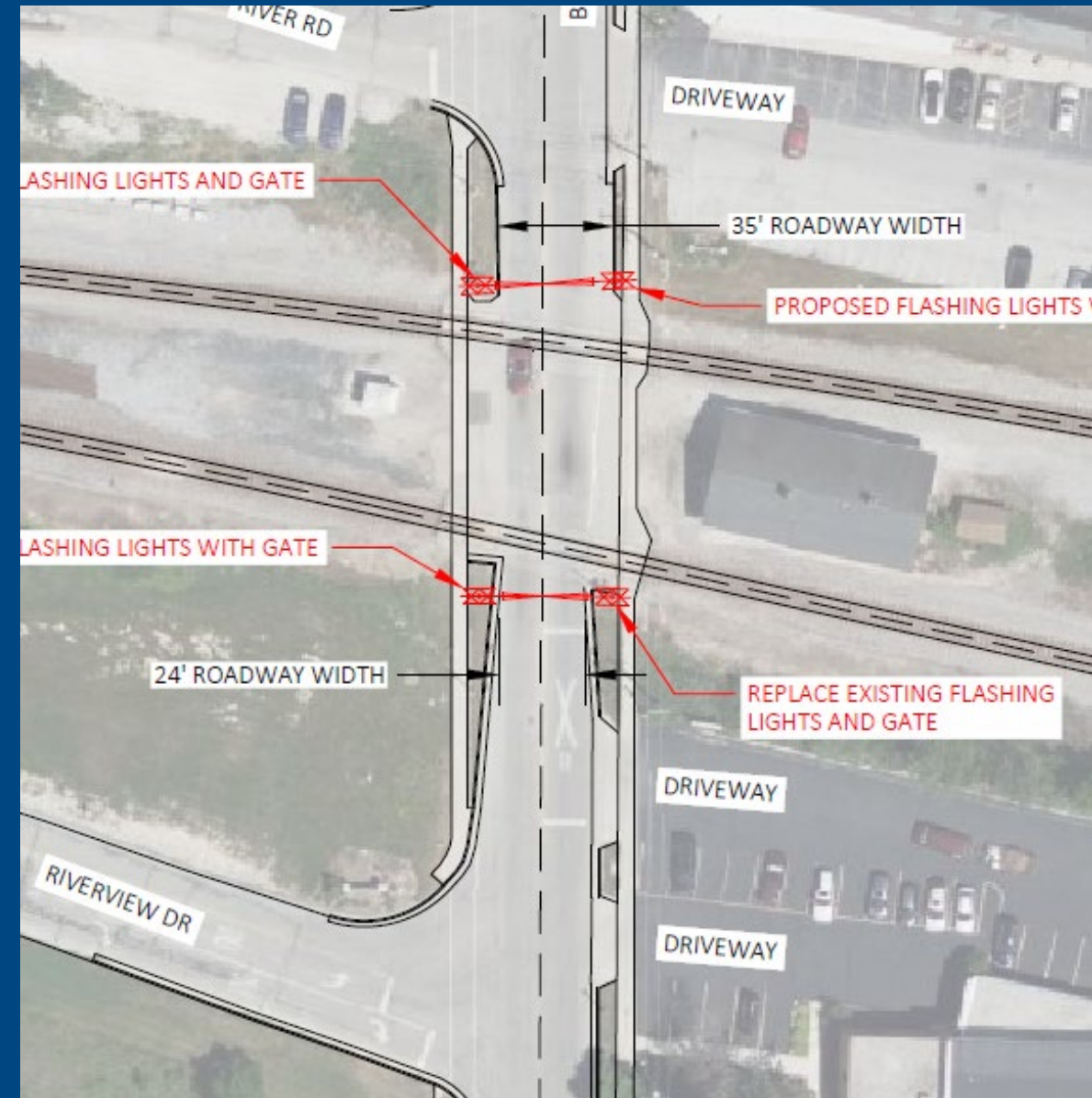
Multi-Crash Crossings

- Two or more crashes, 2016-2020
- 25 Crossings on list, 7 already w/projects
- Analyze crossing consolidation potential, existing geometry, warning devices, patterns

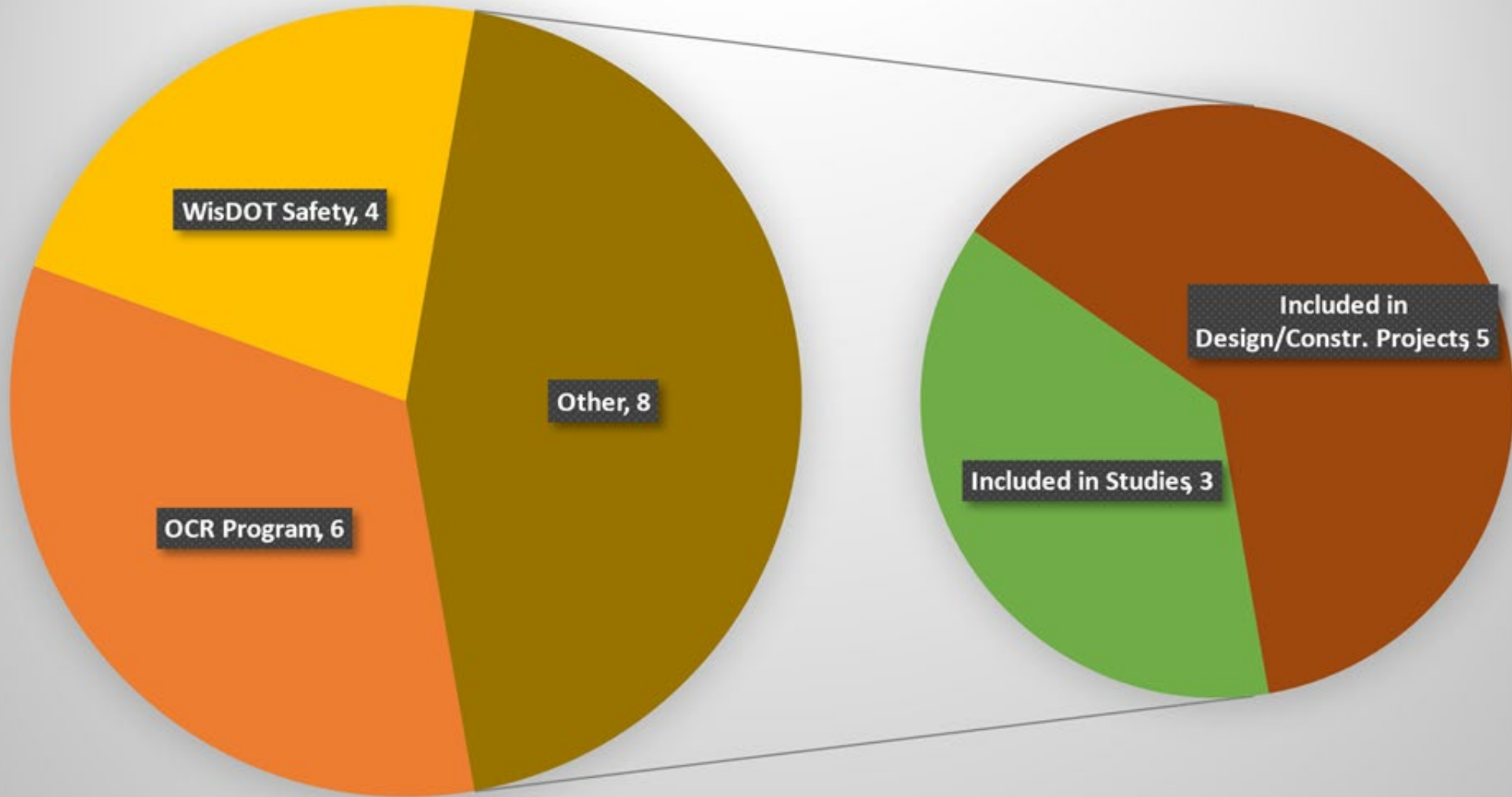


Commonalities/Patterns

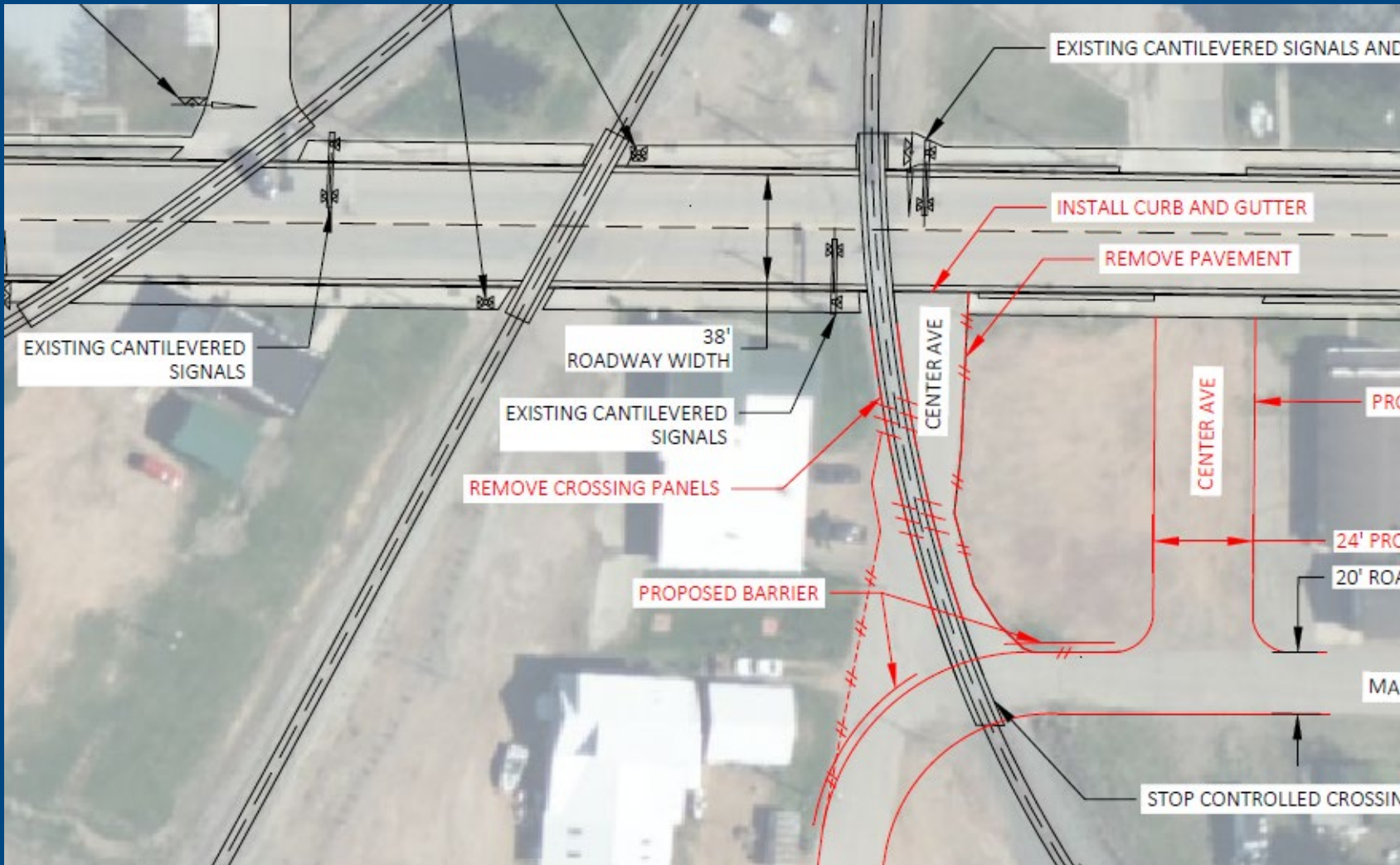
- Failure to yield at passive crossings
- Driving/riding bikes and vehicles around gates....fatal incidents
- Quiet zones....Pre-rule quiet zones
- Geometric improvements necessary: roadway realignments, medians, etc.



Multi-Crash Crossing Solutions



Multi-Crash Crossings: Next Steps



- Update multi-crash list with crashes from 2021-22
- Study implementable solutions: Junction City
- Work on project readiness



Bicycle/Pedestrian Railroad Crossing Safety Action Plan

Project Team

WisDOT

Kris Sommers

Dan Thyes

Chuck Thiede

Chris Squires

SRF Consulting

Justin Scott

Will Fenner

Justin Sebens

Chris Brown

What is the problem...why are we doing this?

- › FRA feedback on Grade Crossing Safety Action Plan: Need pedestrian/bike-centered focus



Tragedy on the tracks: Burlington mourns bicycle-riding teen struck by train

Scott Williams May 22, 2023 5



Burlington resident Tim Otto steps off his bicycle Monday and examines flowers at a makeshift roadside memorial to Jack Meyers, a teenager who was killed a day earlier when police say he rode his bicycle into the path of an oncoming train.

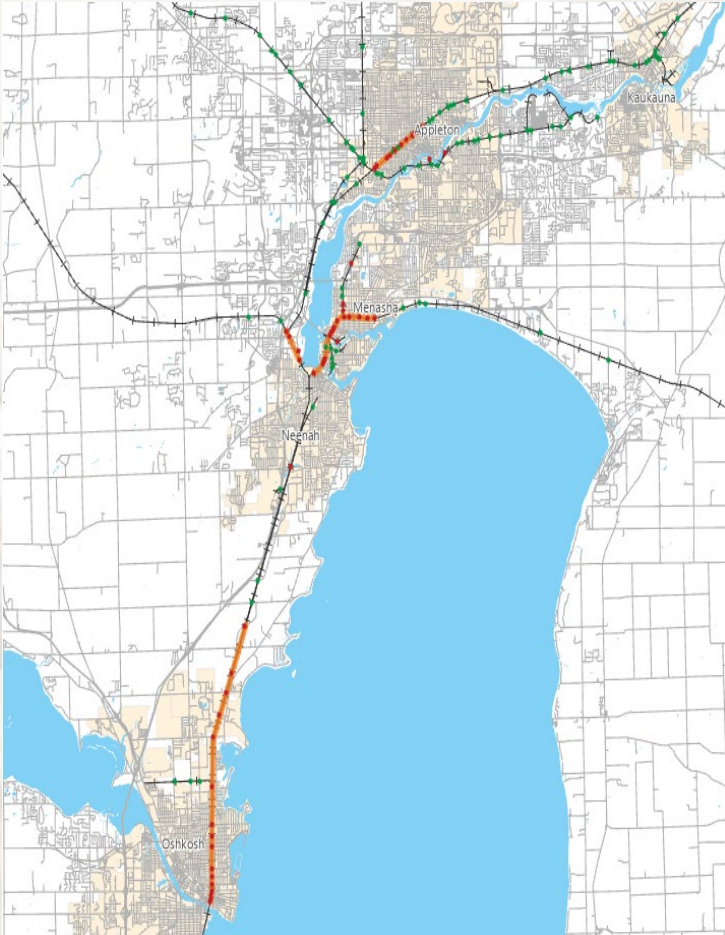
- › People can navigate spaces that vehicles cannot
- › Most efforts to improve safety focus on vehicles
- › Past incidents are not a good predictor of future crashes

Project Goals: Data

- › Estimate bicyclist and pedestrian volumes at all public at-grade railroad crossings in Wisconsin
- › Develop method to estimate risk to pedestrians and bicyclists at public at grade crossings across Wisconsin
- › Identify additional data collection methods, tools, or data sources that could be used to estimate cyclist and pedestrian volumes at all public at-grade railroad crossings in Wisconsin on a recurring basis

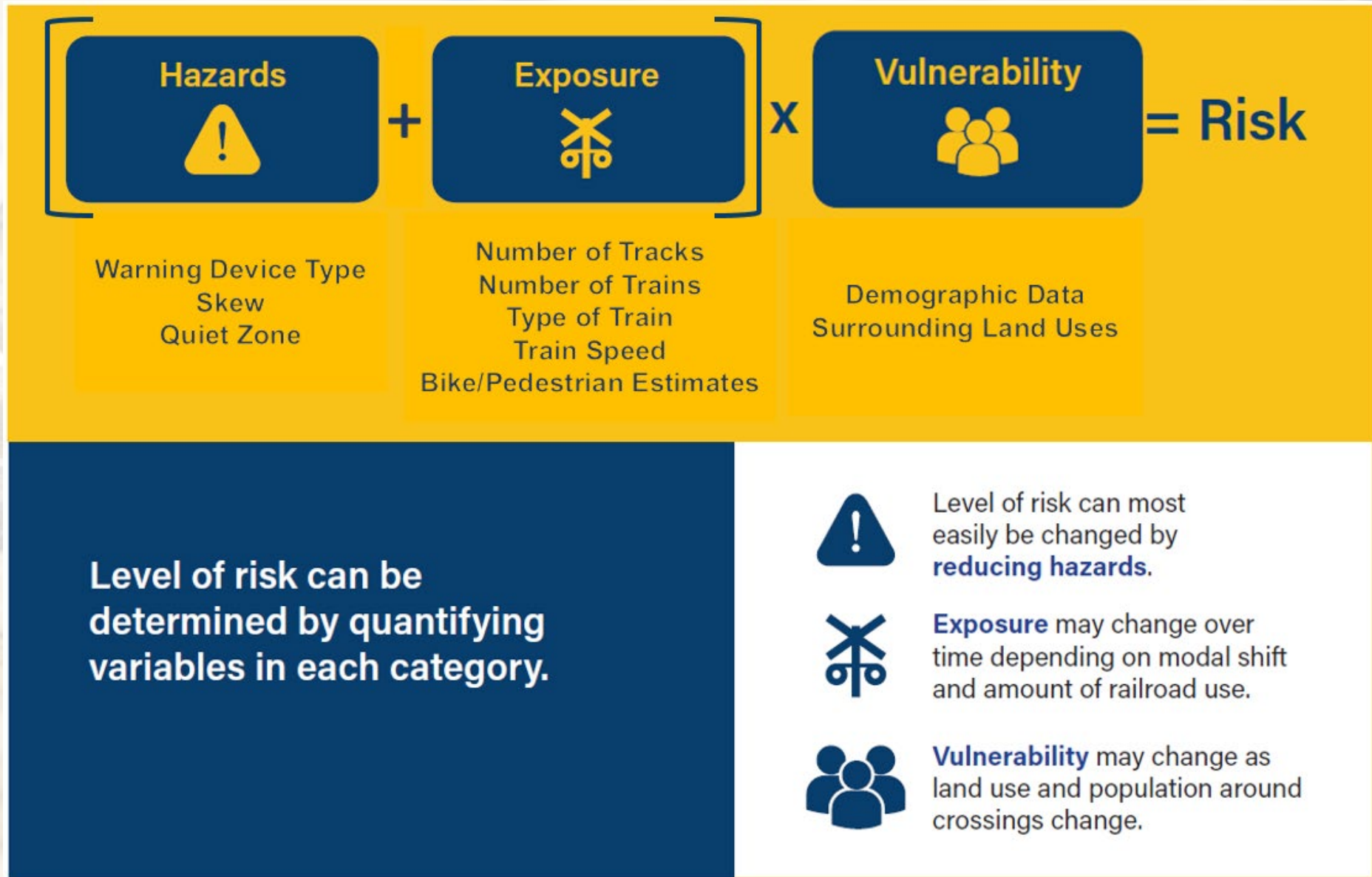


Project Goals: High-risk crossings and corridors



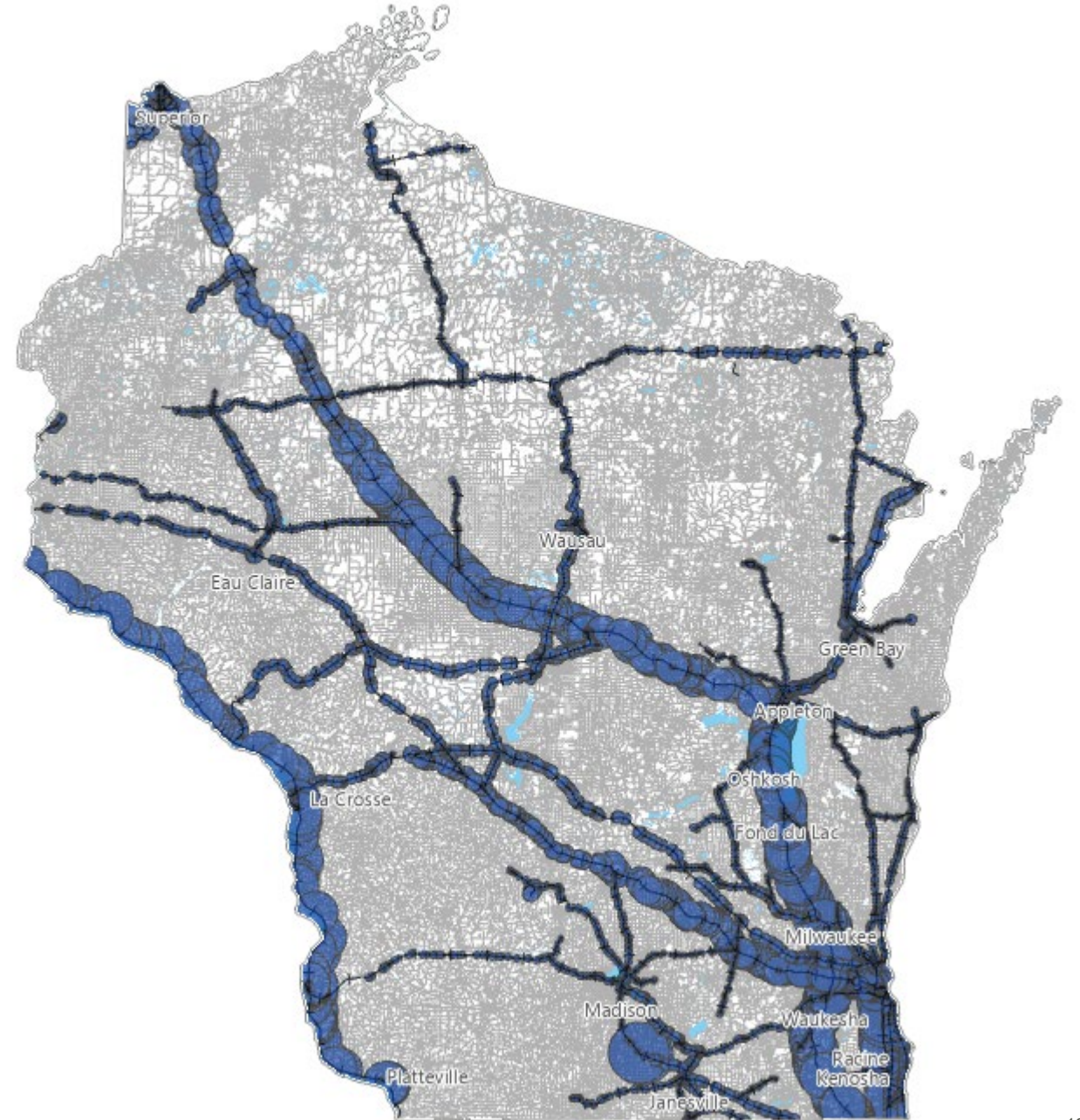
- › What is a corridor?
- › Identify corridors with elevated risk at bike/ped crossings and make suggestions to reduce risk at crossings
- › Develop a way to identify and prioritize rail corridors exhibiting elevated bicyclist and pedestrian crossing safety risk across the state
- › Evaluate corridors with elevated risk and identify opportunities and recommend solutions to improve safety for bicyclists and pedestrians

Risk Evaluation Summary



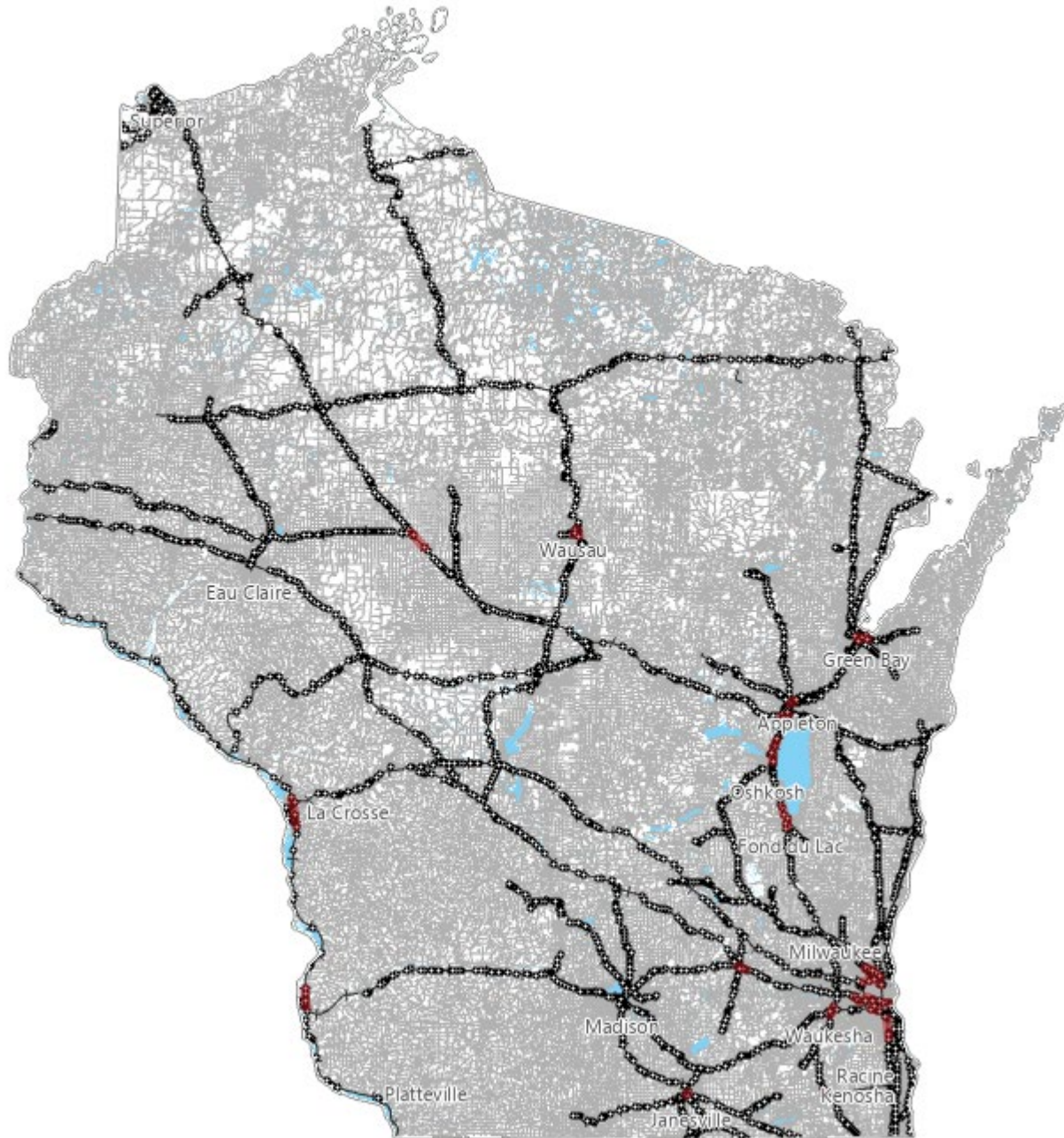
Exposure and Vulnerability: Trains per Day

- › Who do the crossings affect and why?
- › Use demographic data, surrounding land uses, trip data
- › While many crossings in Madison have many pedestrians and bike riders moving over tracks, there are relatively few and slower trains.



Narrowing Down Further

- › Looking at how identified corridors and past incidents align
- › Total possible interactions between trains and pedestrians
- › Narrowed down to 26 corridors...next step to narrow down to **top 3**





WC Neenah Sub

Number of Crossings: 18

Corridor Length: 6.5 miles

Past Incidents: 4

Trains Per Day: 30


Bike/Ped Estimates: 253

Exposure Score: 5.7


Hazard Score: 18.6

Vulnerability Multiplier: 1.6

Total Risk Score: 39.9

 Elevated Risk Corridor

• At Grade Crossings

 Recorded Conflicts

 Rail Lines



0 1 2 Miles



BNSF Aurora Sub

Number of Crossings: 7

Corridor Length: 8.4 miles

Past Incidents: 3

Trains Per Day: 32

Bike/Ped Estimates: 264

Exposure Score: 6.0

Hazard Score: 22.5

Vulnerability Multiplier: 1.3

Total Risk Score: 37.6

 Elevated Risk Corridor

 At Grade Crossings

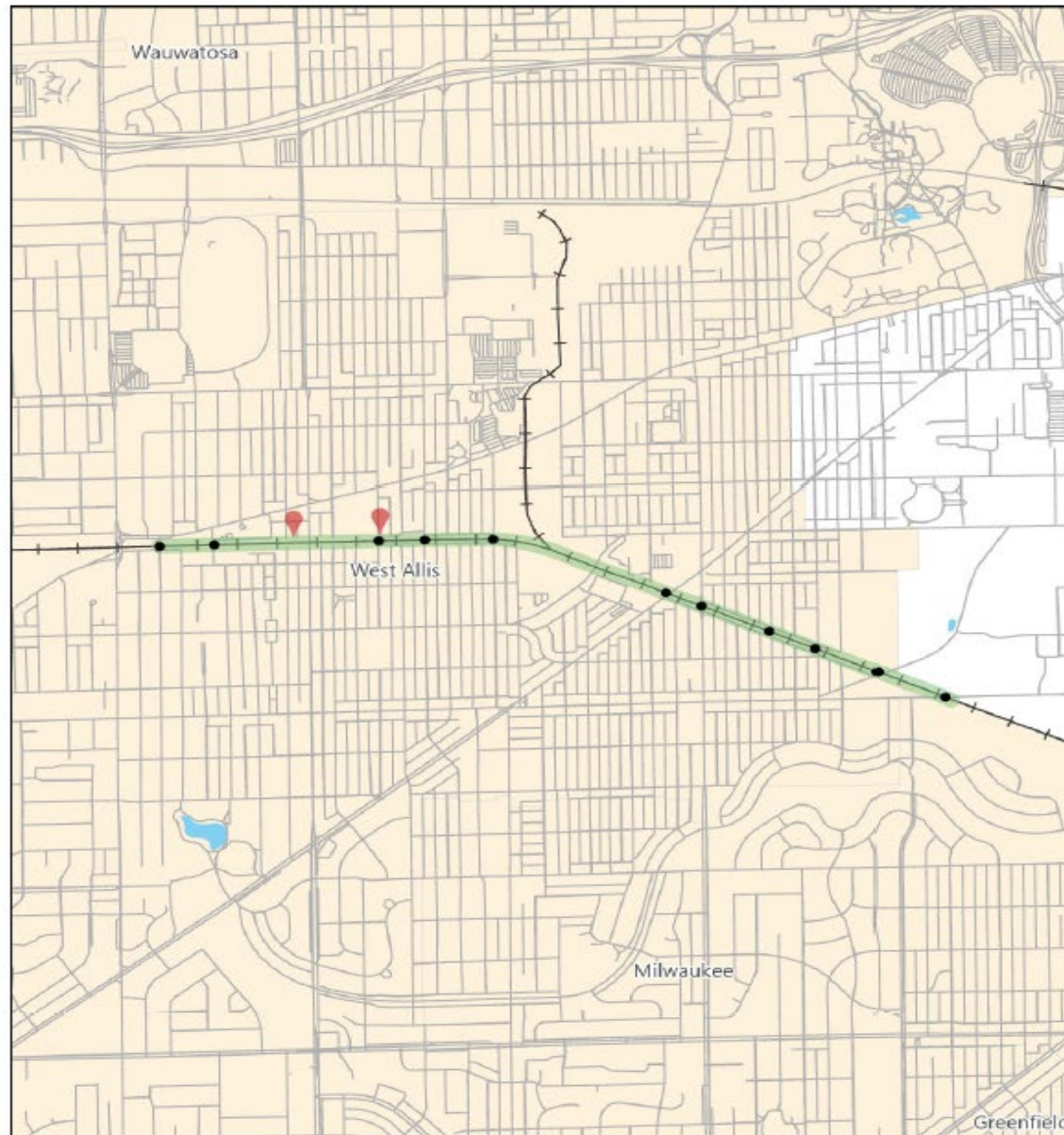
 Recorded Conflicts

 Rail Lines



0 1.5 3 Miles

West Allis



UP + Milwaukee Sub

Number of Crossings: 11

Corridor Length: 2.1 miles

Past Incidents: 2

Trains Per Day: 9

Bike/Ped Estimates: 203

Exposure Score: 6.9

Hazard Score: 19.8

Vulnerability Multiplier: 1.7

Total Risk Score: 46.3

- Recorded Conflicts
- At Grade Crossings
- Elevated Risk Corridor
- Rail Lines

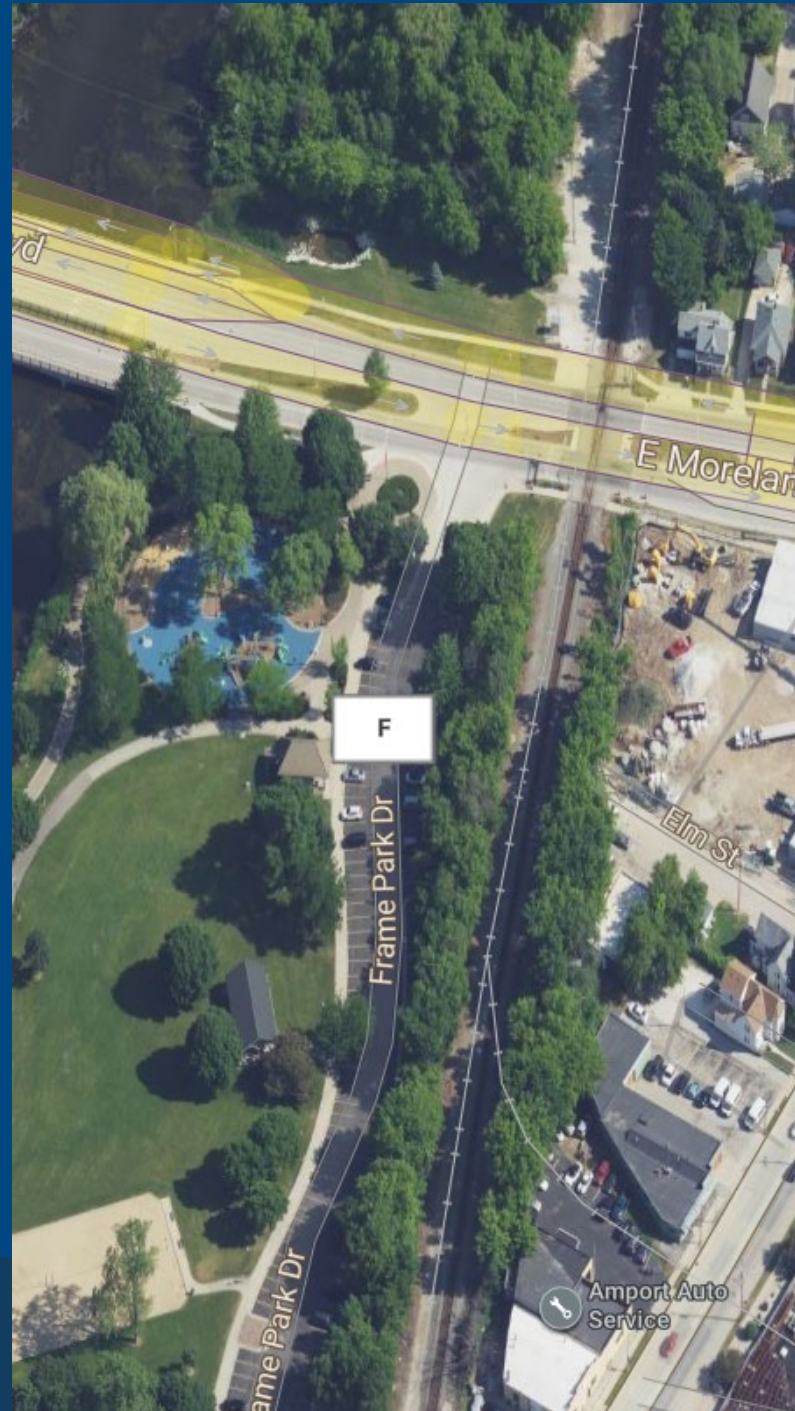


0 0.5 1 Miles

Three Corridors Selected: Next Steps

- › Conduct field evaluations at crossings within the priority corridors
- › Engage public to understand what is happening on the ground
- › Recommend safety changes to elevated risk crossings
- › Evaluate data collection and visualization tools
- › Evaluate 10 highest risk individual crossing locations; make recommendations on improvement strategies
- › Work toward specific safety studies in these three corridors that could identify implementable safety improvements
- › Identify the next three corridors to analyze



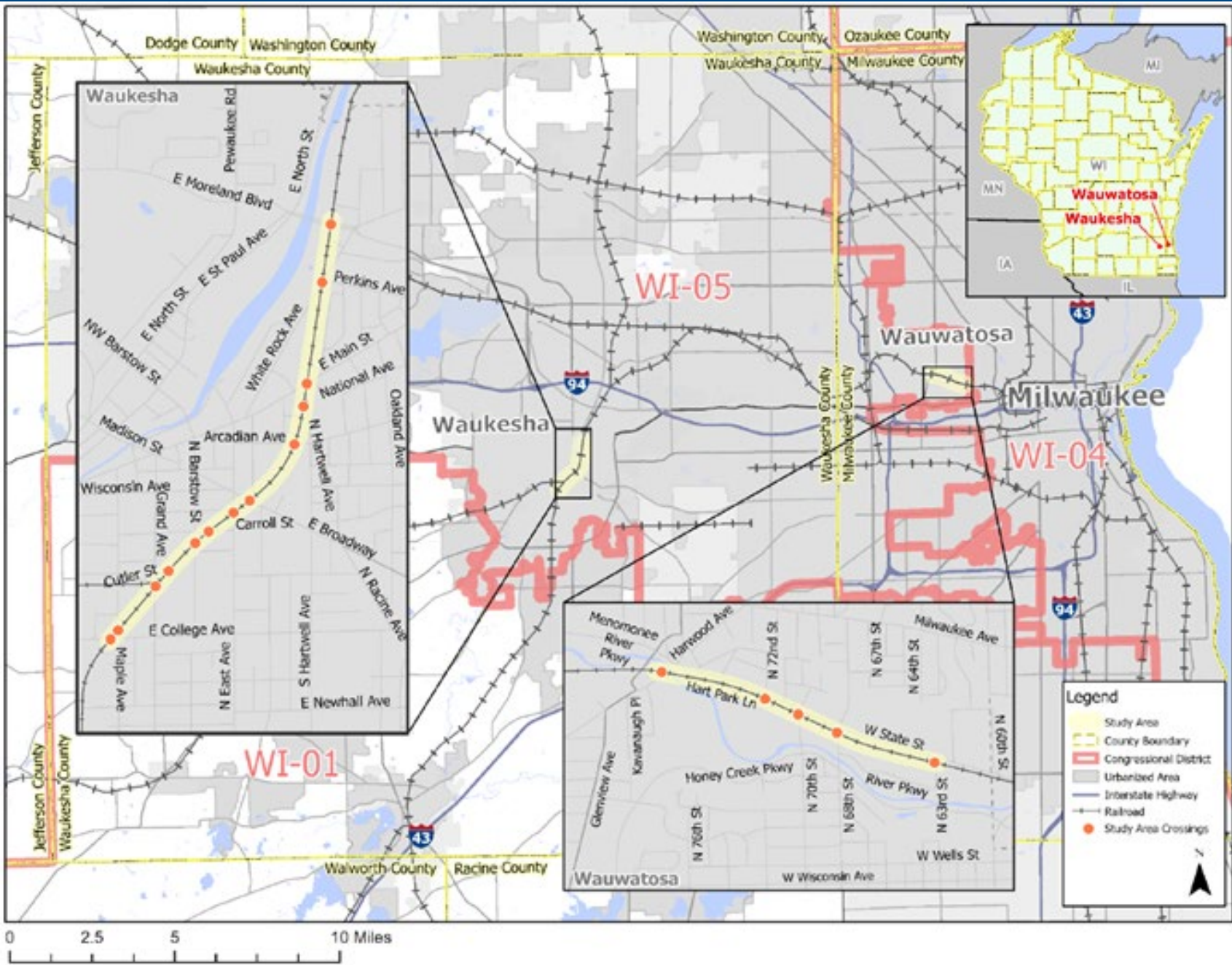


Waukesha-Wauwatosa Rail Corridor Safety Study

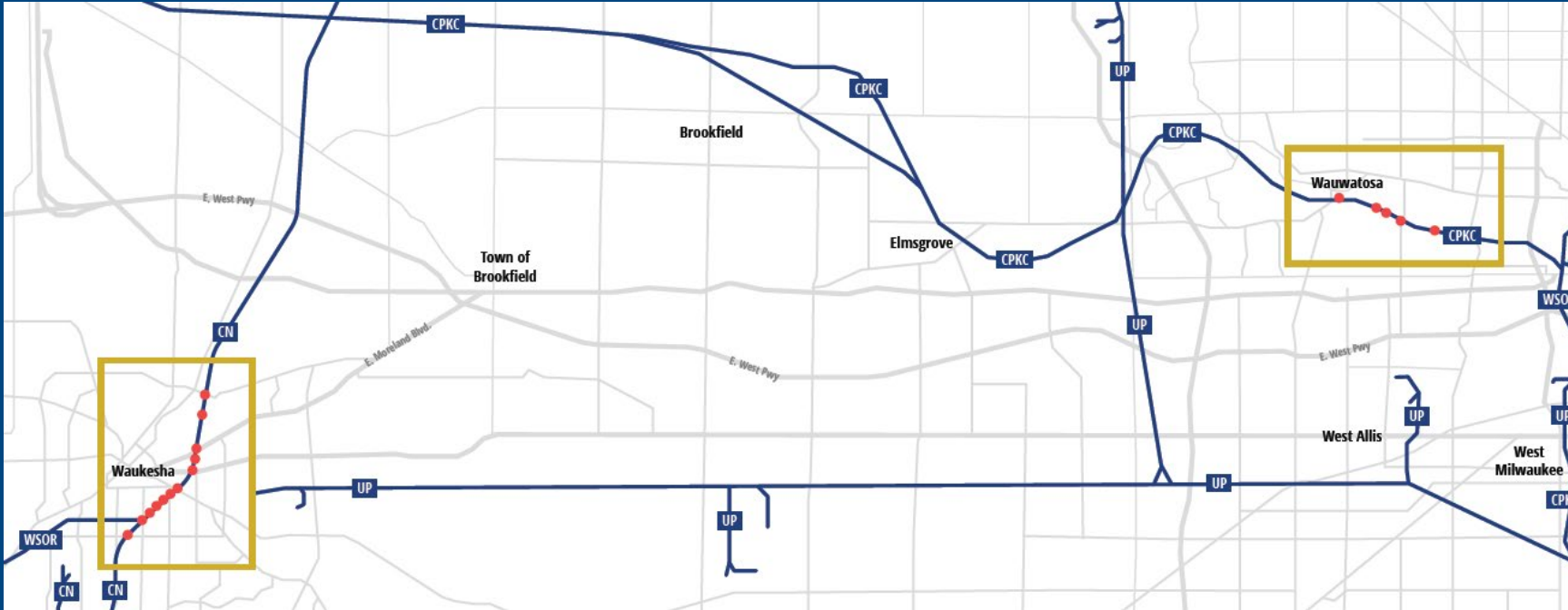


Study Corridors

- Waukesha
 - 13 Crossings (CN), 1.6-mile corridor
- Wauwatosa
 - 5 Crossings (CP), 1-mile corridor
- FY 2021 CRISI Grant awarded to study potential safety treatments
- Distinct from Waukesha Quiet Zone Reaffirmation Study

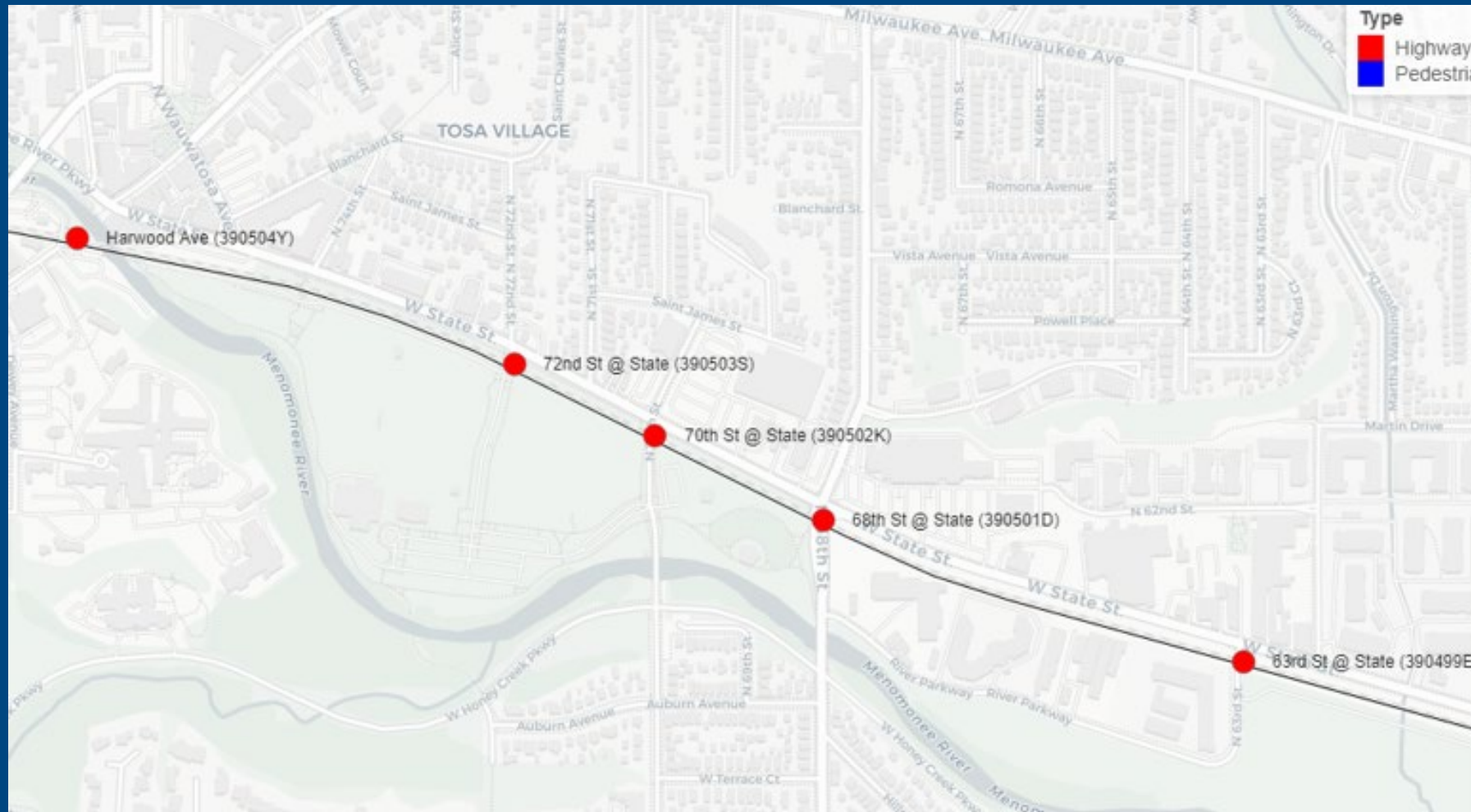


Two Different Cities, Similar Problems....



- Frequent, fast moving trains
- Injuries and deaths
- Frequent trespassing on rail corridors
- Suicides
- Quiet zones throughout corridors
- Recreational trails near to rail corridors
- Both cities have existing safety features/warning devices in place
- Many interactions: high volume of vehicles, pedestrians, bikers.....and trains!!!

Wauwatosa

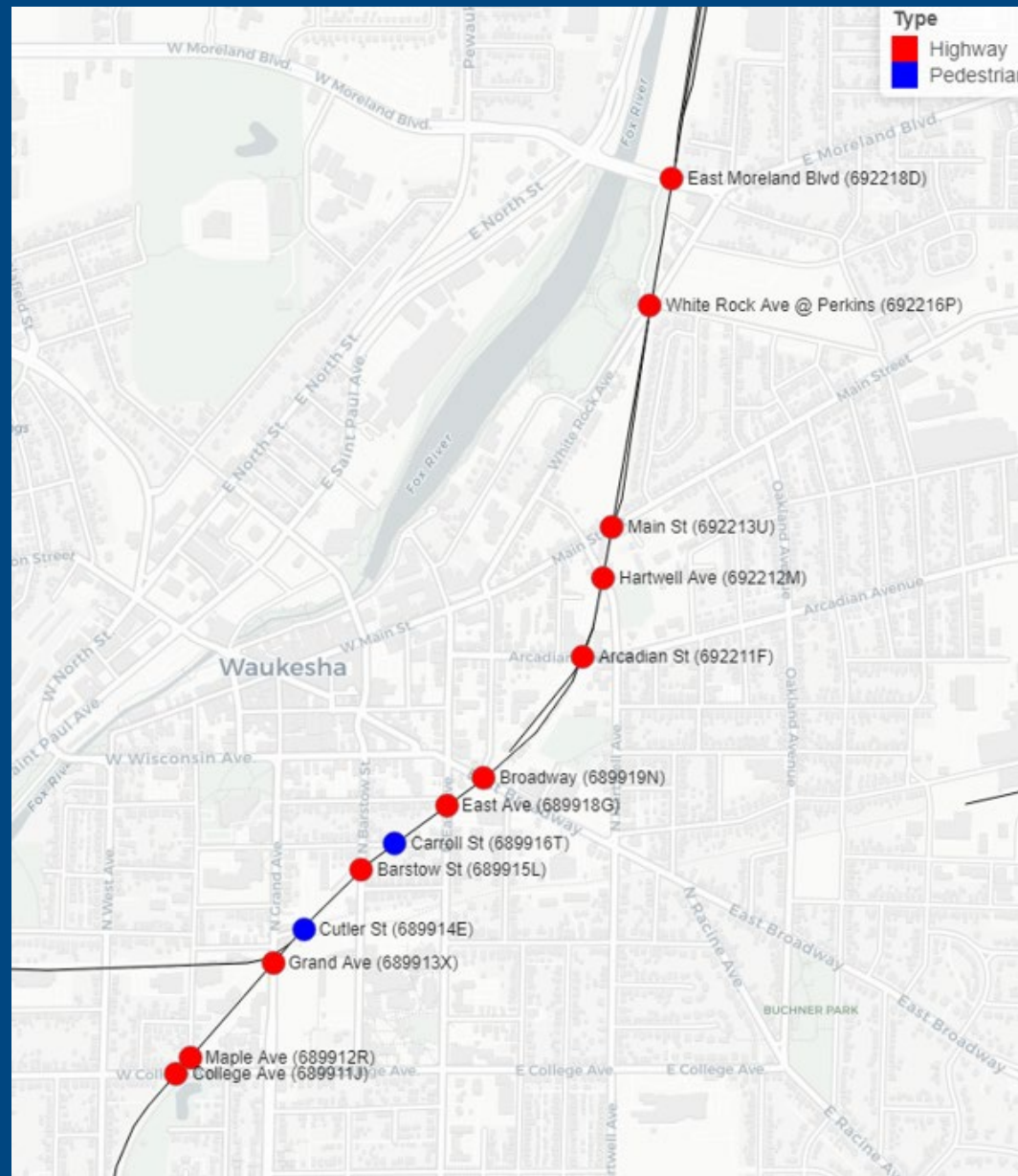


- Population 48,000
- 6 injury/fatality incidents 2012-2021
- 21 trains/day, max speed 35 mph
- Two tracks



Waukesha

- Population 72,000
- 8 incidents causing injury/fatality 2011-2020 multiple-fatalities
- 34 trains/day, max train speed of 35 mph
- High AADT: 1,750-18,700



- Grand Ave - multiple-fatalities: on FRA's hotlist
- High skews

Core Study Team and Oversight Committee

Core Study Team:

Kris Sommers (WisDOT)
Chris Ryan (HDR)
Chris Quesnell (Lakeside Engineers)
Joanna Bush (Mead and Hunt)
Chuck Thiede (WisDOT)
Dan Thyges (WisDOT)

Additional WisDOT:

Lisa Stern (Chief, Rails and Harbors)
Brian Brunmeier, Maithili Dey (Grade Crossing
Safety Engineers)
Jason Kazmierski, Rachel Nuetzel (SE
Region Railroad Coordinators)
Chris Squires (Statewide Bike/Ped)

SEWRPC: Ethan Johnson

Wauwatosa: David Simpson, Mike Steiner, Eva Ennamorato, Mike May

Waukesha: Katie Jelacic, Derrin Wolford

Canadian National: Matt Turner, Gene Meyer

Canadian Pacific: Brian Osborne, Greda Lynn

FRA: Tom Domres, Franceso Jacobini

OCR: Heather Graves

Amtrak: Conrad Baker, Adam Kulwicki, Chase Aiken-Brown, Kelley Carr, Martin Sandoval, Jennifer Bastian

Carroll University: Michael Bagin



What's been done so far?



- Desktop Review of Best Practices and Recent Studies
- Oversight Committee meeting #1
- Field diagnostics
- Analysis, review, then conceptual solutions
- Oversight Committee meeting #2

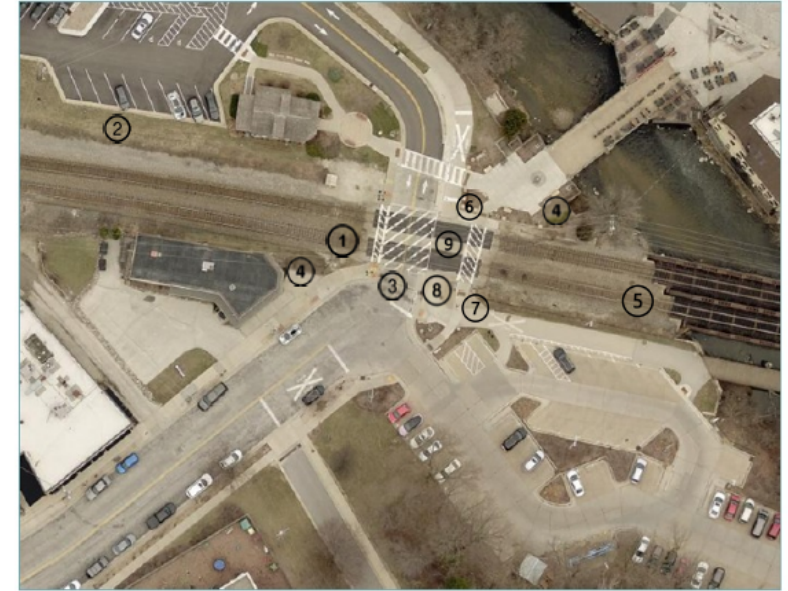


Diagnostic Summary Notes

- Field review of every crossing in both corridors
- Identifications of issues/concerns not visible through data analysis alone
- Common issues/notes:
 - Recommendations for tactile warning strip relocation
 - Visibility of warning devices and signage
 - Feasibility of “Another Train Coming” signs
 - Discussion of pedestrian gates and potential “trapping” issues, and maintenance

Field Notes: Harwood Ave / 390504Y

Watertown Subdivision, MP 90.65 - Wauwatosa, WI (Milwaukee County)



- ① There aren't any 'Do Not Stop On Tracks' signs at this crossing. Should be installed/added as queues of vehicles coming into the parking lot (particularly during the farmers market) are stopping on the track.
- ② The city installs snow fencing along the north side of the tracks west of the crossing to stop trespassing during some community events. Can permanent fencing be installed to prevent people from leaving the parking lot and heading straight across the tracks?
- ③ There is a lot of pavement marking at the crossing for the pedestrian crossings, in the vehicular crossing area, but none in the bike crossing area. Does this paint add to the confusion? Would less be more?

Replace pavement markings:

- Different colors to indicate biking path (green) vs. pedestrian path.
- Marking to separate biking from pedestrian path on the NB approach

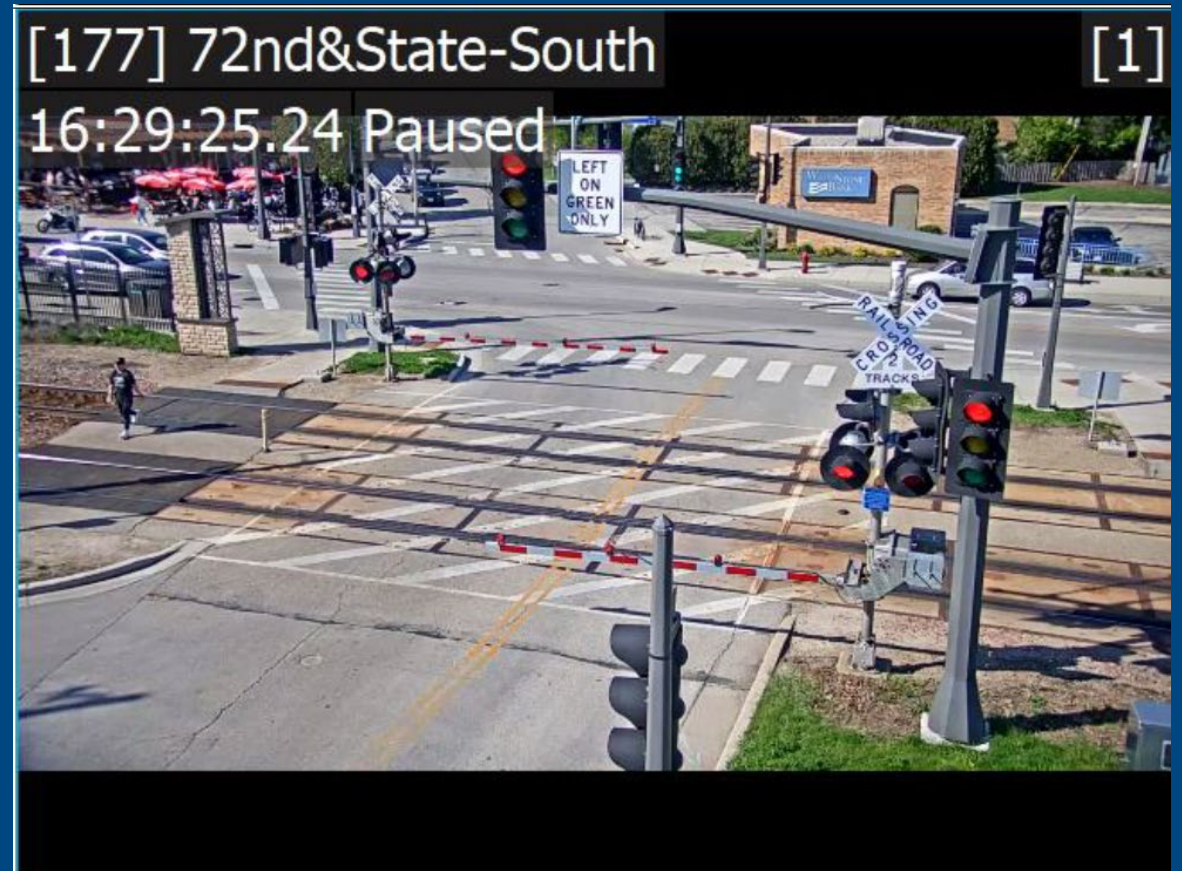
- ④ There are obstructions that are blocking the line of sight for bicycles and pedestrians. In the northeast corner, it impacts the southbound peds/bikes and in the southwest corner, it affects the northbound peds/bikes.
- ⑤ Anti-trespassing panels between the crossing and the bridge could help stop people from using the bridge for photographs (wedding/graduation photos/etc.)

Additional flashing light mast in the NE quadrant. Approach angle and existing signage blocks much of the crossing from view until pedestrians are nearly at the crossing.



Wauwatosa Video Review

- Video collected between May 9 and May 11
- Instances of crossing before train arrival are the most concerning
- May be related to longer than recommended warning time duration (>40 seconds)

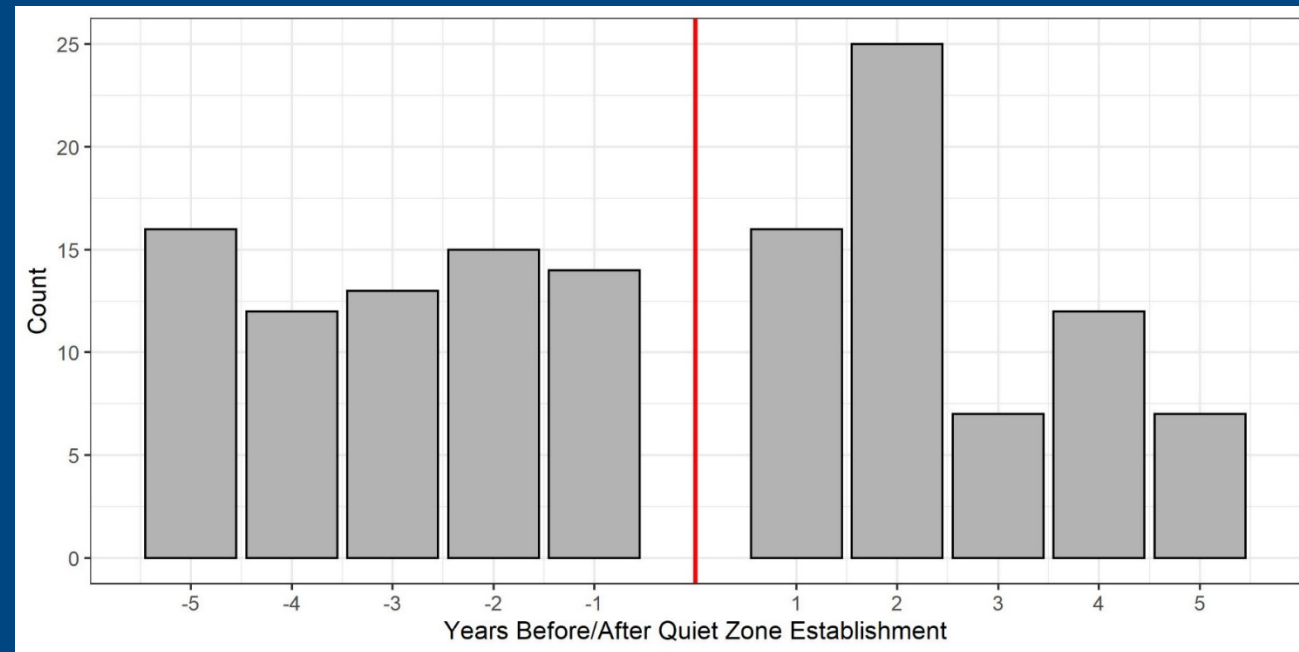


	68 th	70 th	72 nd
Peds crossing between gate down and train arrival	7	1	7
Peds crossing after train, before gate up	11	3	9
Vehicle incidents	4	5	4



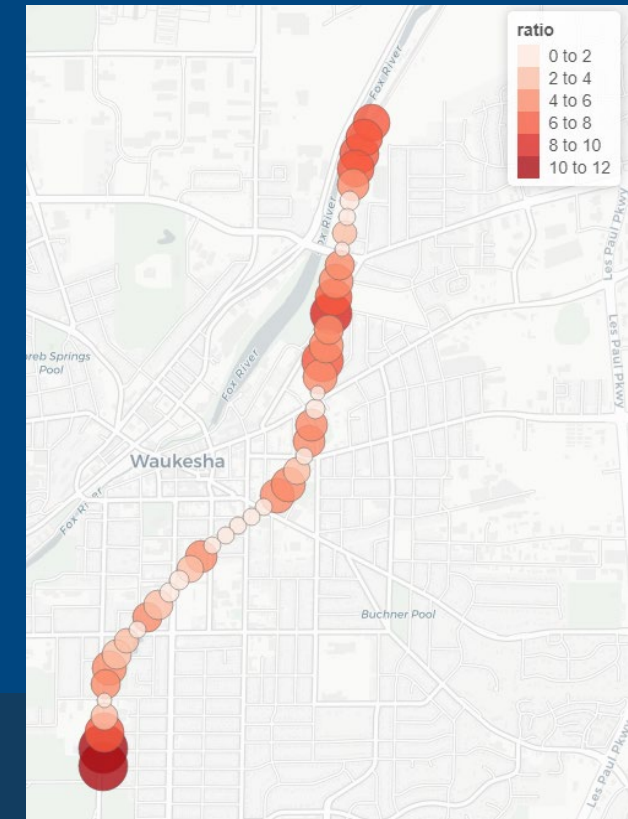
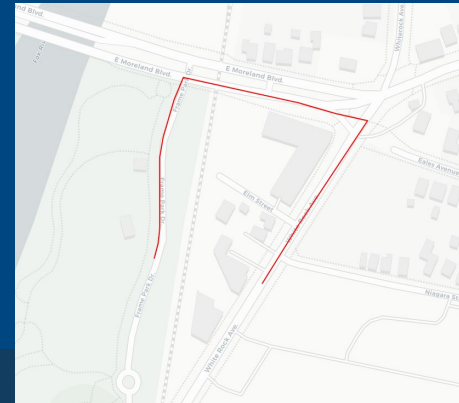
Quiet Zone Impacts

- Wisconsin is 3rd for number of quiet zone crossings after Texas, Missouri
- 623 Wisconsin public highway-rail grade crossings designated as quiet zones
- Based on the review of national, state, and local data, the implementation of a quiet zone is likely a contributing factor to increased risk for pedestrians and bicyclists at highway-rail grade crossings
- Additional pedestrian-focused improvements should be implemented to counteract this risk



Education/Enforcement Recommendations

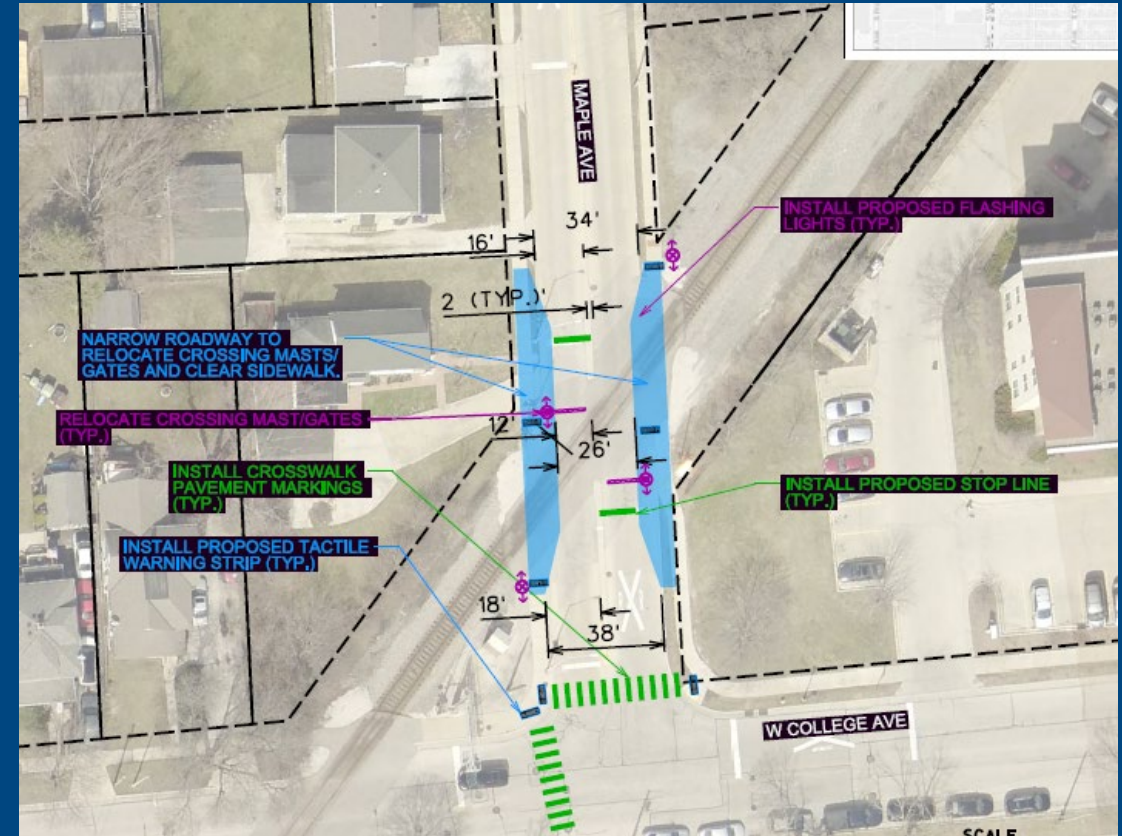
- Partnership with Operation Lifesaver to hold periodic media events and training or outreach programs:
 - Booth at farmer's market
 - Presentations to local schools
- Integration of crossing and trespassing safety materials into school information packets (grade school and university level)
- Coordination with local law enforcement and railroad police to monitor areas during specific times or events
 - Saturdays between noon and 6pm
 - Halloween, farmer's markets, music festivals, etc.



Engineering Recommendations

- Additional flashing light only masts placed in the pedestrian field of view
- Additional sidelights/backlights
- Sidewalk and tactile warning strip improvements
- Another Train Coming signs (Wauwatosa Only)
- Tighten up the advance warning time for preemption
- Roadway modifications
- Fencing

	Minimum	Average	Maximum
68 th Street	26.24 sec	53.29 sec	79.17 sec
70 th Street	27.71 sec	41.39 sec	72.75 sec
72 nd Street	29.81 sec	46.75 sec	79.88 sec



Ped view example: Wauwatosa.....distance view

A

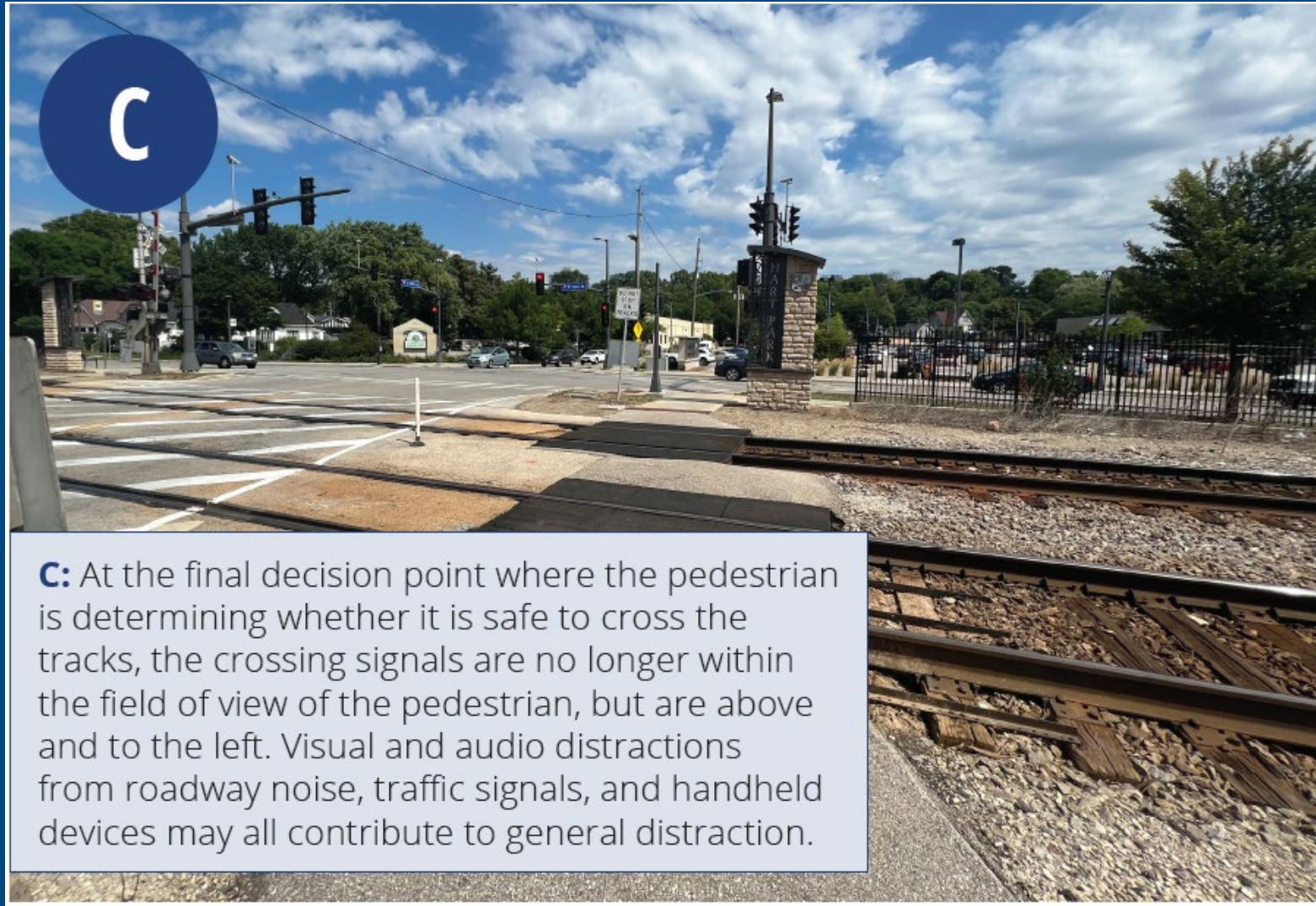


A: At a distance, the rail crossing signal and signage are visible to pedestrians as they approach. The signals are partially obstructed by the traffic signal and the Do Not Stop On Tracks signage.

Ped view example: Wauwatosa...nearer to crossing



Ped view example: Wauwatosa....at decision point



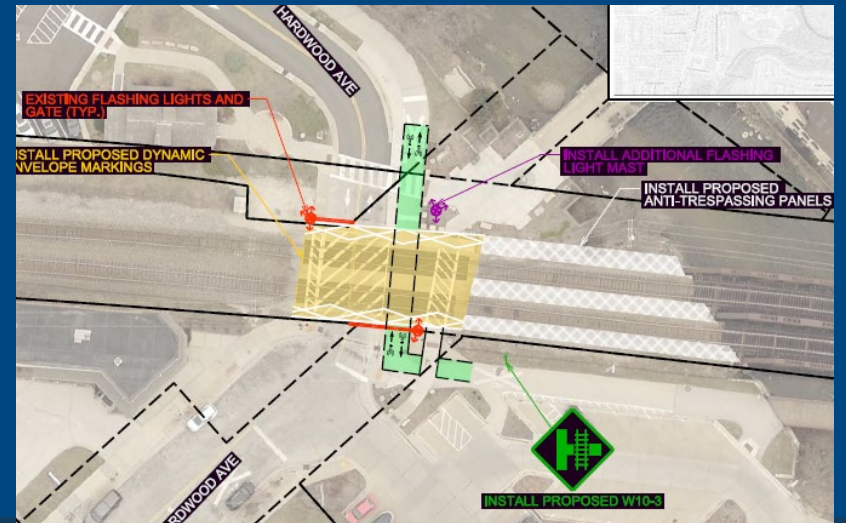
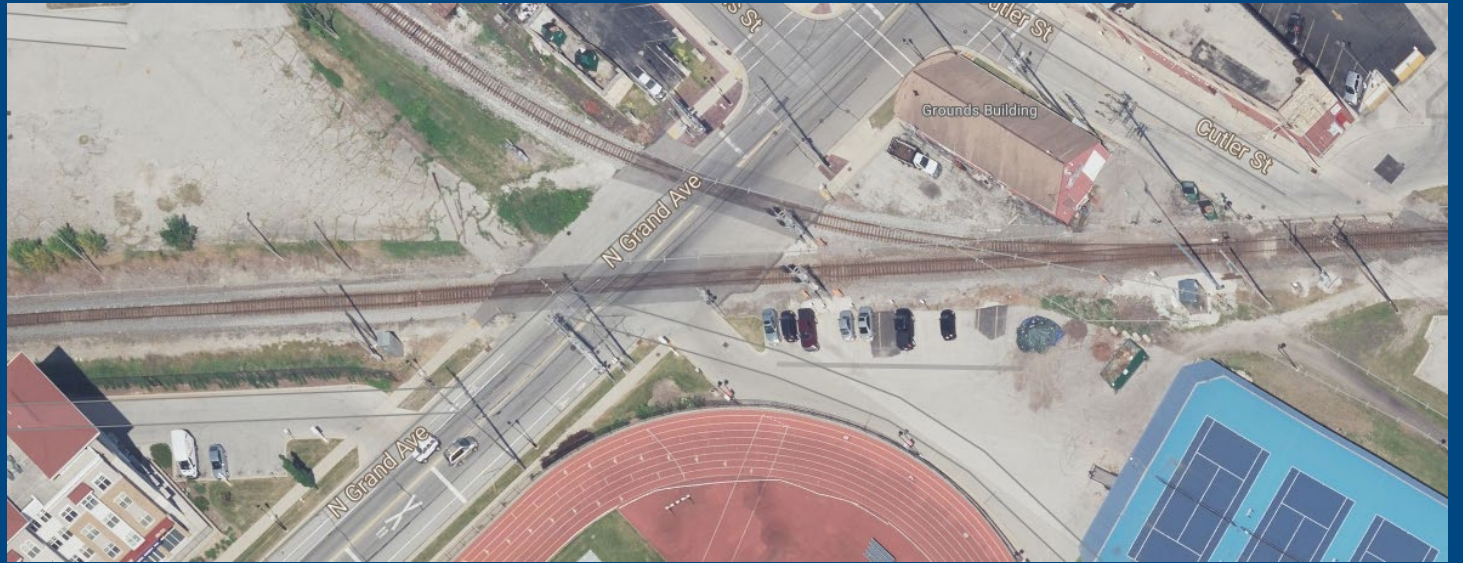
C: At the final decision point where the pedestrian is determining whether it is safe to cross the tracks, the crossing signals are no longer within the field of view of the pedestrian, but are above and to the left. Visual and audio distractions from roadway noise, traffic signals, and handheld devices may all contribute to general distraction.

Ped view example: Wauwatosa...proposed new signal



Next steps....

- Mid December: public information meetings
- Present to Oversight Committee (meeting #3)
- Final Report with recommendations
- Work on implementing solutions



Questions?



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