Minot QZ Assessment Crossings
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

Vehicle gate prevents motorist from entering the crossing area when a train is present.
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 all 8 CP RR crossings
- Identify Potential Crossing Improvements
- Representatives from:
  - City
  - Railroad Federal Railroad Administration (FRA)
  - State Department of Transportation
  - Railroad
3rd Street SE: Four-Quadrant Gates
Central Avenue E: 49’ west, 100’ east
3rd St/Amtrak Depot: 80’ North, 60’ South
Recommended Crossing Improvements

• 3rd Street SE
  – Four-quadrant gates due to driveway implications
  – Estimated Total Cost: $402,000

• Central Avenue E
  – Medians
  – Estimated Total Cost: $103,000

• 3rd Street/Amtrak Depot
  – Gates and Medians
  – Estimated Total Cost: $390,000

• Total Estimated Project Cost: $895,000
Canadian Pacific Quiet Zone Summary

• One Quiet Zone for the entire Canadian Pacific RR through Minot
  – Includes crossings at 8\textsuperscript{th} and 9\textsuperscript{th} Avenue SE
  – Downtown crossings (3\textsuperscript{rd} St SE to Main St N)
  – 3\textsuperscript{rd} Street / Amtrak Depot
  – Maple Street – to be removed as part of the Maple diversion project
Minot Quiet Zone Crossings
THANK YOU!

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