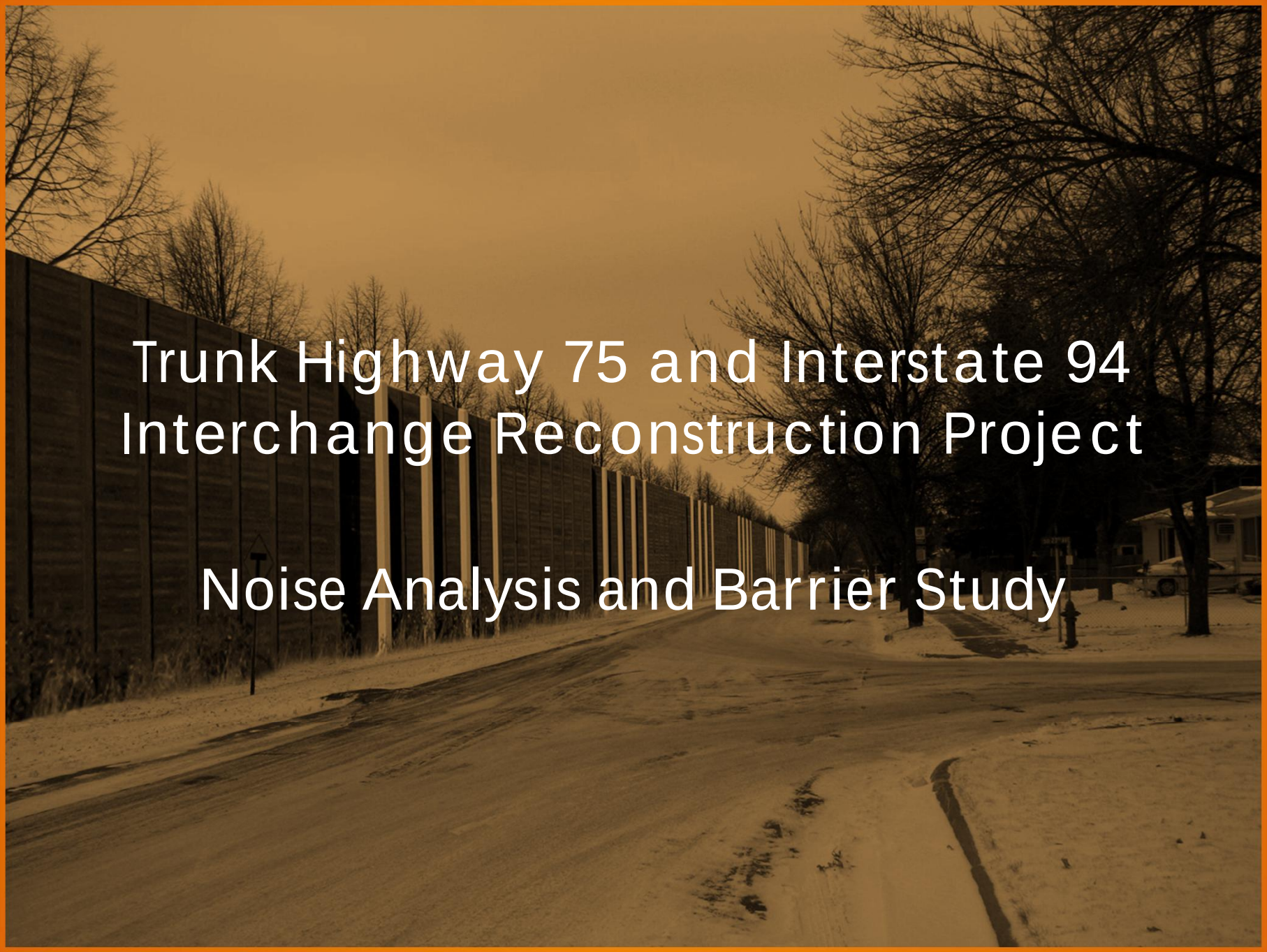
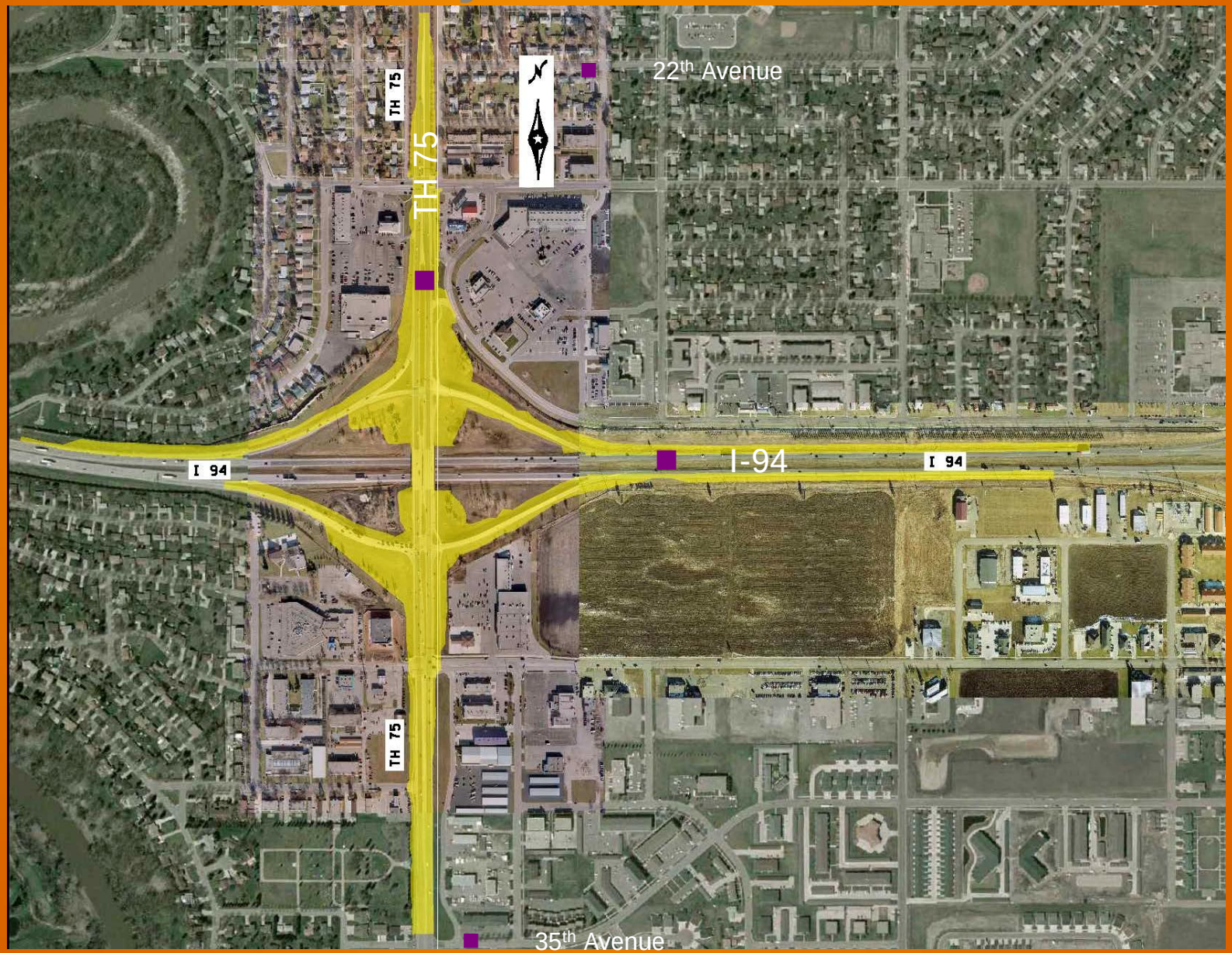


Trunk Highway 75 and Interstate 94 Interchange Reconstruction Project

Noise Analysis and Barrier Study

Project Area



Study Background

- Why do a noise study?
  - To assess existing noise levels
  - To predict future noise levels
  - Determine mitigation need/reasonableness
- Who regulates noise?
  - State: Minnesota Pollution Control Agency (MPCA)
  - Federal: Federal Highway Administration (FHWA)

Noise Characteristics

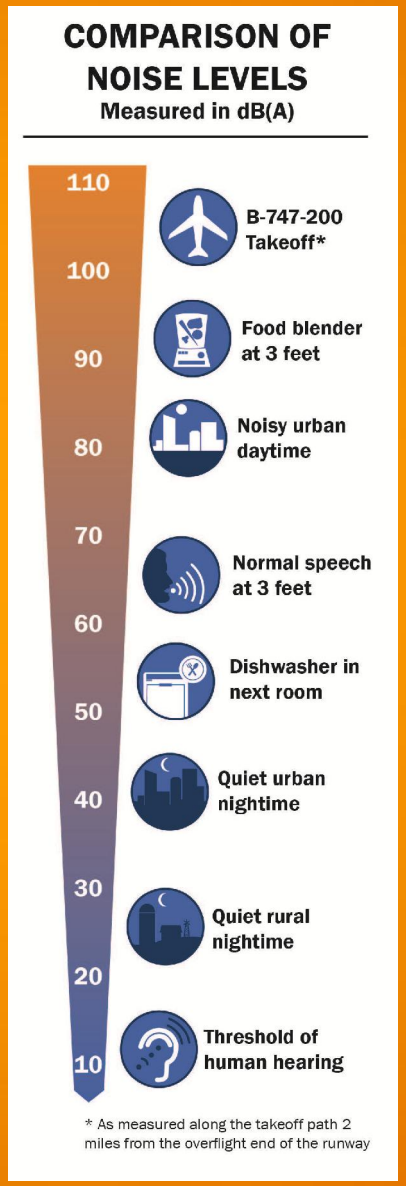
- Noise is defined as unwanted sound
- Measured on a decibel scale (dBA)
  - Logarithmic scale, based on orders of magnitude
  - Example 1
    - Not apples + apples
    - 60 dBA AC + 60 dBA AC= 63 dBA
  - Example 2
    - 60 dBA AC vs. 50 dBA refrigerator (half)

      vs. 70 dBA vacuum cleaner (double)

Noise Characteristics

- Perceived Change in Decibel Level
  - +/- 1 dBA Not Perceptible
  - +/- 3 dBA Threshold of Perception
  - +/- 5 dBA Clearly Noticeable
  - +/- 10 dBA Twice (or half) as Loud

Decibel Levels of Common Noise Sources



Governing Criteria

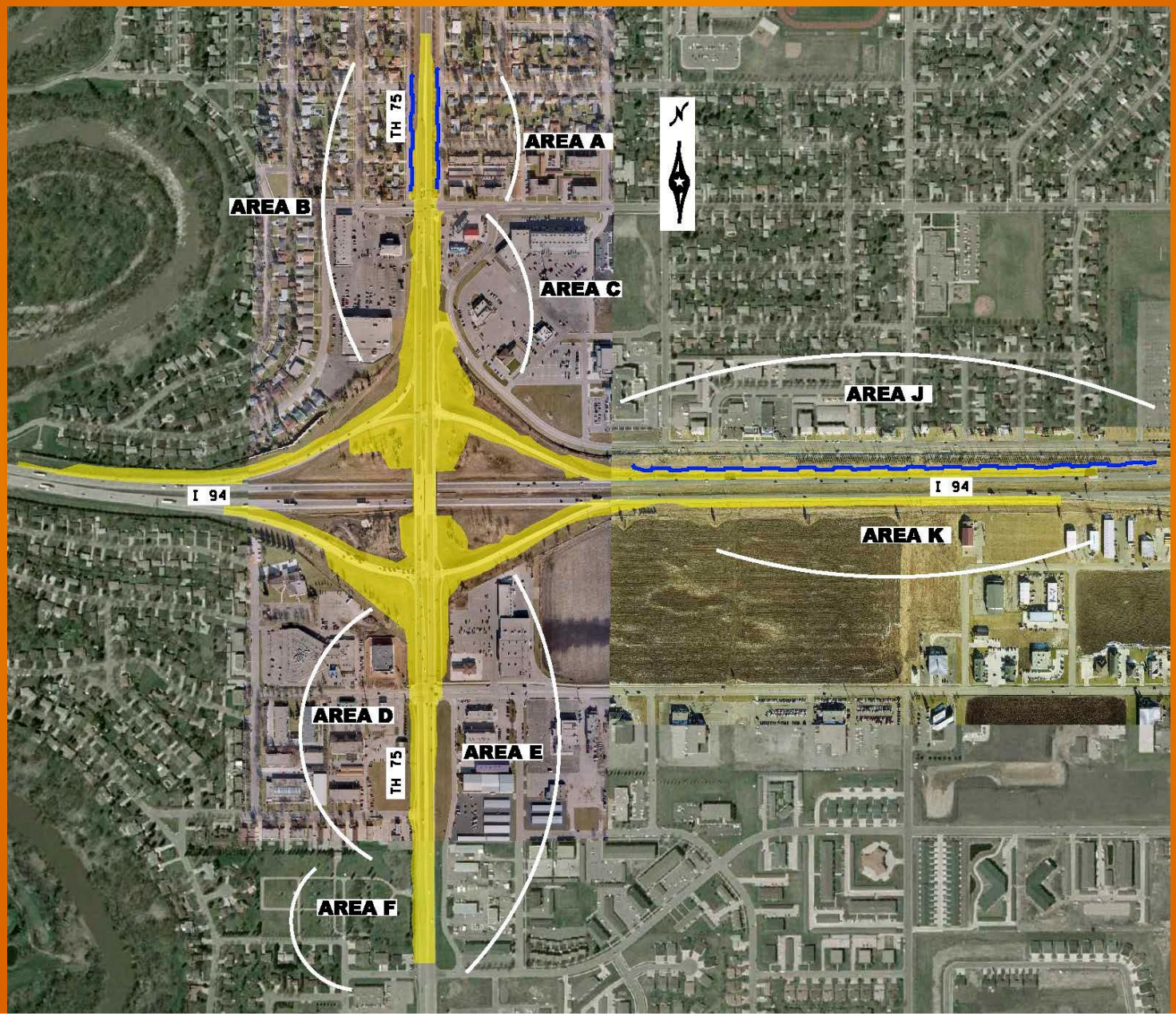
Noise Mitigation must be considered when predicted traffic noise levels exceed standards:

- State Standards (Residential)
  - Daytime Standard (65 dBA) L10
  - Nighttime Standard (55 dBA) L10
  - Involve a future increase of 5 dBA or more over existing traffic noise levels
- Federal Standards (Residential)
  - 69 dBA or higher

Noise Modeling

- Noise Monitoring
  - Field noise meter readings obtained to verify computer noise modeling results
- Computer Noise Modeling
  - Develop models for existing conditions and future no-build and build conditions
  - Factors:
    - Existing and Future traffic volumes, speeds, roadway geometry and receptor locations (location of residences)

Noise Study Areas



Noise Modeling Results

6 of 8 Areas - Receptors above State Standards for Build condition

- Area A - (east side of TH 75, north of 24th Avenue)
  - 12 of 18 Receptors Above State Standards
- Area B - (west side of TH 75, north of I-94)
  - 15 of 18 Receptors Above State Standards
- Area D - (west side of TH 75, south of I-94 to 32nd Ave)
  - 3 of 8 Receptors Above State Standards

Noise Modeling Results

- Area F - (west side of TH 75, 32nd Ave to Belsly Ave)
  - All (5) Receptors Above State Standards
- Area J - (north side of I-94, east of TH 75)
  - All (70) Receptors Above State Standards
- Area K - (south side of I-94, east of TH 75)
  - All (3) Receptors Above State Standards

Noise Modeling Results

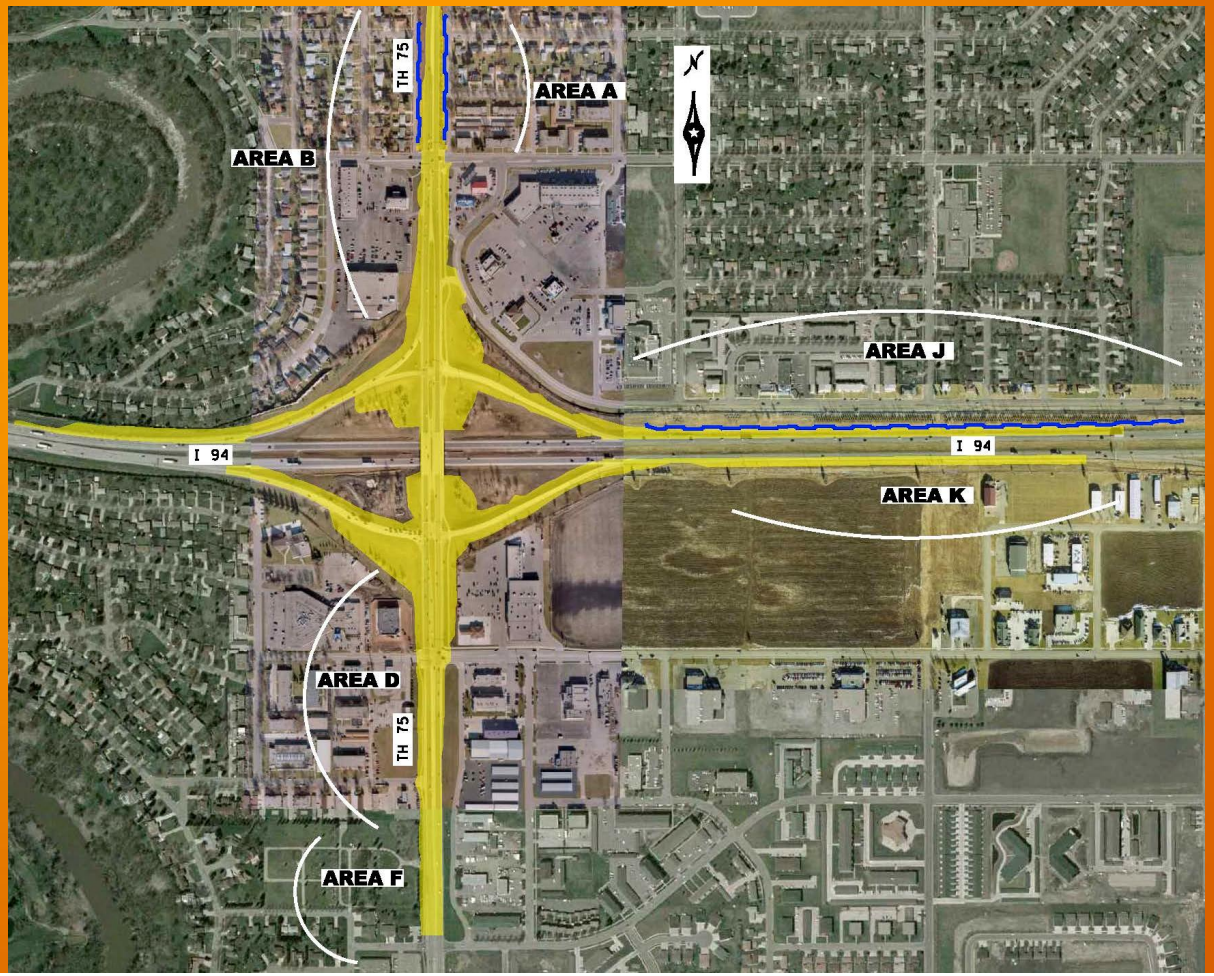
Areas With NO Receptors above State Standards for Build condition

- Area C
- Area E

Noise Modeling Results

Proceed to mitigation assessment for 6 of 8 study areas:

- Area A
- Area B
- Area D
- Area F
- Area J
- Area K



Mn/DOT Reasonability Policy

- A “reasonable” noise wall is cost effective and acoustically effective
  - ‘Benefitted’ receptor: sees at least a 5 dBA reduction in noise from Barrier
  - Less than $43,500 per benefitted residence

Reasonability Assessment

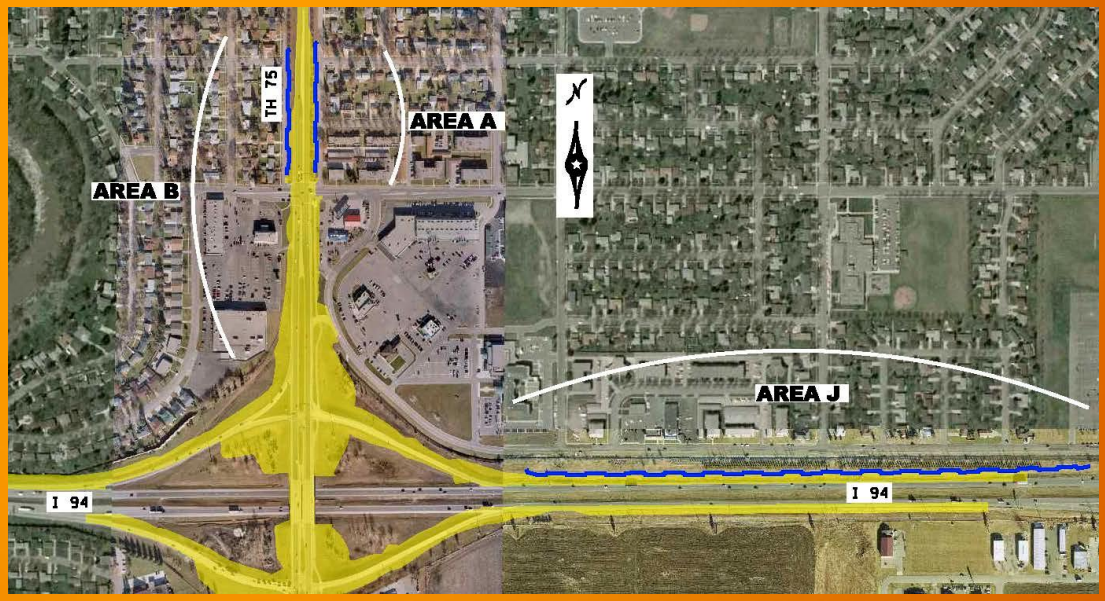
3 areas do NOT meet MnDOT's Cost Reasonableness Policy:

- Area D
- Area F
- Area K

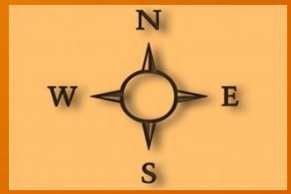
Reasonability Assessment

3 areas DO meet MnDOT's Cost Reasonableness Policy:

- Area A
  - 18 benefitted receptors
  - $13,076 per receiver
- Area B
  - 8 benefitted receptors
  - $33,810 per receiver
- Area J
  - 72 benefitted receptors
  - $15, 740 per receiver

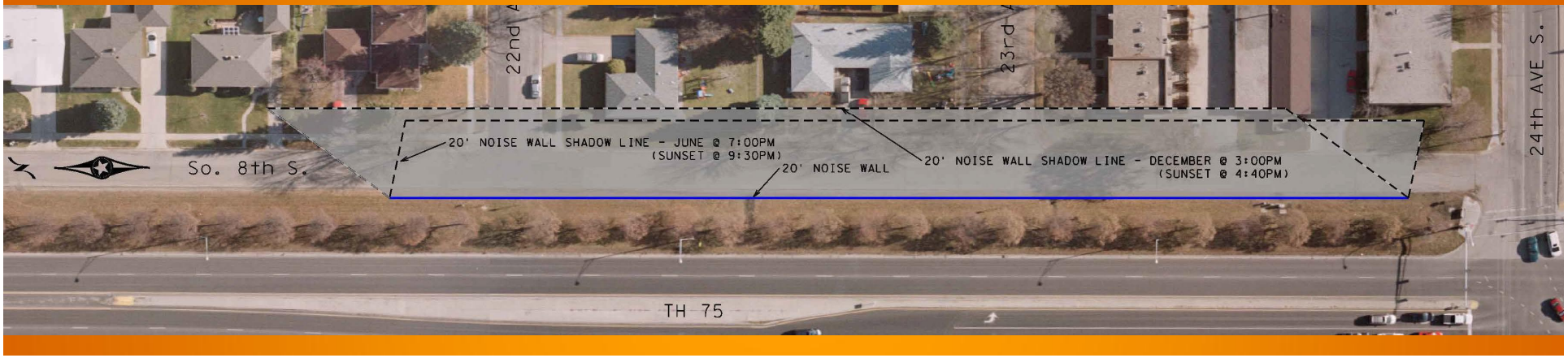


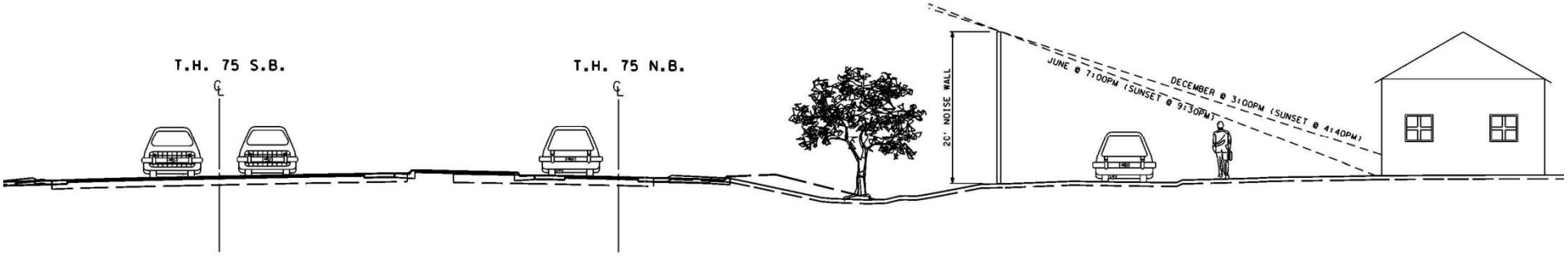
Wall A



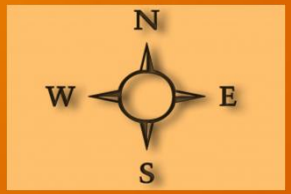
Noise Wall A Renderings

Potential Wall A Shadow Lines

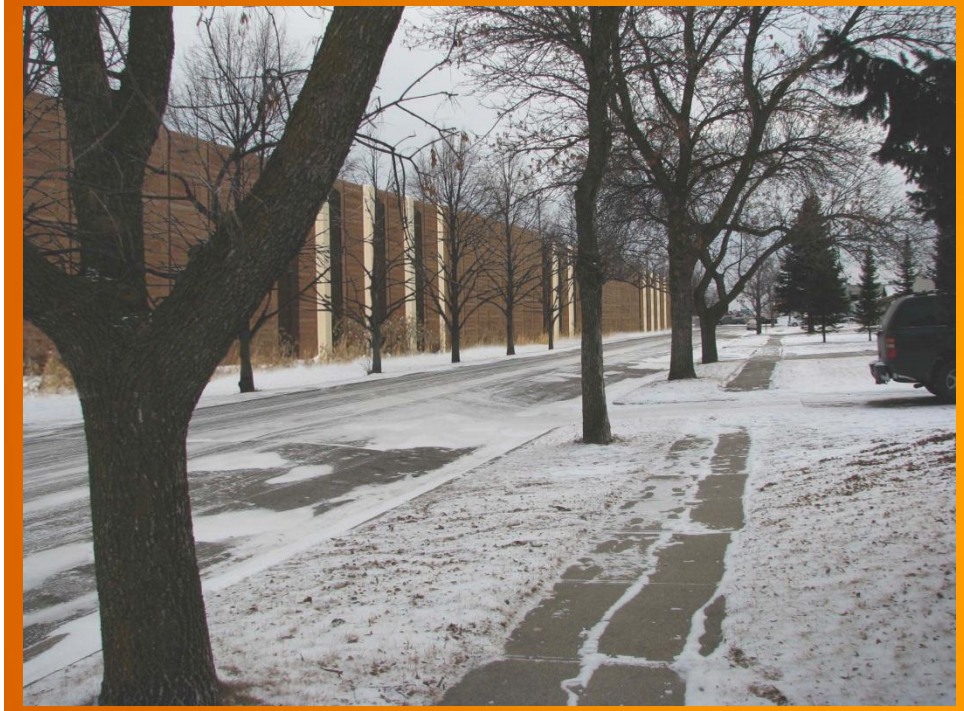




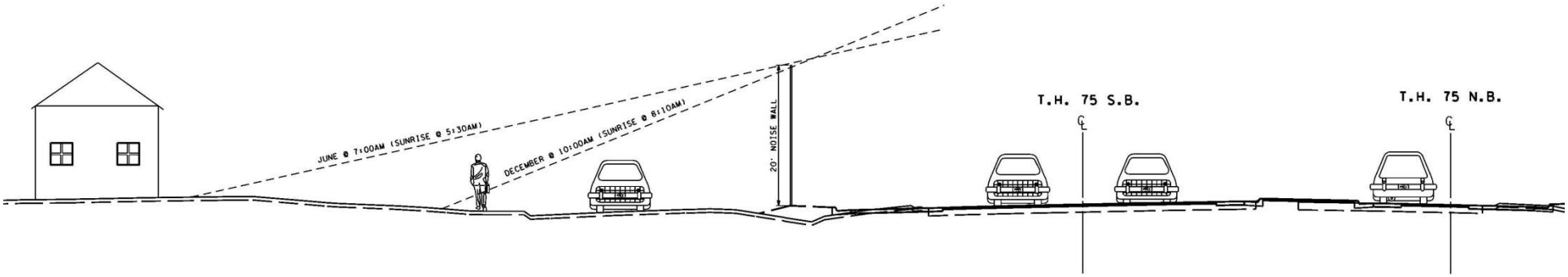
Wall B



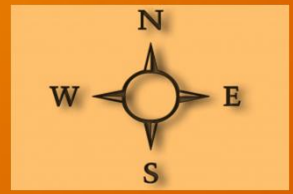
Noise Wall B Renderings



Potential Wall B Shadow Lines



Wall J



Noise Wall J Renderings

Mitigation Assessment

Residents/Property Owners vote ‘Yes’ or ‘No’ to include or exclude the benefitting Noise Wall in the Construction project.

More than 50% of all potential votes must be “No” to exclude the wall from the project.

	Resident	Property Owner	Both
Adjacent to Roadway	2	4	6
Not Adjacent to Roadway	1	2	3

Project Staff is Available to Answer Questions

To Vote: Please Visit the Ballot Table tonight or mail in your ballot by March 9th.

Thank You!