TEXAS DEPARTMENT OF TRANSPORTATION

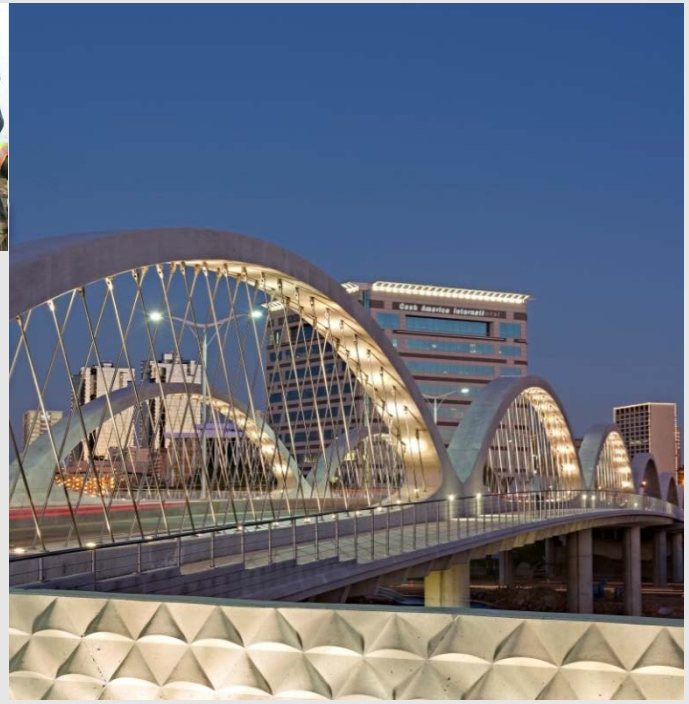


Photo by Liam Frederick

FORT WORTH DISTRICT

I-30/SH 360 Interchange Project

Castillian Condominiums Noise Workshop #2

City of Grand Prairie, Tarrant County, Texas

December 21, 2017

CSJs: 1068-02-076, -104, & -127

What is the Purpose of this Workshop?

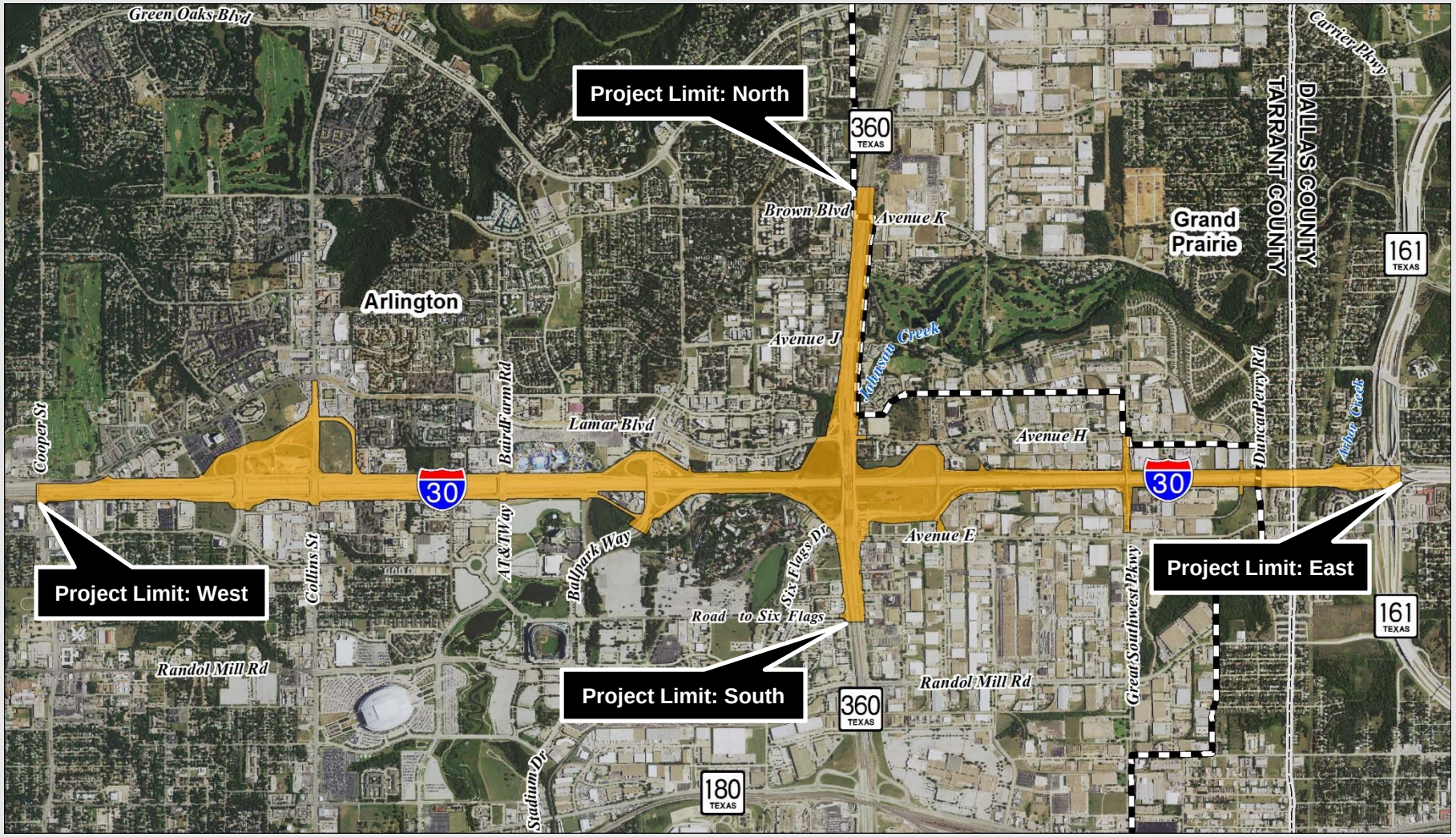
- Provide overview of how Traffic Noise Analysis was conducted
- Present the potential noise barrier location, dimensions, construction, utilities, and vegetation impacts

Voting Ballot

For Noise Barrier

Against Noise Barrier

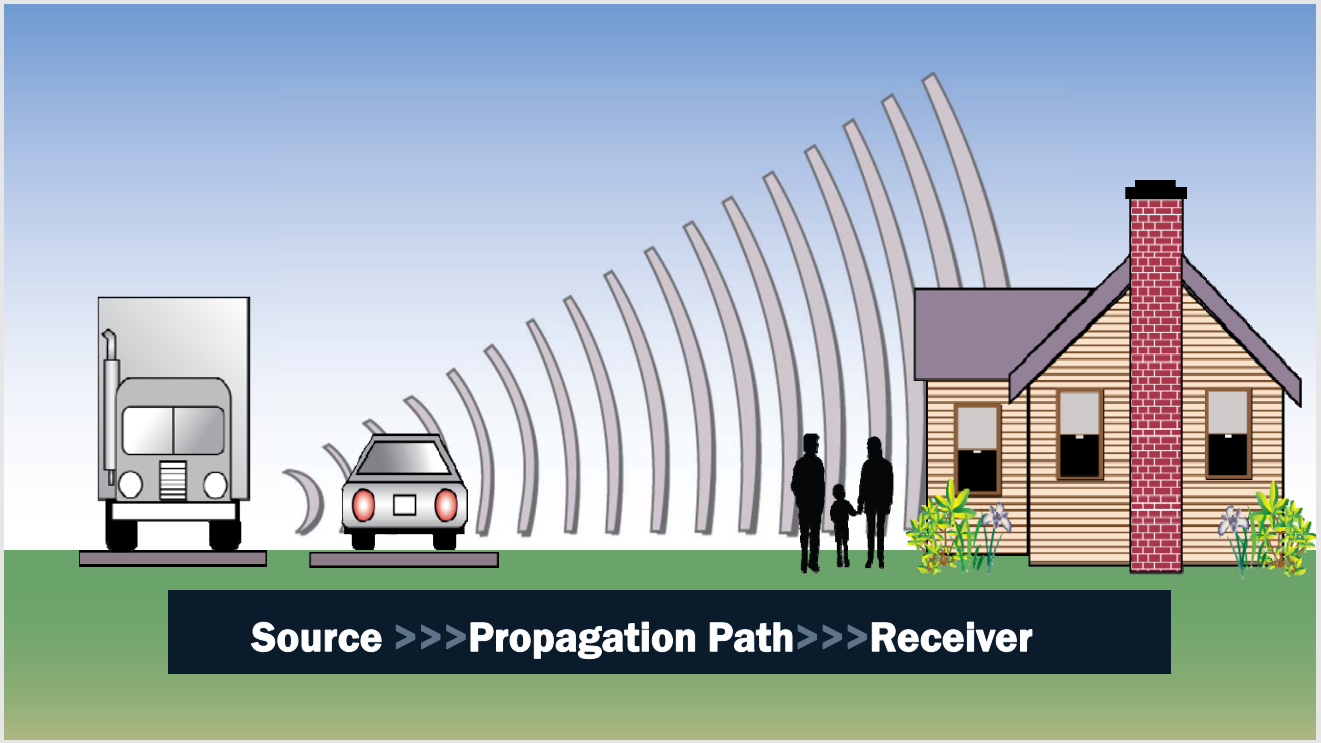
I-30/SH 360 Interchange Project Location



Highway Traffic Noise

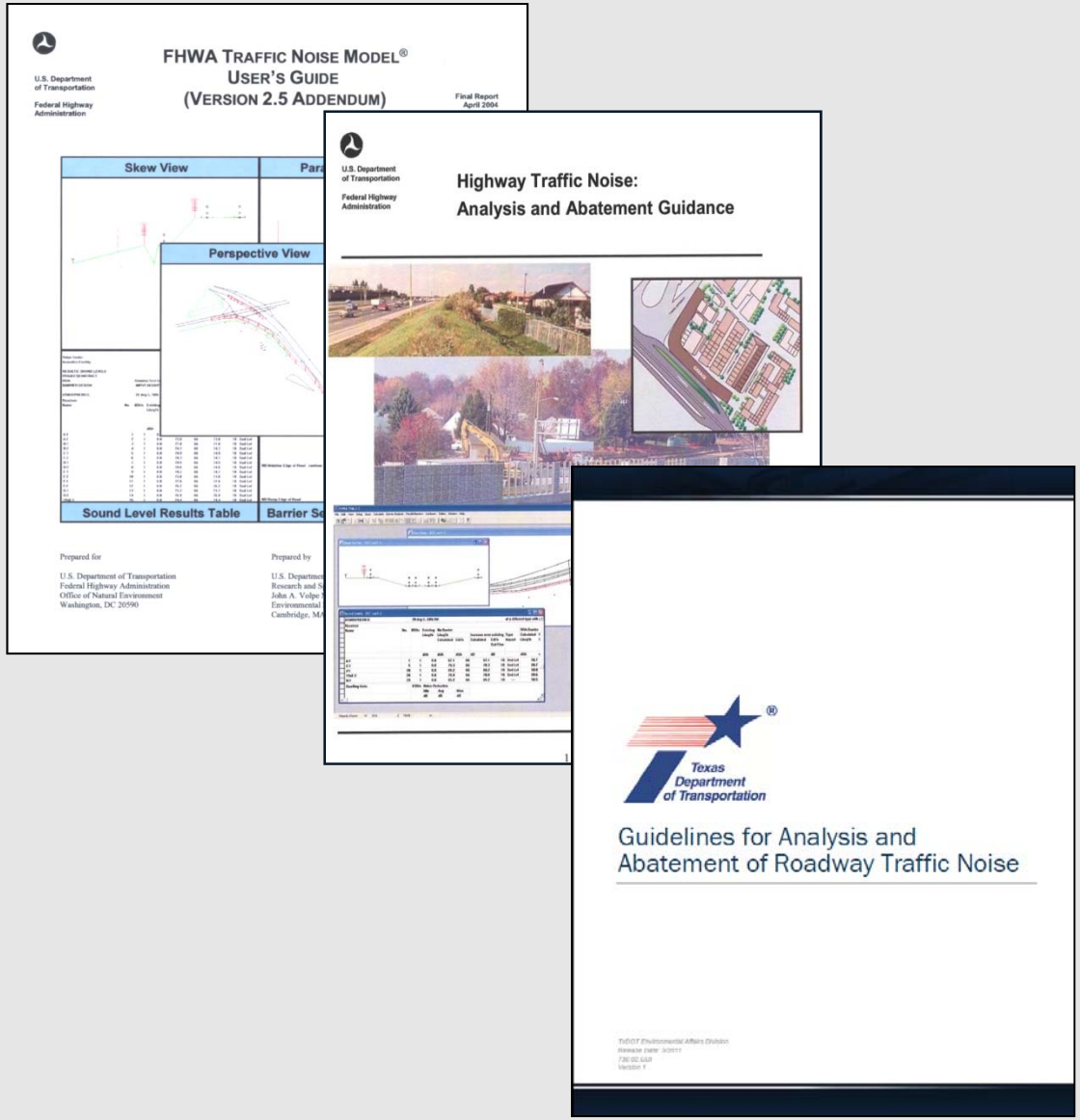
- **Produced from:** tires, engines, and mufflers of cars and trucks.

- **Depends on:**
  - ✓ number and speed of vehicles;
  - ✓ the terrain; and
  - ✓ the distance between the highway (source) and listener (receiver).



Traffic Noise Analysis

- FHWA requires traffic noise study when:
  - utilizing federal funds, &
  - adding capacity on existing highways.
- Study follows TxDOT guidelines (FHWA-approved).
- Traffic Noise Model (v.2.5) is used to predict noise on existing & future roadway.
- Purpose of noise study: determine noise impacts on **nearby outdoor areas frequently used by people.**



Traffic Noise Impacts

- Measured in decibels (dB)
- Not all sound can be heard by the human ear.
- So dB are "A-Weighted" to adjust for high/low frequencies of traffic noise to match human hearing and expressed as dB(A).
- Traffic noise levels vary widely, so the average or equivalent ("Leq") noise level us used by model.
- "Decibels" in our discussion = dB(A) Leq

NOISE ABATEMENT CRITERIA (NAC)		
dB(A) (Leq)	Activity Area	Category
57	A	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where preservation of those qualities is essential if the area is to
67	**B**	**Residential**
67	C	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings

TxDOT policy: an impact occurs when predicted noise levels are either:

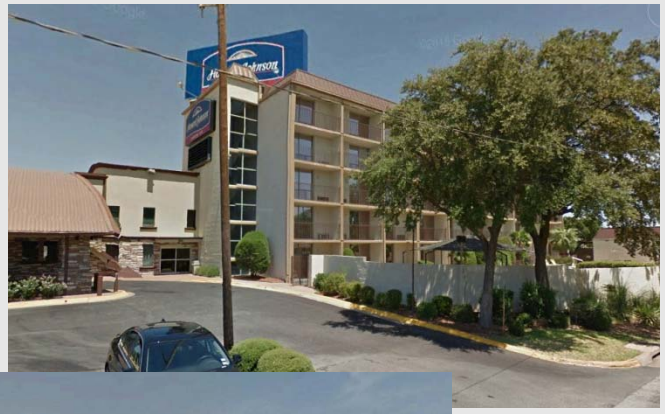
- 1 dB(A) Leq below, equal to, or above the NAC criterion for a specific activity area; OR
- More than 10 dB(A) Leq higher than the existing levels at any activity area.

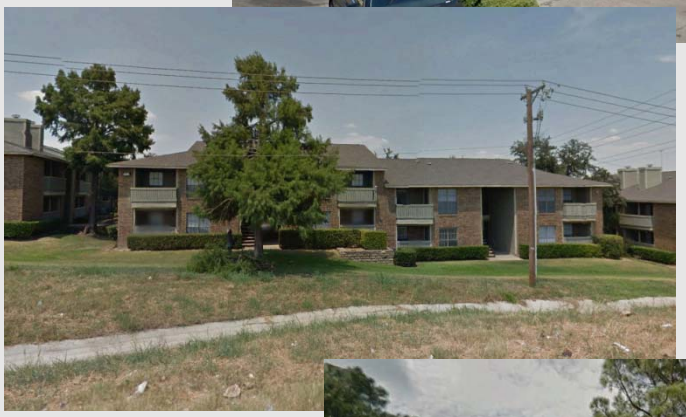
What Does a Level of 67 Decibels Sound Like?

Source	Decibels (dB(A) Leq)
Rock Band	110
Leaf Blower	100
Food Blender	90
Police Whistle	80
Vacuum Cleaner	70
Conversation at 3-ft to 5-ft	60
Refrigerator	50
Library	40

Our Noise Study does What?

- Identify “receivers” = land use and activity areas that may be affected by noise.
- Model existing noise levels for receivers.
- Predict noise levels 20 years in the future after proposed interchange construction.
- Evaluate noise abatement measures.





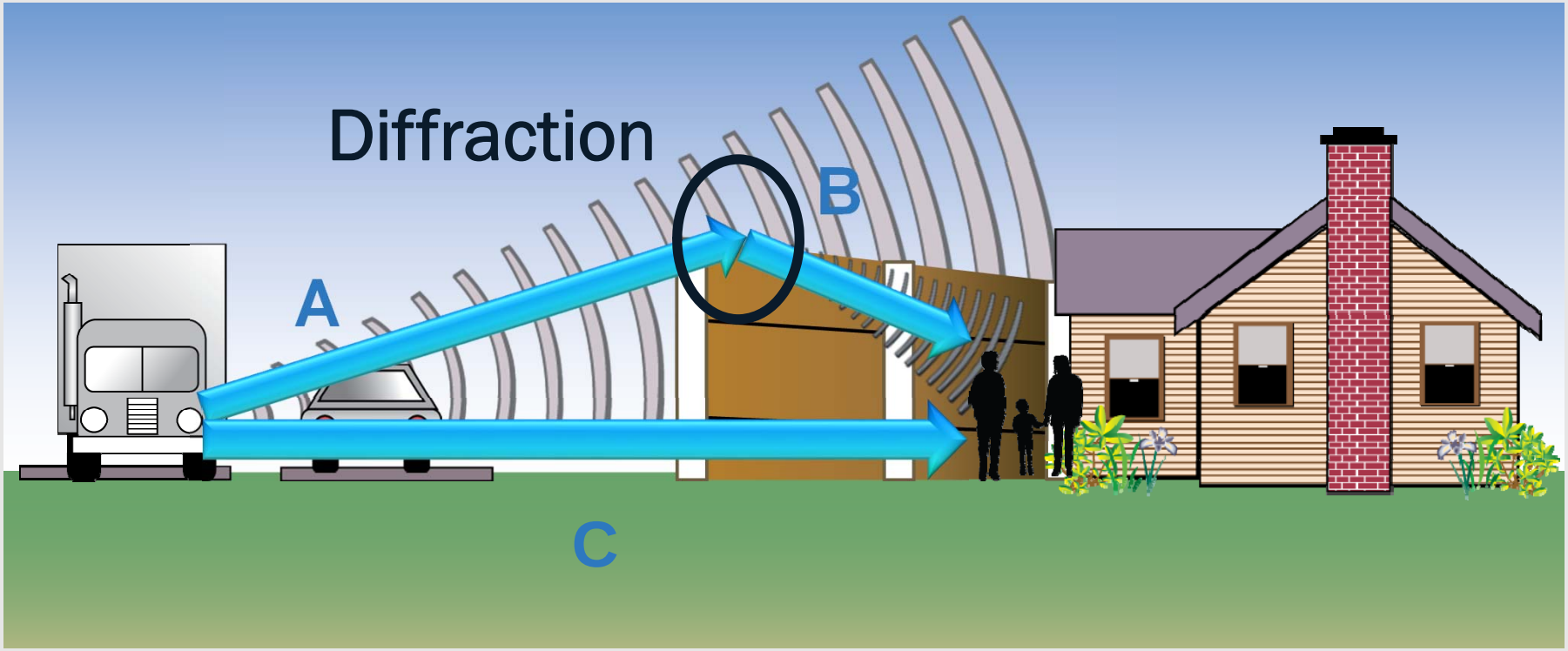
Noise Abatement Consideration

- Noise abatement = action to reduce noise impact on an activity area (receiver).
- Noise abatement on this project:

  Noise Barriers
- Noise Barriers evaluated to determine if they are feasible and reasonable.

Photos taken from FHWA *Keeping the Noise Down Guidebook*

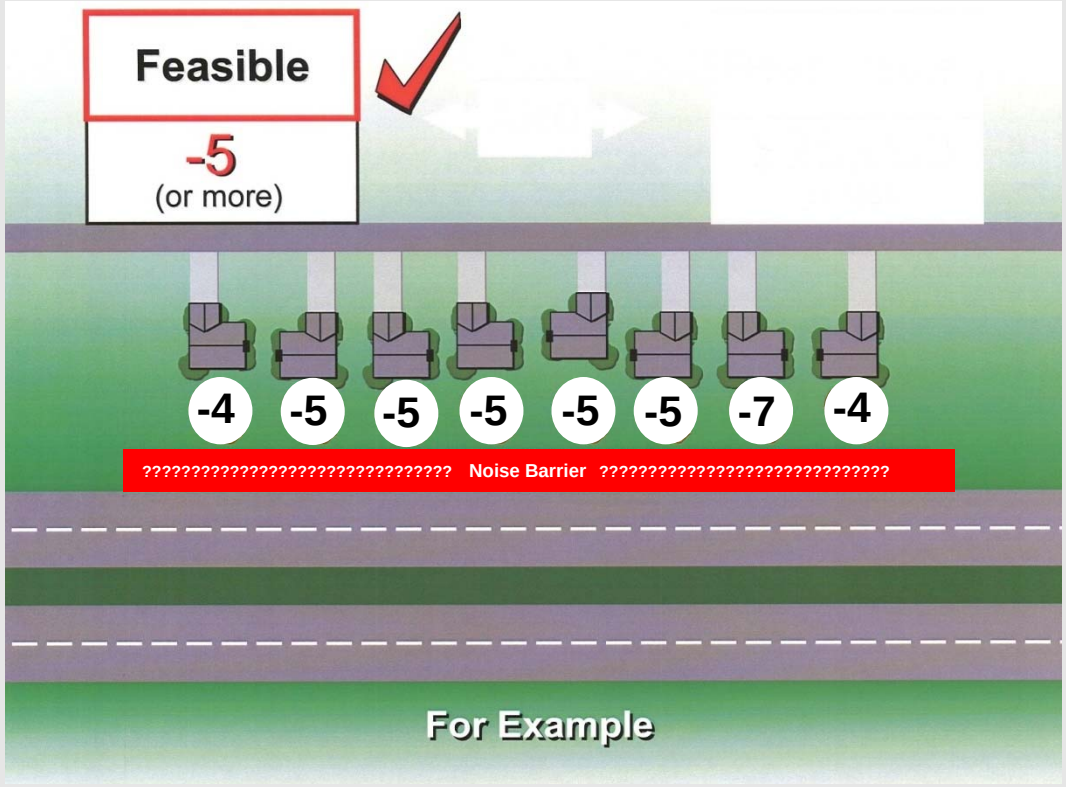
How Noise Barriers Work



A + B > C = Longer Path Length

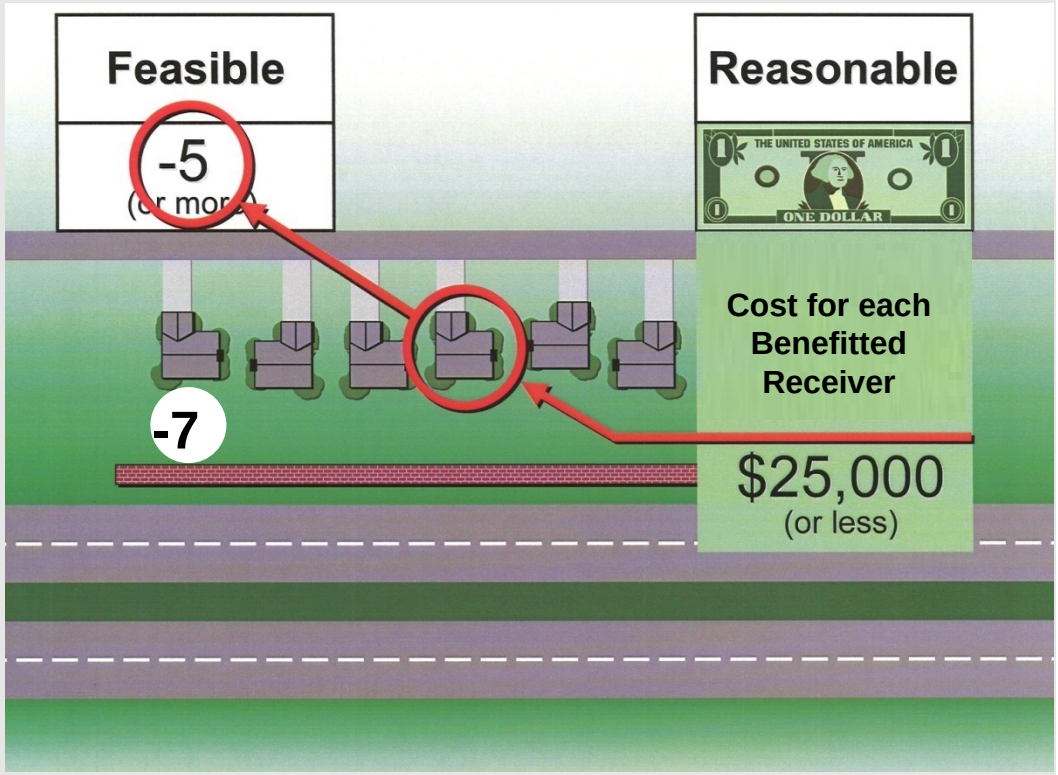
Feasibility Requirements

- Can the noise barrier:
  - Provide at least a 5-decibel reduction for the majority first-row receivers?
  - Be constructed at proposed location?
- Would noise barrier:
  - Create a safety issue?
  - Restrict access for vehicular and pedestrian movement?
  - Be inaccessible for maintenance?
  - Impact utilities, drainage?
  - Affect historic properties?

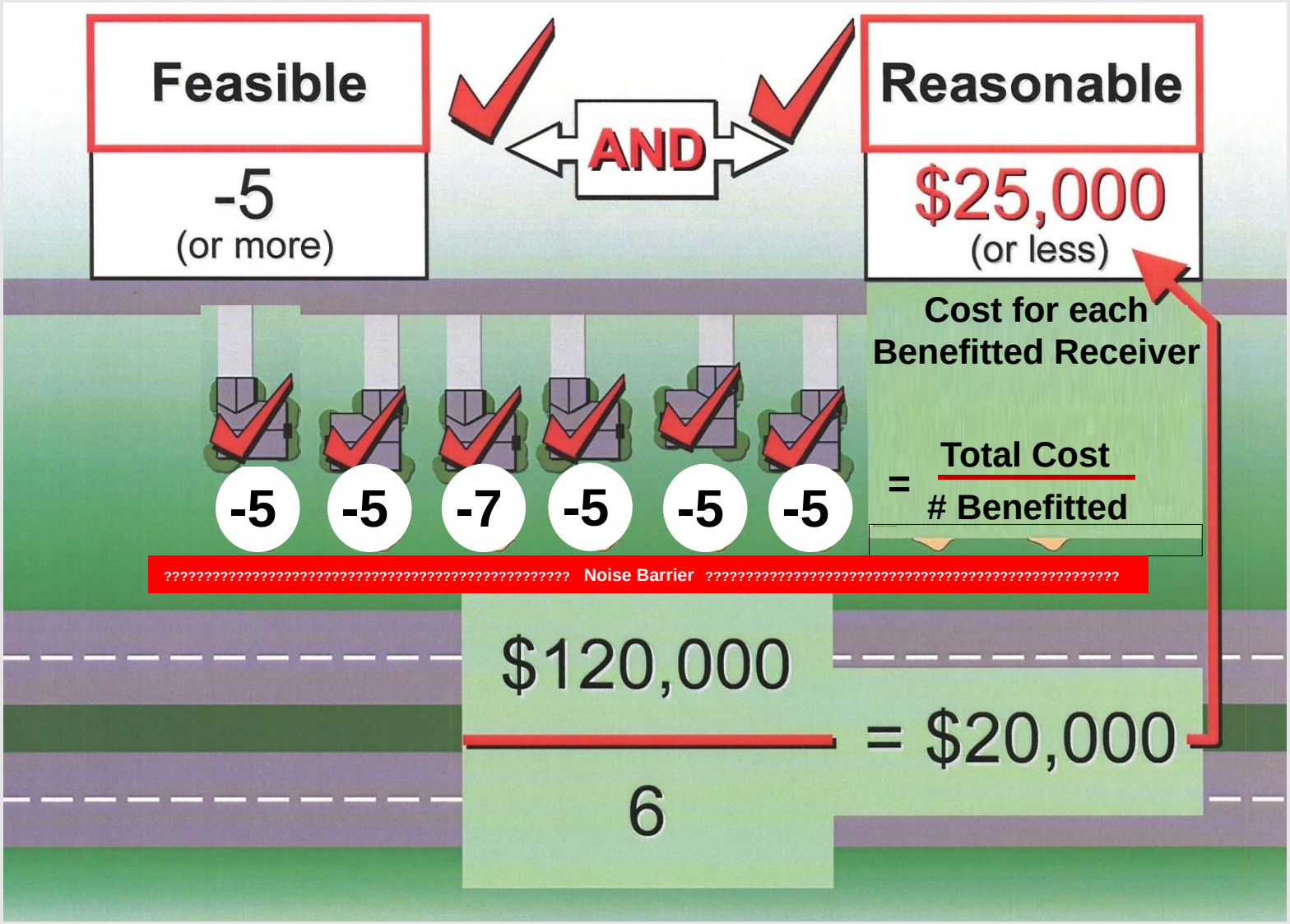


Reasonableness Requirements

- **Cost/benefit analysis:** total cost of noise barrier is $25,000 (or less) per benefitted receiver.
- **Noise reduction design goal:** at least one first-row receiver achieves 7-decibel reduction.
- **Opinion of owners of the benefitted receiver(s):** final decision to construct noise barrier is by a simple majority vote.



Reasonable and Feasible



Noise Barrier Considerations

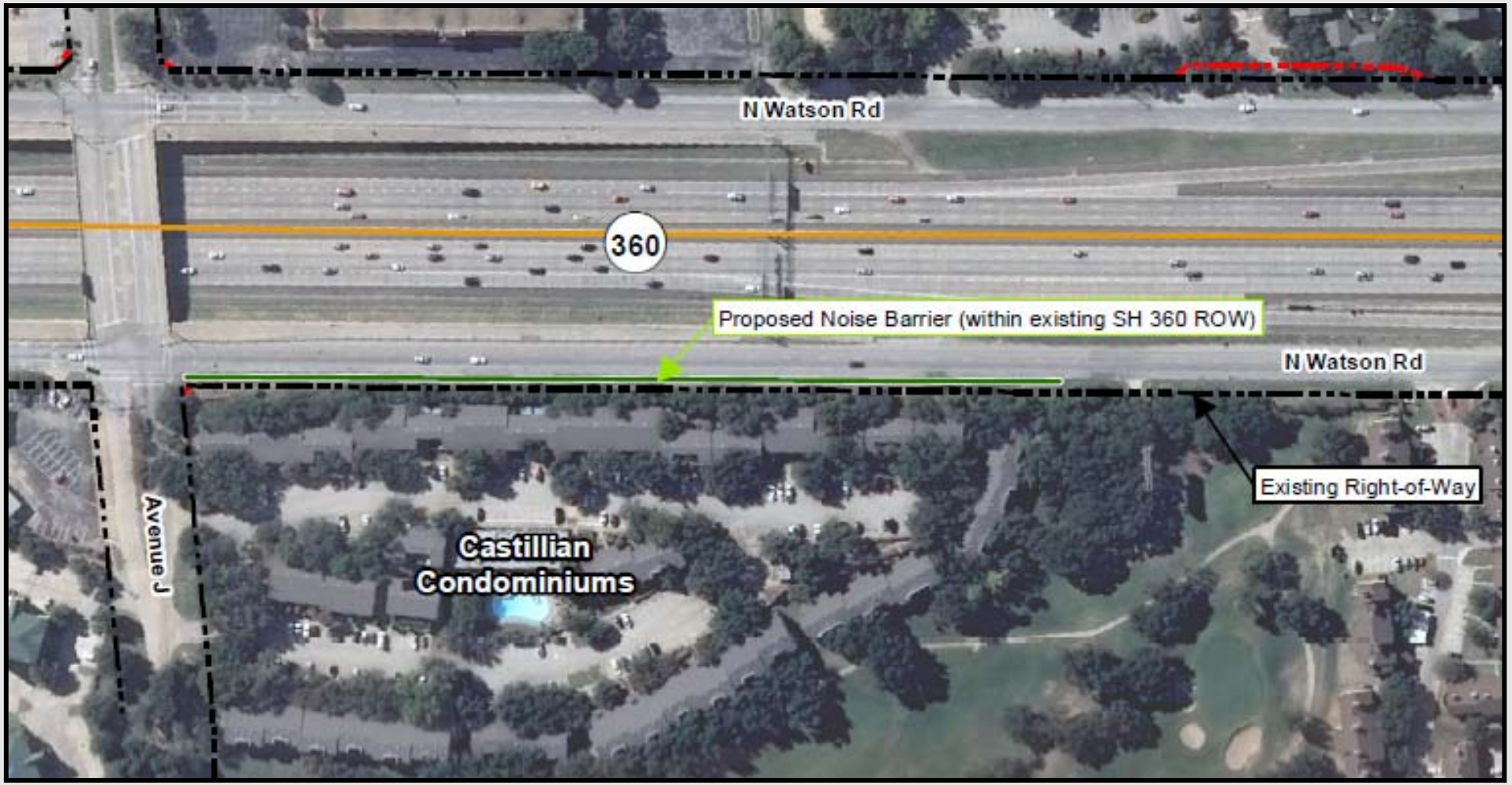
PROS:

- Barriers reduce the impacts of traffic noise.
- Aesthetically pleasing appearance and ability to blend in with the surrounding environment.
- Relocation of utilities.

CONS:

- Could restrict views.
- May result in feelings of confinement.
- Potential loss of air circulation, sunlight, and night lighting.
- Less-convenient access to AC units outside of fence.
- Property owners cannot tie in their fence to barrier.

Noise Barrier Location Map



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Traffic Noise Analysis Results Summary

- Results apply to Castillian Condominium first-row receivers adjacent to SH 360.
- Traffic Noise Model calculated existing sound levels to be 73 decibels and Year 2035 sound levels to be 75 decibels.
- A noise barrier 940 feet long and 14 feet tall is recommended.
- Traffic Noise Model estimated that the proposed noise barrier would help reduce noise levels for several receivers by an average of approximately 7.1 decibels.

Proposed Noise Barrier Construction

- Construct within TxDOT SH 360 existing right-of-way (ROW).
- No removal of vegetation and fences outside of ROW.
- Trim tree limbs and shrubs within the ROW to the edge of ROW.
- No change to existing entrance to the condominiums (Ave. J).
- Part of ongoing construction of the I-30/SH 360 Interchange Project.

Similar Noise Barrier Aesthetics – SH 161 at British Boulevard

Residential Side

Roadway Side

***These are photographs of a similar aesthetic treatment on an existing noise barrier. Actual aesthetic treatment may vary.**

Noise Barriers

- Noise barriers help reduce noise levels.
- Aesthetic style was coordinated the cities of Arlington and Grand Prairie.
- TxDOT would maintain the noise barrier.
- Noise barrier would be built if approved by >50% of adjacent condominium owners.

Ballot Deadline

Ballots must be postmarked by:

Monday, January 8, 2018

What Happens After Tonight's Workshop?

- Tally up the votes received.
- There are 44 eligible condominium units for voting purposes, with one vote tallied for each unit.
- If approved by majority vote:
  - The noise barrier would be constructed as part of the I-30/SH 360 Interchange Project; and
  - Construction of the noise barrier is scheduled in 2019.

Thank you for your interest in the I-30/SH 360 Interchange Project.

For Additional Information Visit:

http://www.txdot.gov/inside-txdot/projects/studies/fort-worth/i-30.html