



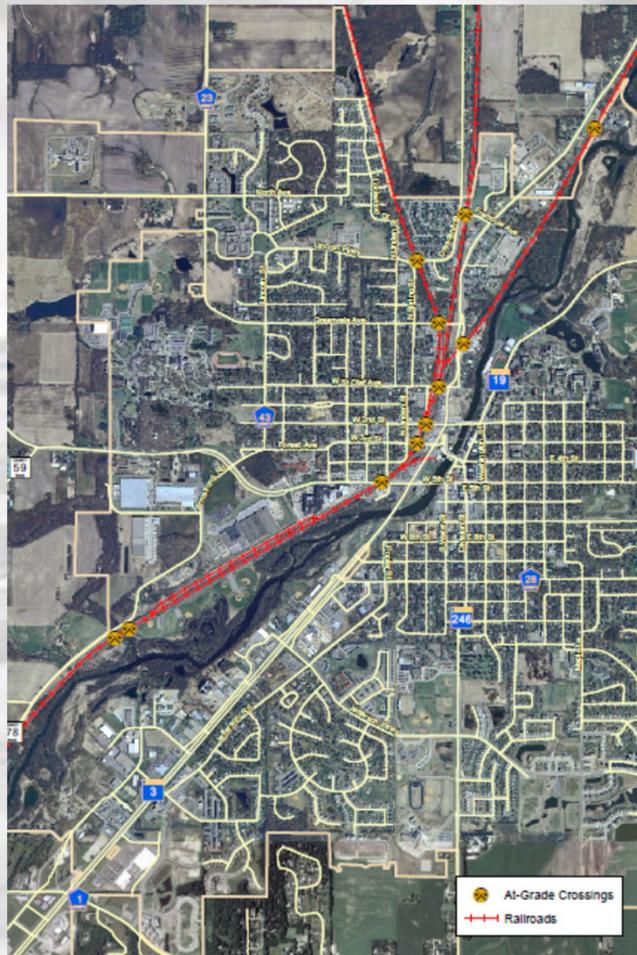
NORTHFIELD QUIET ZONE ASSESSMENT



January 4, 2022



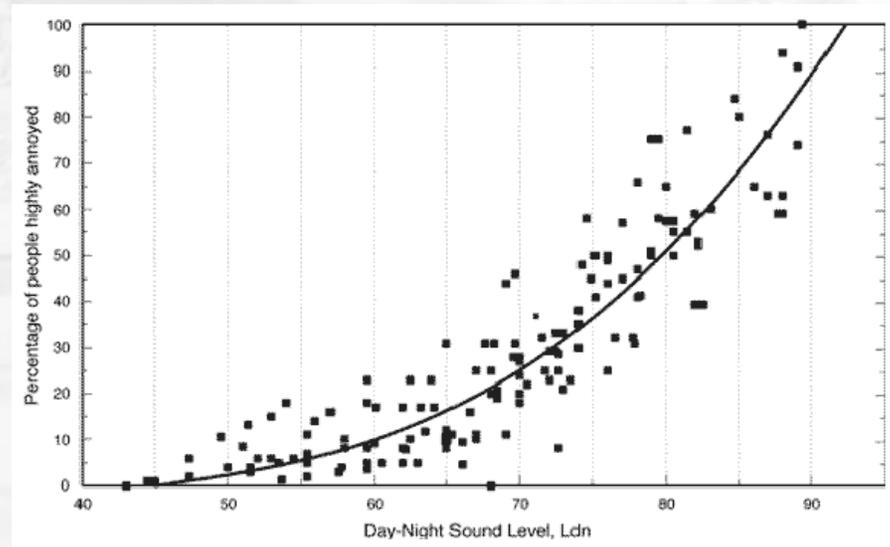
Northfield Railroad Crossings



- Three different rail lines on the north side
- UP Mainline primary focus
- Progressive RR low volume track

What is a quiet zone?

- A section of railroad where the routine sounding of locomotive horns is not allowed



Minimum Requirements

- Quiet Zone must be at least 1/2-mile long and include all crossings within the quiet zone limits
- All public grade crossings must meet pre-qualifying criteria:
 - Gates and flashing lights
 - Power-out indicators
 - Constant warning time detectors

Quiet Zone Risk Levels

- Quiet Zone Implementation based on risk analysis
- DOT Accident Prediction Model
 - Highway volumes and speed
 - Rail volumes and speed
 - Crossing surface and geometry
 - Previous crash history (5 years)
 - Estimated cost by crash type

Quiet Zone Risk Levels

- Nationwide Significant Risk Threshold (NSRT)
 - National average of risk for all crossings in the U.S.
 - Adjusted annually (Current level = 15,488)
- Risk Index With Horns (RIWH)
 - Existing conditions with horns
- Quiet Zone Risk Index (QZRI)
 - Risk level after the corridor is adjusted for the lack of a horn and increased safety improvements

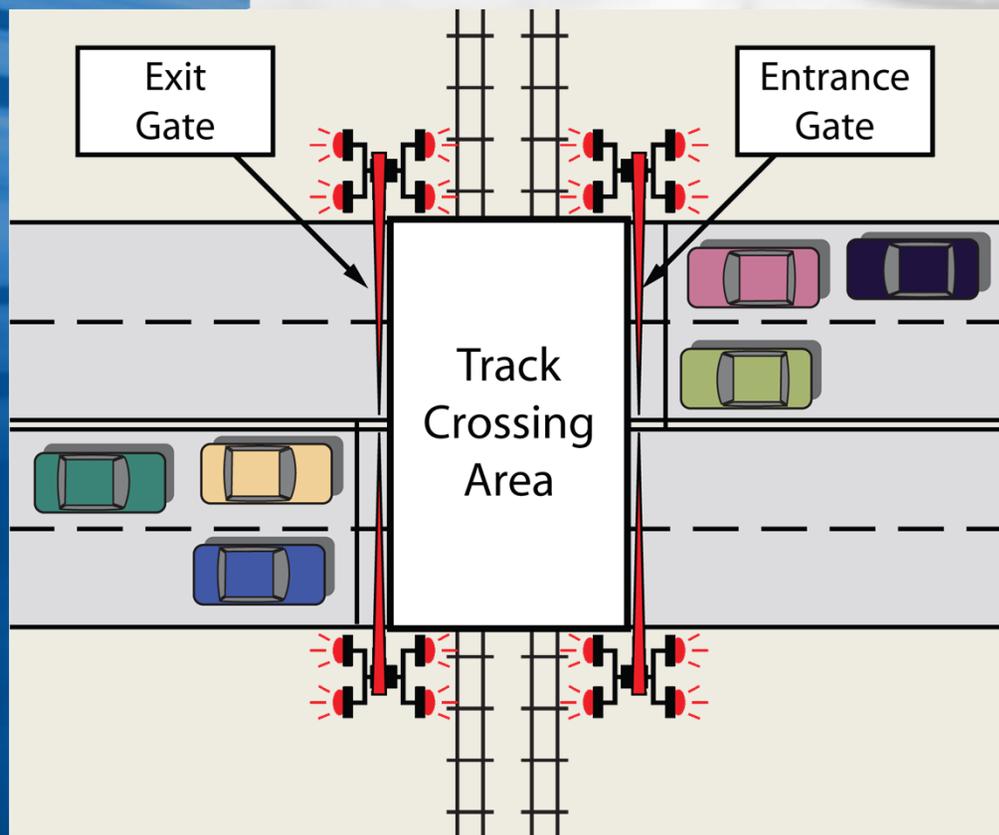
Quiet Zone Risk Levels

- QZRI reduced with safety improvements
- QZRI must be below RIWH or NSRT
- If QZRI below RIWH, then exempt from changes in NSRT and annual risk-level recalculations

Supplementary Safety Measures (SSMs)

- Four-quadrant vehicle gates
- Medians/channelization devices
- Closure (temporary or permanent)
- One-way street
- Wayside horns

Four-Quadrant Vehicle Gates

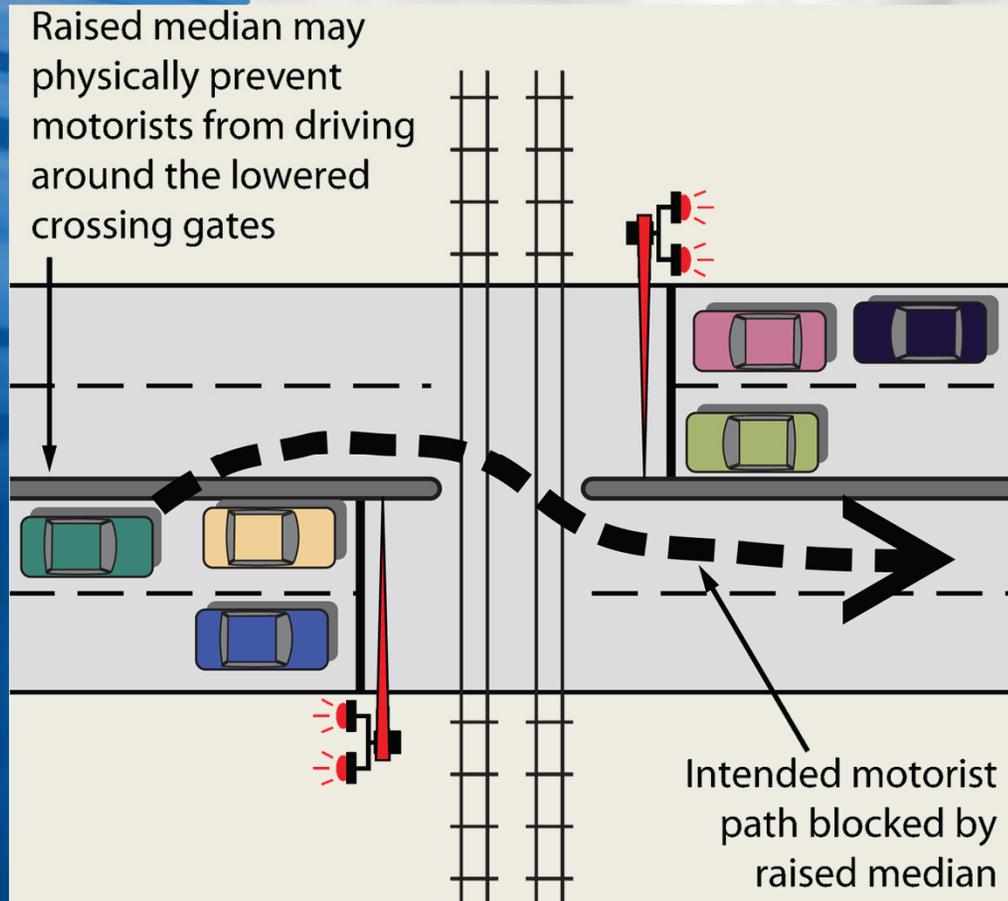


- Cost w/ detection = \$700K
- Railroad agreement
- Maintenance costs = \$7K annually
- Railroad controls:
 - Installation requirements
 - Construction schedule
 - Cost
- No access impacts
- 77-82% risk reduction

Four-Quadrant Gate Example



Non-Traversable Medians/ Channelization Devices



- Cost = \$10 - 100K
- Minimal maintenance costs
- City controls:
 - installation
 - scheduling
 - Cost
- 75-80% risk reduction

Non-Traversable Median Example



Channelization Device Example



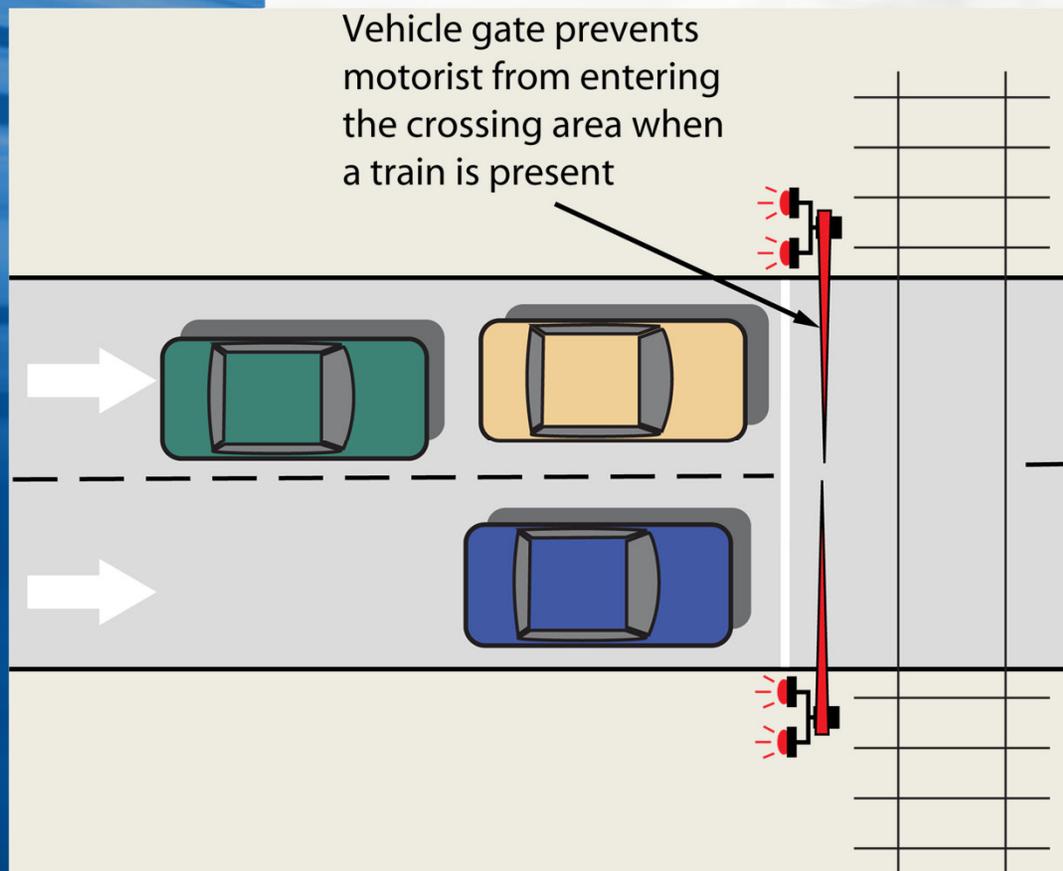
Channelization Device Example



Crossing Closure



One-Way Street



- Costs variable
 - Gate relocation?
 - Street conversion?
- Typically done as one-way pairs
- 82% risk reduction

Wayside Horns



- Cost w/ detection = \$100K
- Annual maintenance costs = \$5K
- Stationary horn sounded in place of train horn
- Railroad installs train detection system – requires RR Agreement
- No access impacts
- Less expensive than four-quadrant gates
- Equal risk to train horn

Diagnostic Meeting

- Site visit to review 13 RR crossings in and around the City of Northfield
- Identify Potential Crossing Improvements
- Representatives from:
 - City staff
 - Railroad Federal Railroad Administration (FRA)
 - State Department of Transportation
 - SRF Consulting Group

Crossings Must Meet FRA Requirements

- Active warning devices needed at all crossings
 - Flashing lights
 - Vehicle gates
 - Constant warning time
 - Power out indicators
- Several crossings currently deficient
 - UP crossings include: CR 96, 2nd Street, 3rd Street, Sechler Park
 - All PGR crossings

Recommended Crossing Improvements for Union Pacific RR

- Sechler Park and Compost Site eliminated from QZ due to QZ Rule requirements
 - Can't end a QZ on a private crossing and need minimum $\frac{1}{4}$ mile spacing between crossings
- Medians Improvements at the following:
 - Hwy 19/5th Street
 - 3rd Street (currently in place)
 - Fremouw Avenue

Recommended Crossing Improvements for Union Pacific RR

- Quiet zone would include crossings from Fremouw Avenue to 5th Street/Hwy 19
- Risk index below current level with horns sound (safer than current conditions)
- Exempt from fluctuations in National Average (NSRT)
- Updated gate funding from MnDOT for 2nd and 3rd Street crossings
- City's only cost would be medians on Fremouw Avenue (\$100K)

Recommended Crossing Improvements for Progressive Railroad

- Quiet zone implementation by meeting minimum requirements
 - Flashing lights
 - Vehicle gates
 - Constant warning time detection
 - Power out indicators
- Estimated cost: \$250K/crossing (\$1M total excluding CR 96)
- Lower priority given minimal train traffic



THANK YOU!

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