



# City of Columbus, IN Redevelopment Commission Meeting

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May 20, 2019

## FRA Train Horn Rule (Aug 2006)

- The Federal Railroad Administration (FRA) Rule §222.21 requires:
  - The locomotive horn be sounded 15-20 seconds before entering a public crossing
  - Trains traveling faster than **60 mph** shall not begin sounding more than one-quarter mile in advance of a public crossing.
  - "LONG-LONG-short-LONG" horn sequence be repeated or prolonged until crossing is occupied



## Basics of a “Quiet Zone”

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- Segment of a rail line where locomotive horns are **not routinely sounded**, unless for emergencies
- At least one-half mile in length (i.e. one-quarter mile on each side of a crossing)
- All public crossings in a QZ must be equipped with:
  1. Flashing lights, gates, and bells
  2. Power-out indicators
  3. *Constant Warning Time* devices
  4. Advance warning signs
- Can only be established by a public authority



# Current Crossing Equipment – Columbus, IN

Street or Road Name	DOT No.	Flashing Lights, Gates and Bells	Constant Warning Time Device	Power Out Indicator
SR-46	535495H	✓	✓	✓
5 <sup>th</sup> Street	535496D	X	✓	✓
8 <sup>th</sup> Street	535497W	X	✓	✓
11 <sup>th</sup> Street	535498D	X	✓	✓

# How to Establish a QZ

- Public Authority Designation (PAD) if any of the following meet:
  1. Supplemental Safety Measures (SSM) are established at each crossing
  2. The **Quiet Zone Risk Index**  $\leq$  **Nationwide Significant Risk Threshold** (with or without SSMs)
  3. The **Quiet Zone Risk Index**  $\leq$  **Risk Index With Horns** (with SSMs)

*\*PAD does NOT require application to, and approval from, FRA for QZ establishment.*



# How to Establish a QZ

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- Public Authority Application (PAA) when PAD requirements cannot be met
- Requires one or more safety measures be implemented *and* FRA review and approval
- May include Alternative Safety Measures (ASMs) (*e.g. shorter medians or channelization*) or a combination of ASMs and SSMs
- Must result in either:
  1. The **Quiet Zone Risk Index**  $\leq$  **Nationwide Significant Risk Threshold**
  2. The **Quiet Zone Risk Index**  $\leq$  **Risk Index With Horns**



# SSM Examples

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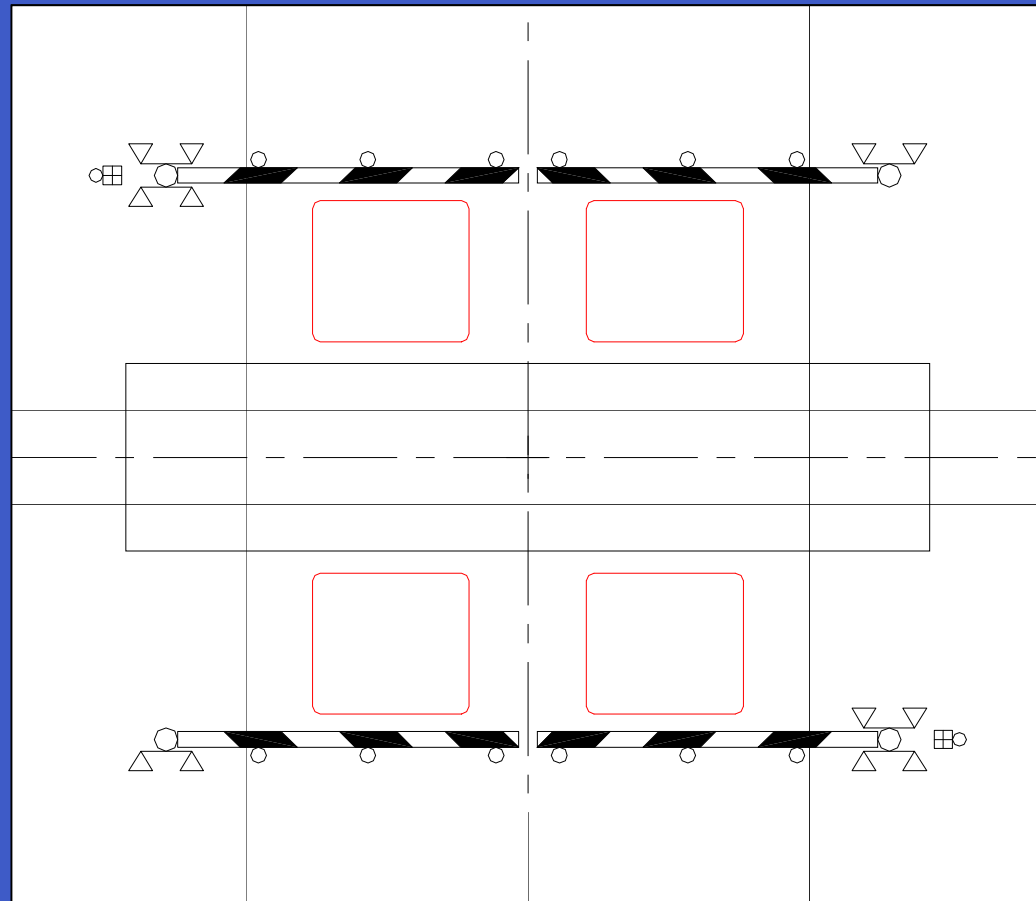
## 1. Temporary Closure of a Public Highway-Rail Grade Crossing



# SSM Examples

## 2. Four-Quadrant Gate System

Vehicle Presence Detection System



Loop Detectors shown in Red



# SSM Examples

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## 2. Four-Quadrant Gate System



# SSM Examples

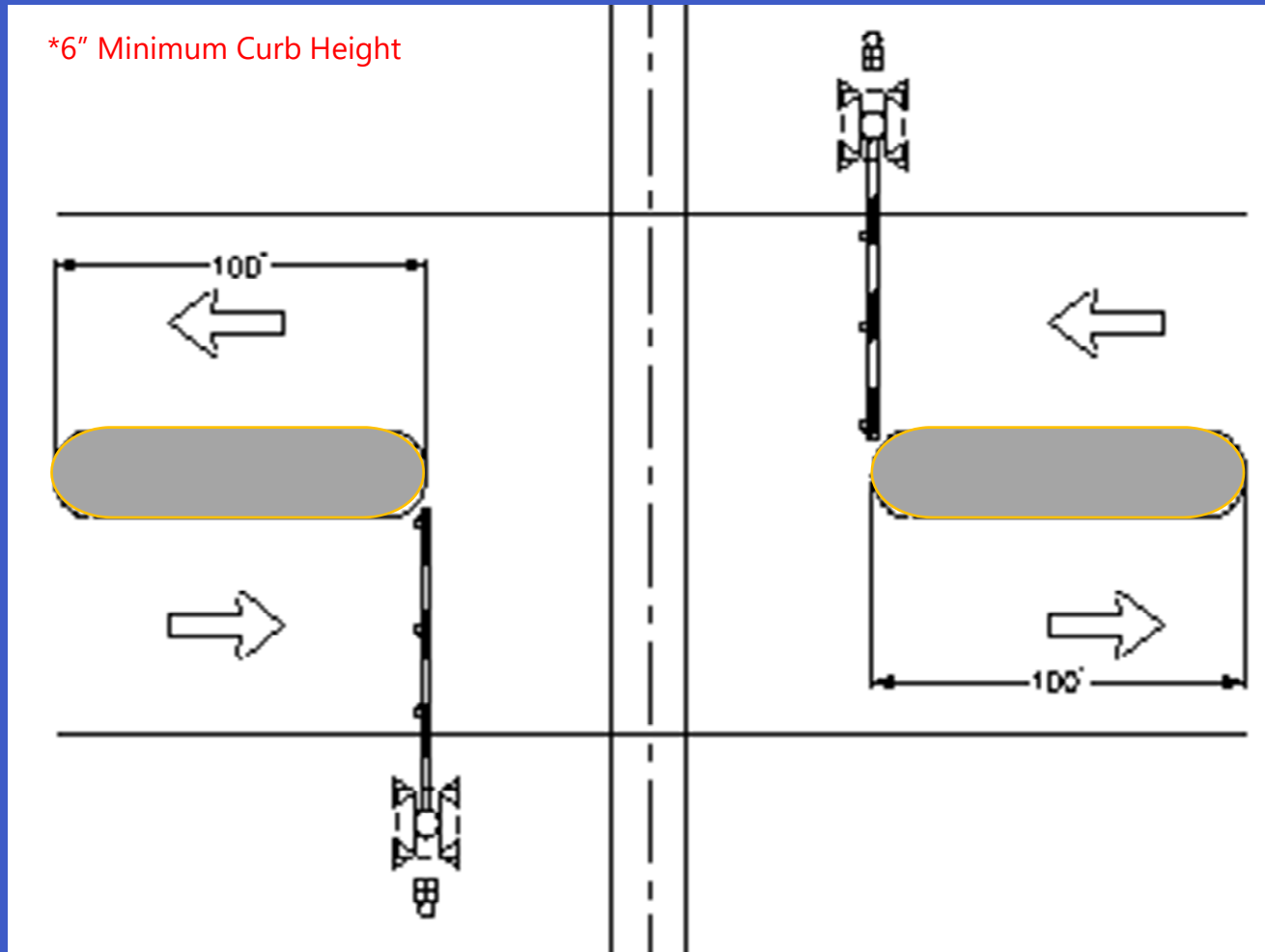
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## 2. Four-Quadrant Gate System



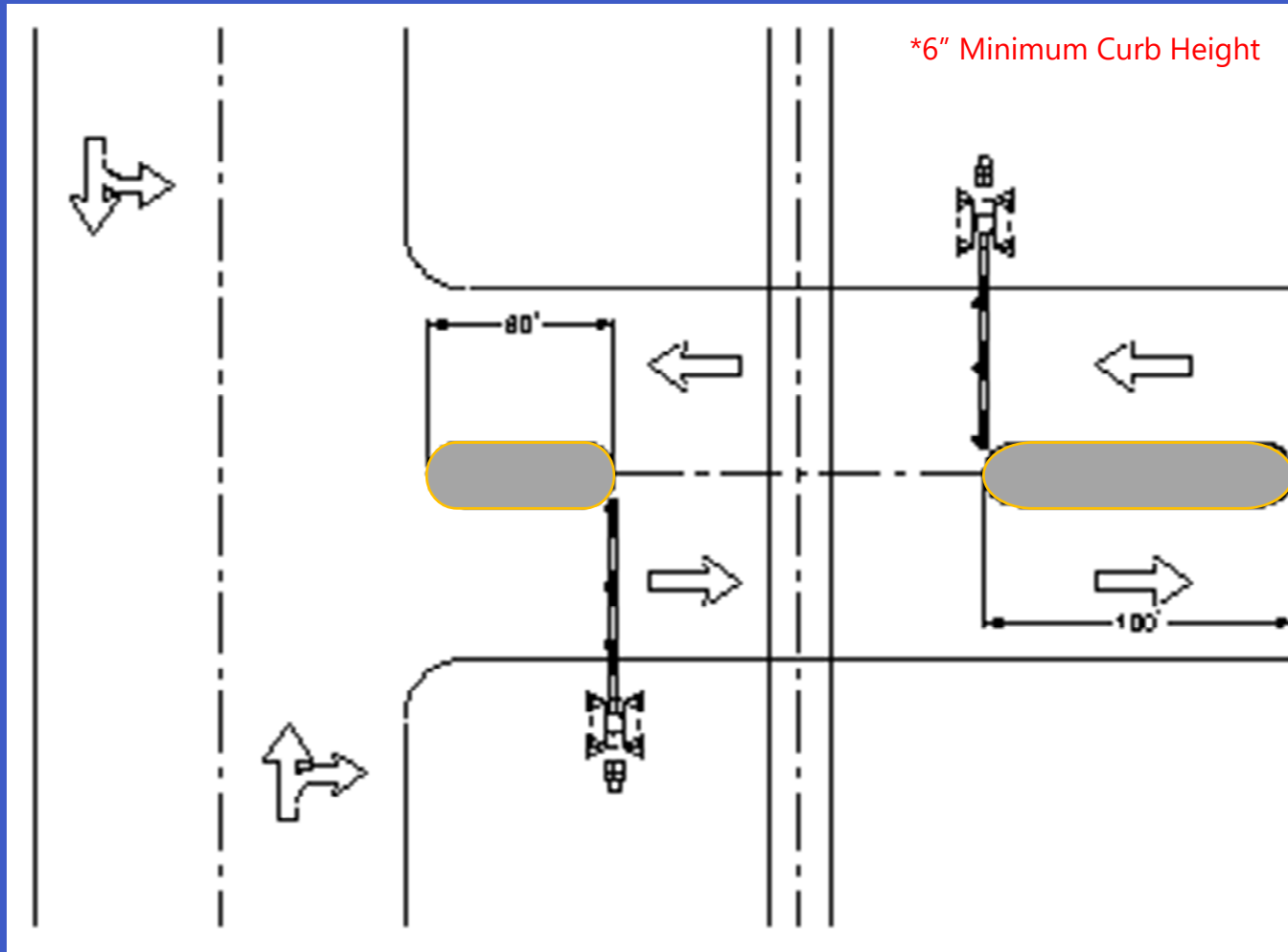
# SSM Examples

## 3. Gates With Medians or Channelization



# SSM Examples

## 3. Gates With Medians or Channelization



# SSM Examples

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# SSM Examples

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## 3. Gates With Medians or Channelization



# SSM Examples

## 3. Gates With Medians or Channelization



# SSM Examples

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## 4. One-Way Street with Gate(s)





# SSM Examples

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## 5. Permanent Closure of a Public Highway-Rail Grade Crossing



# Train Horn Substitute – Wayside Horn System

- Artificial train horn directed at motorists
- Accepted as one-for-one train horn substitute
- NOT an SSM treatment, *but can be used within a Quiet Zone*
- Automatically activated by approaching train and ceases when train reaches the crossing
- Reduces noise pollution in neighborhoods along railroad



# QZ Treatment Options – Columbus, IN

Street or Road Name	DOT No.	Crossing Closure (SSM)	Four-Quadrant Gate System (SSM)	Concrete/Channelization Median Barrier (SSM or ASM)	One-Way Street (SSM)	Wayside Horn System
SR-46	012060T	U	U	P	U	U
5 <sup>th</sup> Street	012061A	O	P	U	O	U
8 <sup>th</sup> Street	012063N	U	O	P	O	U
11 <sup>th</sup> Street	012064V	U	U	P	U	U

**O – Optional**

**P – Preferred**

**U – Undesirable**

# Preferred QZ improvement – SR 46

- SSM-compliant concrete medians/channelization
- Escape gates, fencing



# Preferred QZ improvement - 5<sup>th</sup> Street

- SSM–Four quadrant gate system
- Pedestrian railroad gates, escape gates, fencing



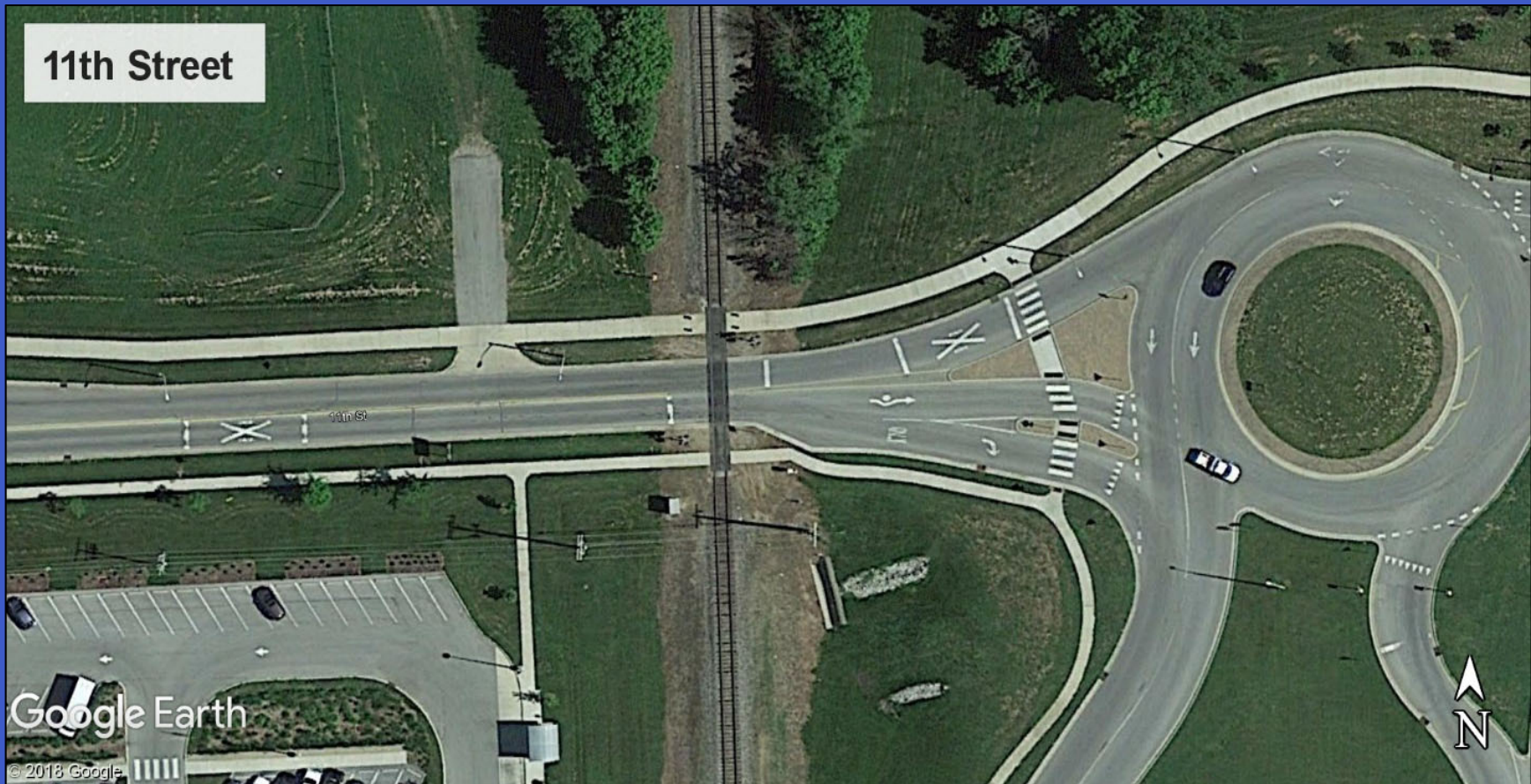
# Preferred QZ improvement - 8<sup>th</sup> Street

- Non-SSM-compliant concrete medians (short median east of crossing)
- Pedestrian gates, escape gates, fencing



# Preferred QZ improvement - 11<sup>th</sup> Street

- SSM compliant concrete medians
- Pedestrian gates, escape gates, fencing



# Typical Estimated QZ Costs

Treatment Type	Approach 1 (Preferred)	Approach 2	Approach 3	Approach 4	Approach 5
SR 46	<b>\$19,680</b>	\$19,680	\$19,680	\$19,680	\$19,680
Columbus People Trail	<b>\$14,792</b>	\$14,792	\$14,792	\$14,792	\$14,792
5 <sup>th</sup> Street	<b>\$558,617</b>	\$75,360	\$313,525	\$283,825	\$558,617
8 <sup>th</sup> Street	<b>\$401,990</b>	\$401,990	\$401,990	\$401,990	\$568,240
11 <sup>th</sup> Street	<b>\$417,517</b>	\$417,117	\$417,117	\$417,117	\$417,117
<i>*Additional Cost</i>	<b>\$376,046</b>	\$303,891	\$328,210	\$340,954	\$419,654
<b>TOTAL</b>	<b>\$1,788,642</b>	\$1,232,830	\$1,495,314	\$1,478,358	\$1,998,100

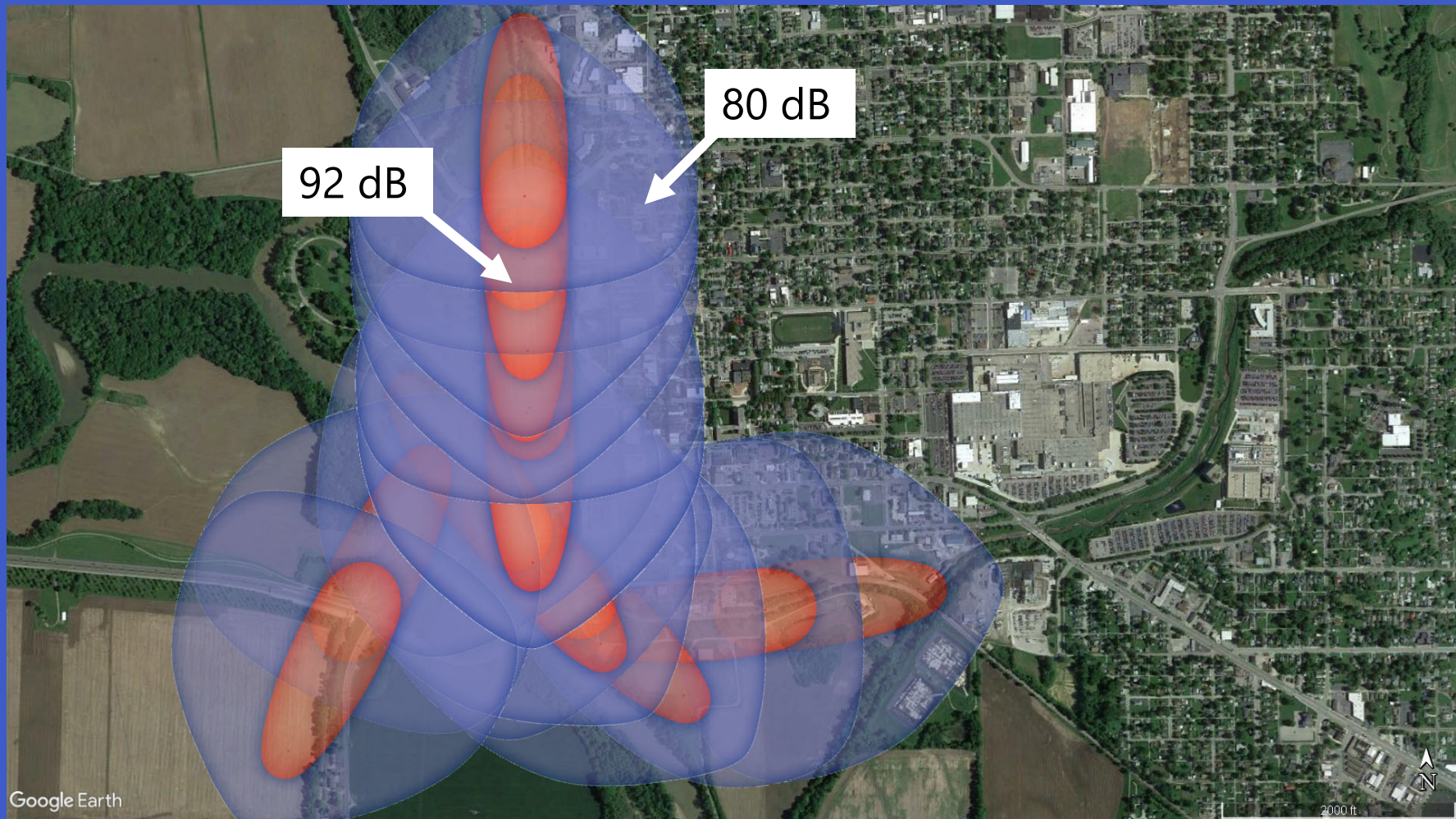
\*Traffic control, design, contingency

**Total Estimated QZ Cost - Columbus, IN:**  
\$1.23 Million – \$1.99 Million

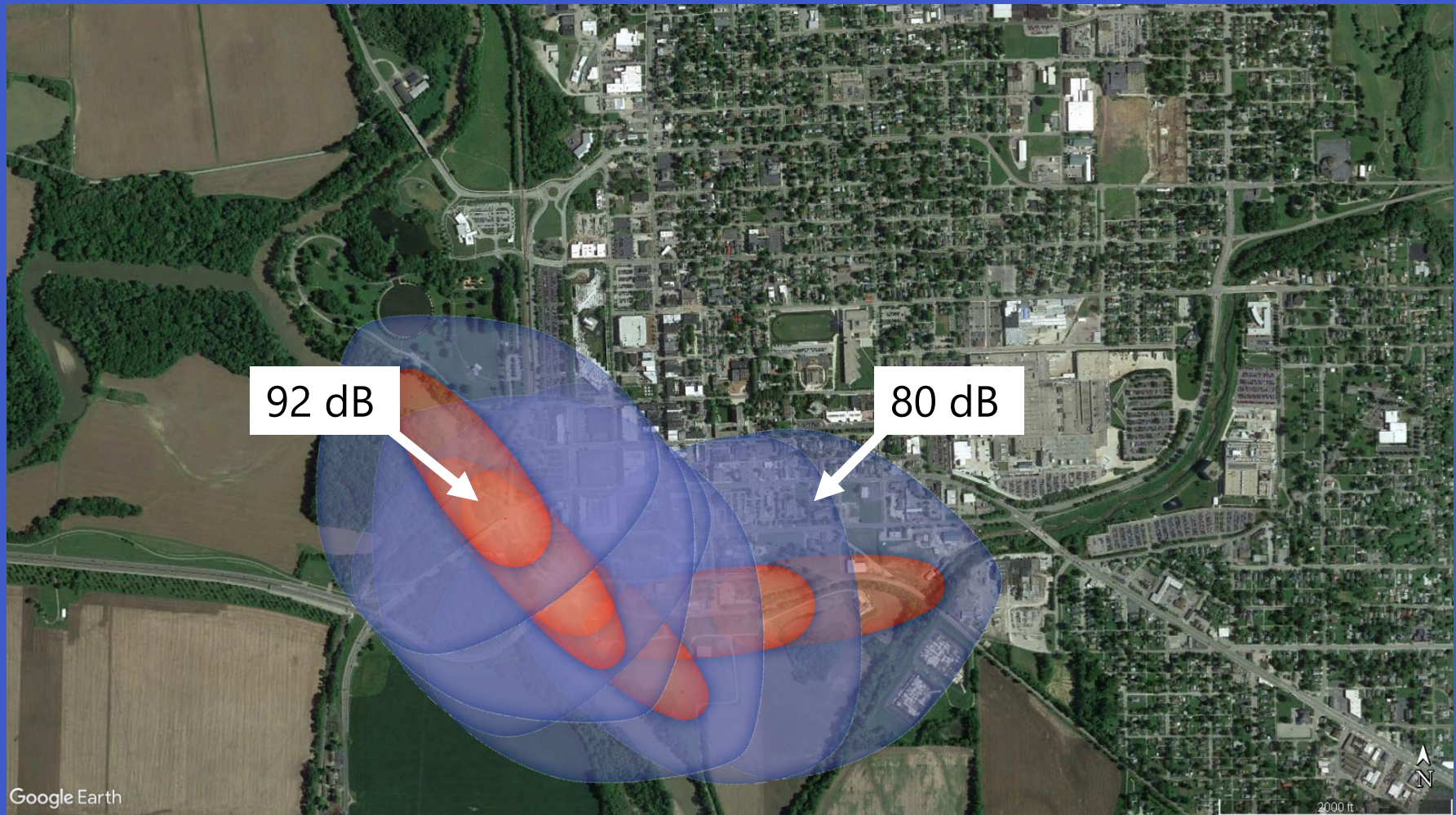




# Train Horn Noise *without* QZ



# Train Horn Noise *with* QZ



# Quiet Zone Next Steps – Railroad Construction

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1. Obtain LIRC estimates (30-60 days)

2. Identify Funding

3. Execute construction maintenance contract with LIRC

4. Notice to Proceed to LIRC


5. LIRC procurement, assembly, installation (9-12 months)

# Quiet Zone Next Steps – City Construction

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**\*Concurrent with Railroad Construction**

1. Complete Plans, Specifications, and Estimates for medians, curb and gutter, and sidewalks



2. Bid out project



3. Construction (3-6 months)

# Quiet Zone Next Steps – FRA Process

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**\*Concurrent with Railroad and City Construction**

1. Issue Notice of Intent (NOI) and execute LIRC contract

2. 60-day comment period

3. Conduct final construction inspection

4. Issue Notice of Establishment (NOE)  
(21 days)

5. Quiet Zone establishment

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Estimated Quiet Zone Completion:

**18-24 months**

# Questions?

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