



TEXAS DEPARTMENT OF TRANSPORTATION



FORT WORTH

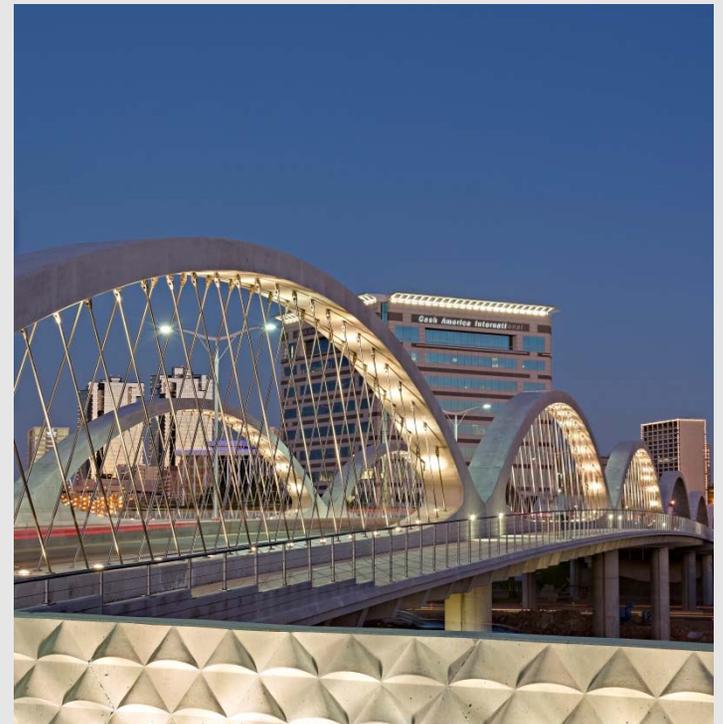


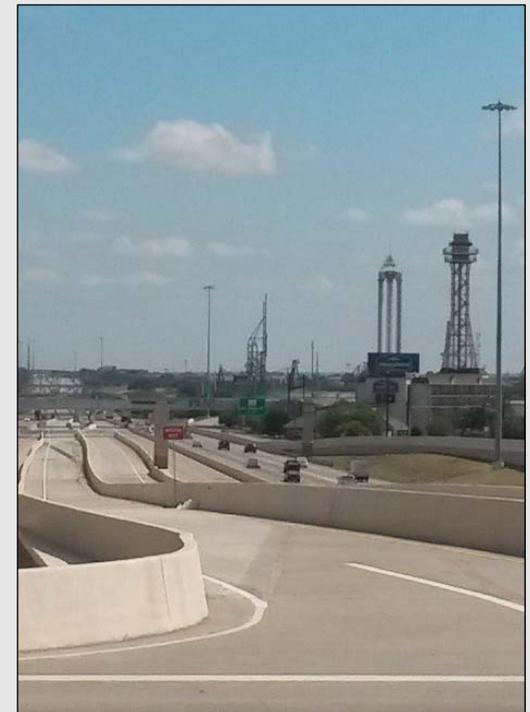
Photo by Liam Frederick



IH 30/SH 360 INTERCHANGE PROJECT

NOISE WORKSHOP

Castillian Condominiums
City of Grand Prairie, Tarrant County



November 17, 2015

CSJs: 1068-02-076, -104, -127; & 1068-04-903

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



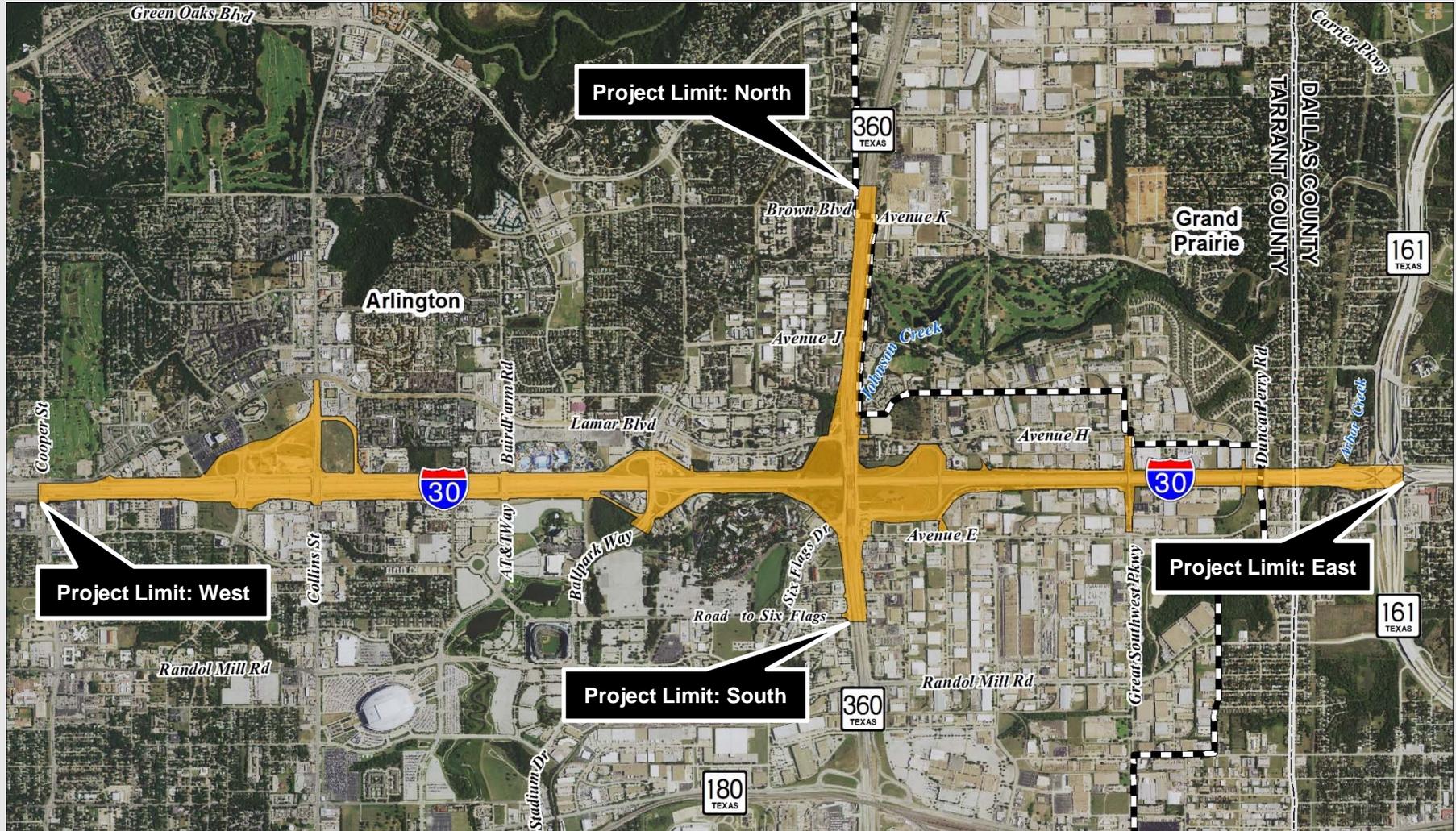
For Noise Barrier



Against Noise Barrier



IH 30/SH 360 – Project Location



Project Description – Existing Facilities

Existing IH 30

Three general purpose main lanes, one high-occupancy vehicle (HOV) lane (from Center Street to SH 161), and discontinuous two to three lane frontage roads in each direction.

Existing SH 360

Three general purpose main lanes, two to three lane one-way frontage roads in each direction.

Existing IH 30/SH 360 Interchange

No direct connection between these two highways.

- Traffic required to utilize outdated interchange constructed for IH 30 toll road and Six Flags Drive.

Project Description – Proposed Facilities

Proposed IH 30

Up to five general purpose main lanes, two to three lane frontage roads in each direction, and two reversible managed lanes (from Center Street to SH 161).

Proposed SH 360 (North of IH 30)

Three general purpose main lanes and three to four lane frontage roads in each direction.

Proposed SH 360 (South of IH 30)

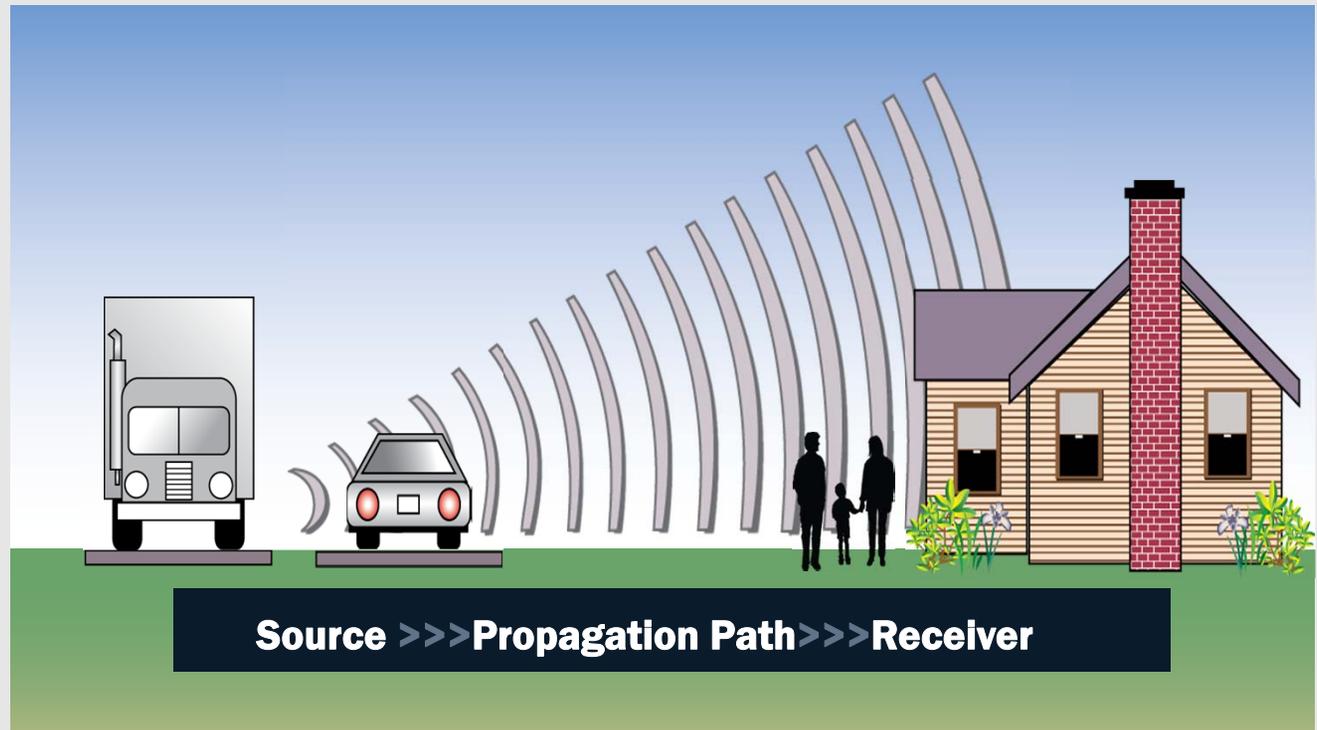
Four general purpose main lanes and three to four lane frontage roads in each direction.

Proposed IH 30/SH 360 Interchange

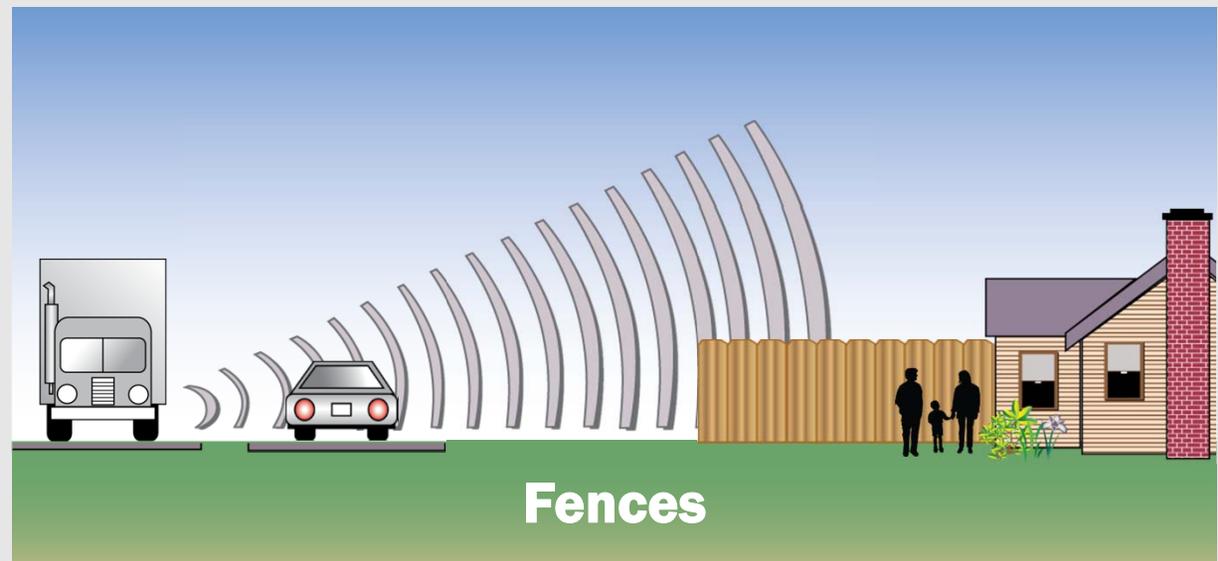
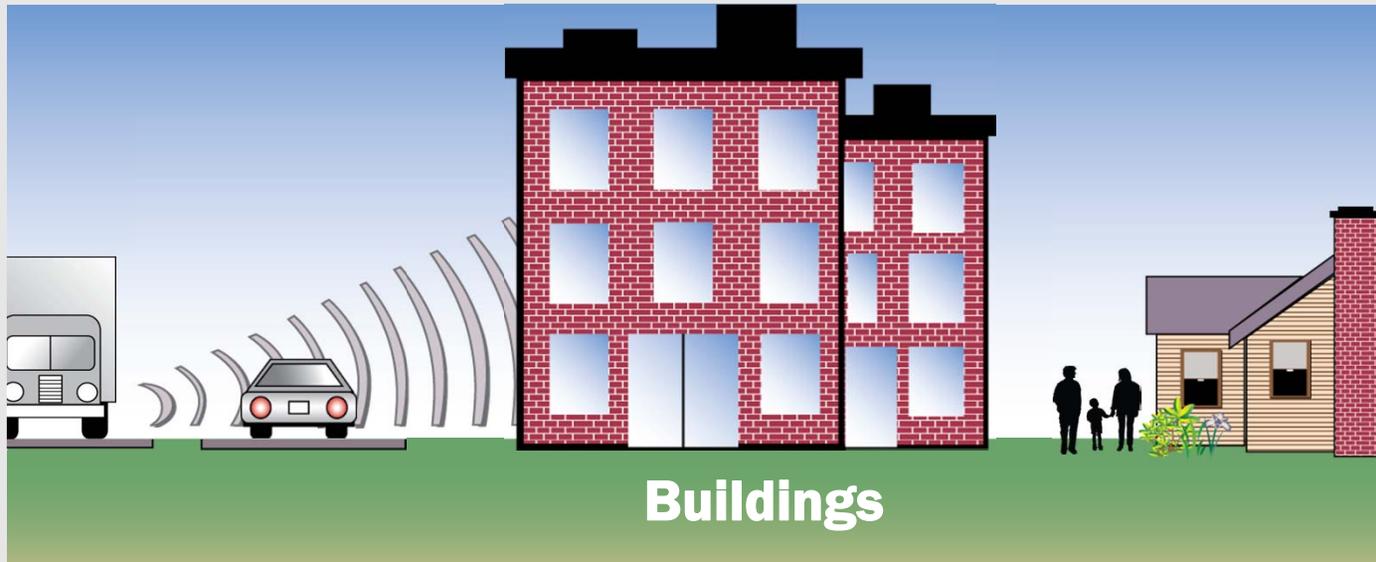
Multi-level interchange with direct freeway-to-freeway ramps.

Highway Traffic Noise

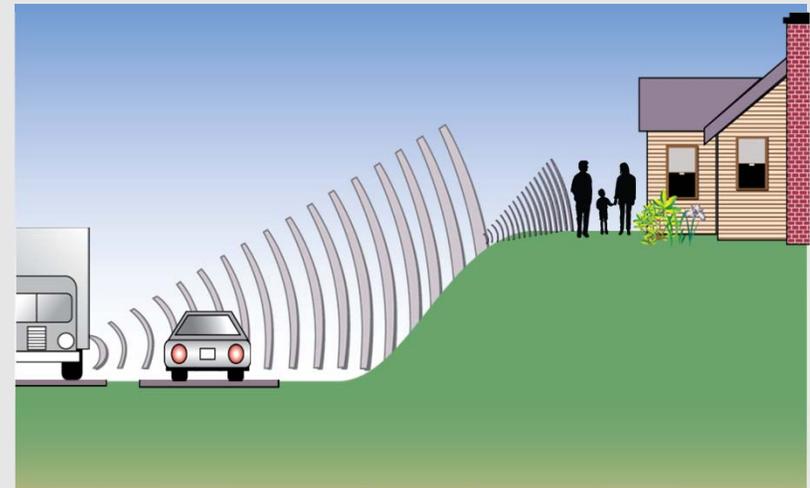
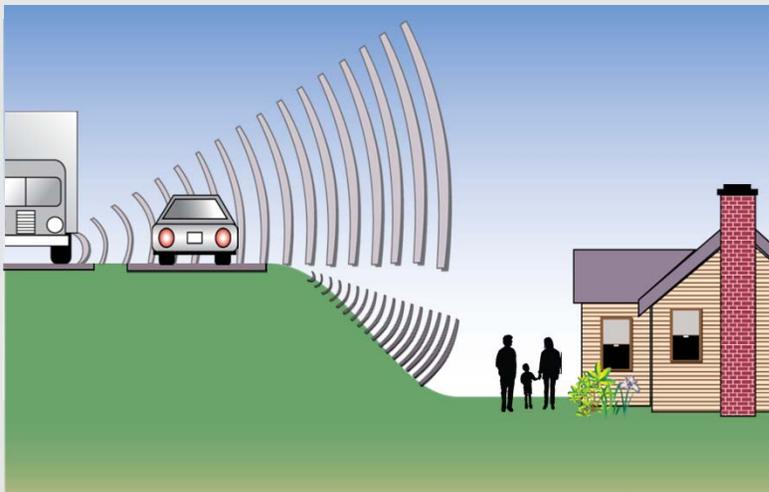
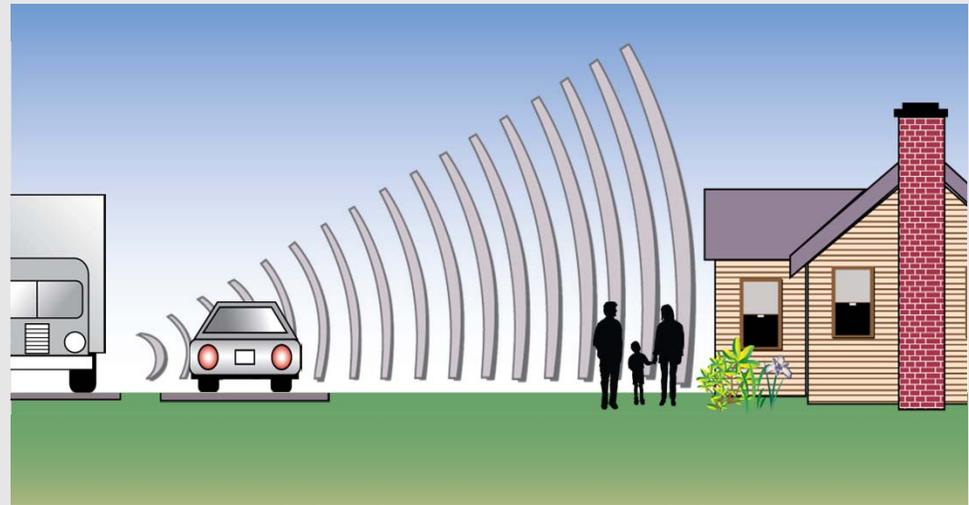
- Produced from tires, engines, and mufflers of cars and trucks.
- Measured either by a sound meter or predicted by computer program.
- Depends on the number and speed of vehicles, the terrain, and the distance between the highway (source) and listener (receiver).



Structures that Affect Traffic Noise

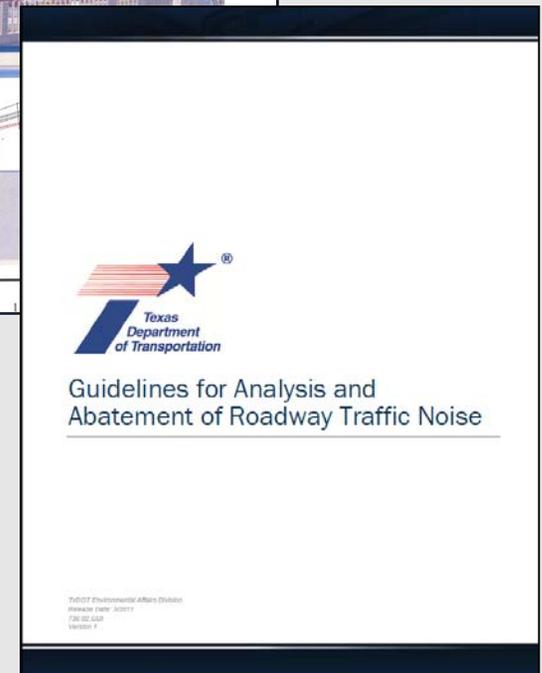
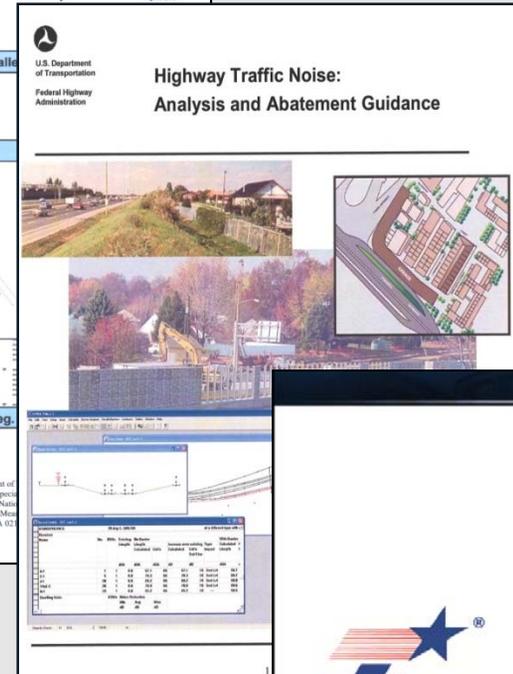
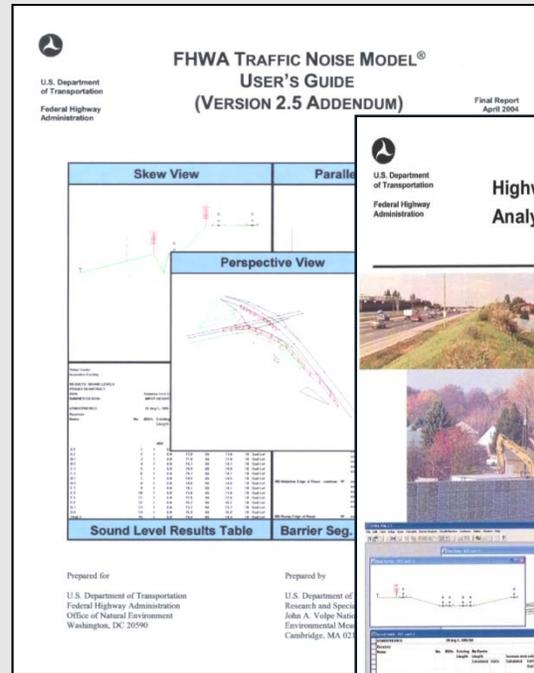


Topography



Traffic Noise Analysis

- FHWA regulation on highway traffic noise requires that we conduct noise studies when:
 - utilizing federal funds
 - adding capacity on existing highways
- TxDOT guidelines (FHWA approved) utilized to perform this analysis.
- Traffic Noise Model (v.2.5) is the software that models the existing and future roadway.
- The purpose of our noise study is to learn whether the IH 30/SH 360 Interchange Project traffic noise will have an impact 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. When sound levels are measured, sound meters adjust the high/low frequencies of traffic noise to match the way an average person hears it. This adjustment is called A-weighting (dB(A)).
- Traffic noise levels are never constant due to the changing number, type and speed of vehicles. A single value is used to represent the average or equivalent sound level or “Leq.”

FHWA has established **Noise Abatement Criteria (NAC) to determine possible traffic noise impacts on various activity areas.**

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 continue to serve its intended purpose
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 decides that an impact occurs when predicted noise levels are:

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

In either of the above condition, noise abatement must be considered.

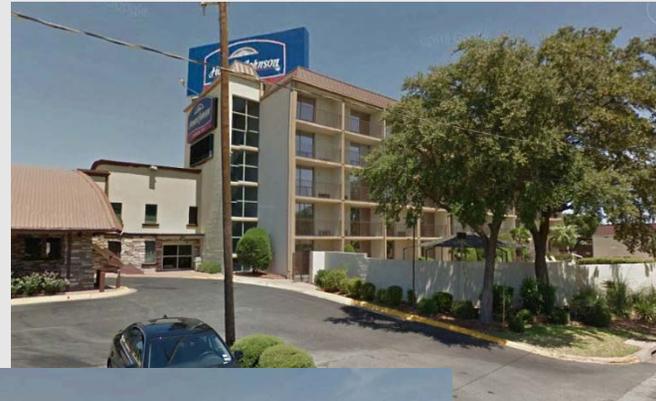
What Does 67 dB(A) Sound Like?

Sources	dB(A)
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?

- Identifies land use and activity areas that may be impacted by highway traffic noise.
- Determines existing noise levels.
- Predicts noise levels 20 years in the future for No-Build and Build Alternatives.
- Examines and evaluates ways to reduce noise impacts (abatement measures).



Noise Abatement Consideration

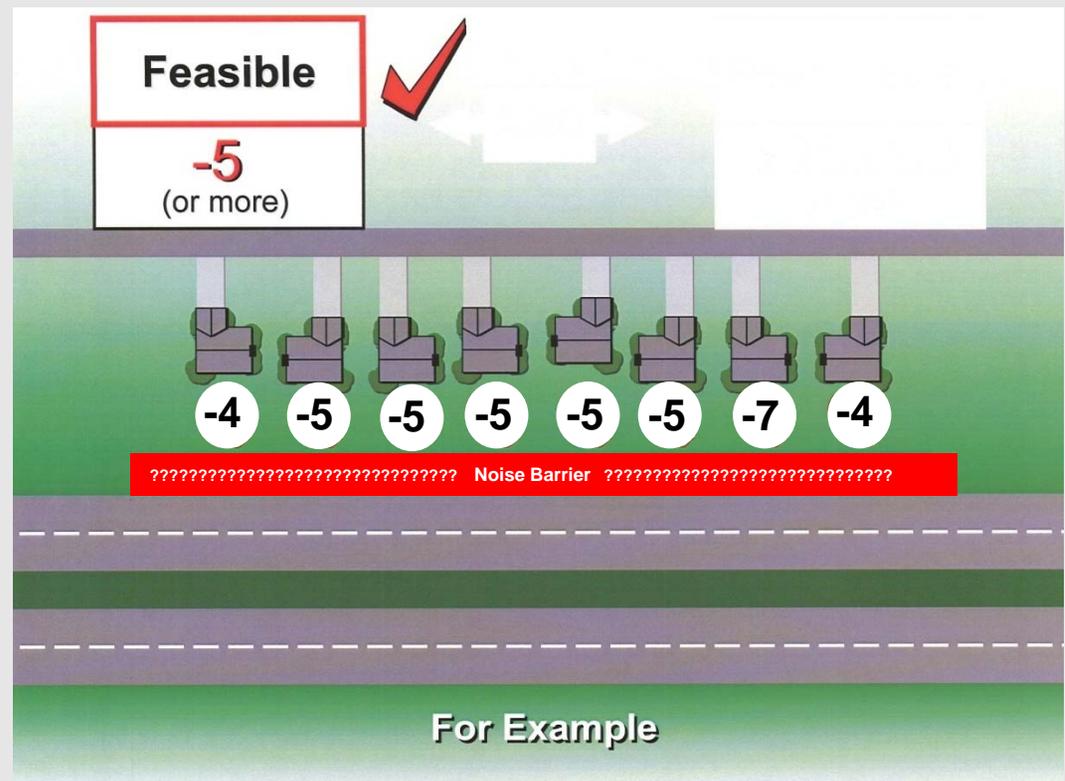
- Noise abatement refers to the positive action taken to reduce the impact of noise from highway traffic on an activity area.
- Noise abatement on this project:
Noise Barriers
- Noise Barriers evaluated to determine if they are **feasible and reasonable.**



Photos taken from FHWA *Keeping the Noise Down Guidebook*

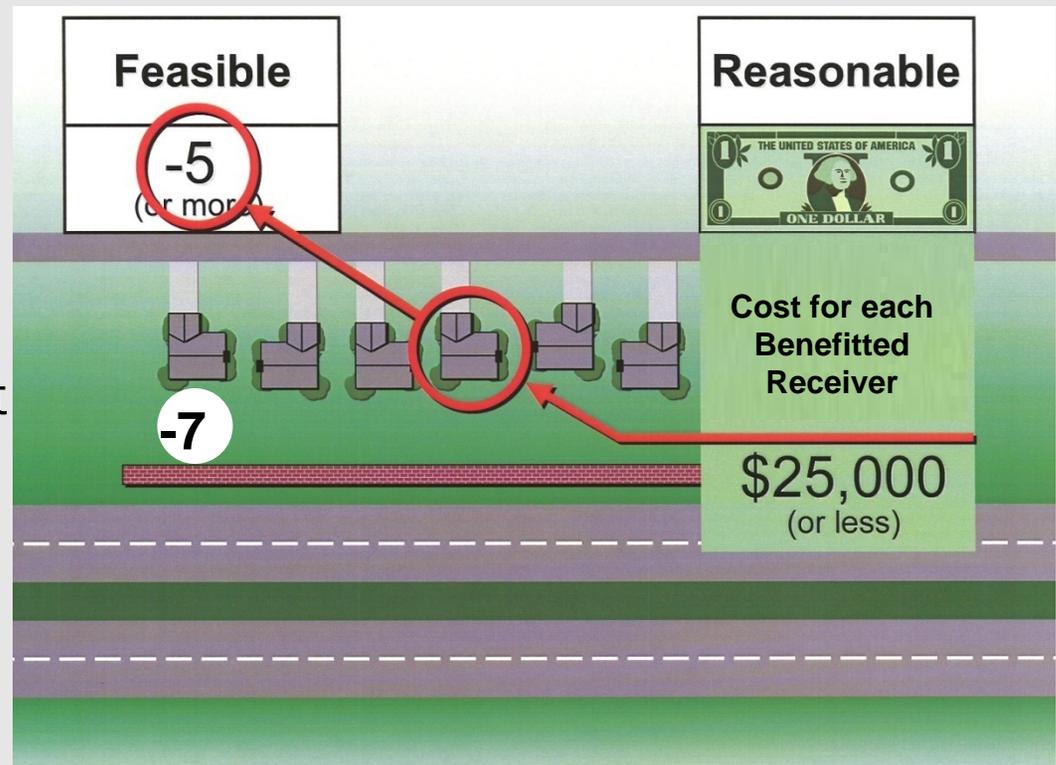
Feasibility Requirements

- Can the noise barrier:
 - Provide a minimum of 5 dB(A) reduction in noise levels at the majority of impacted sites?
 - Be constructed at the appropriate 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?

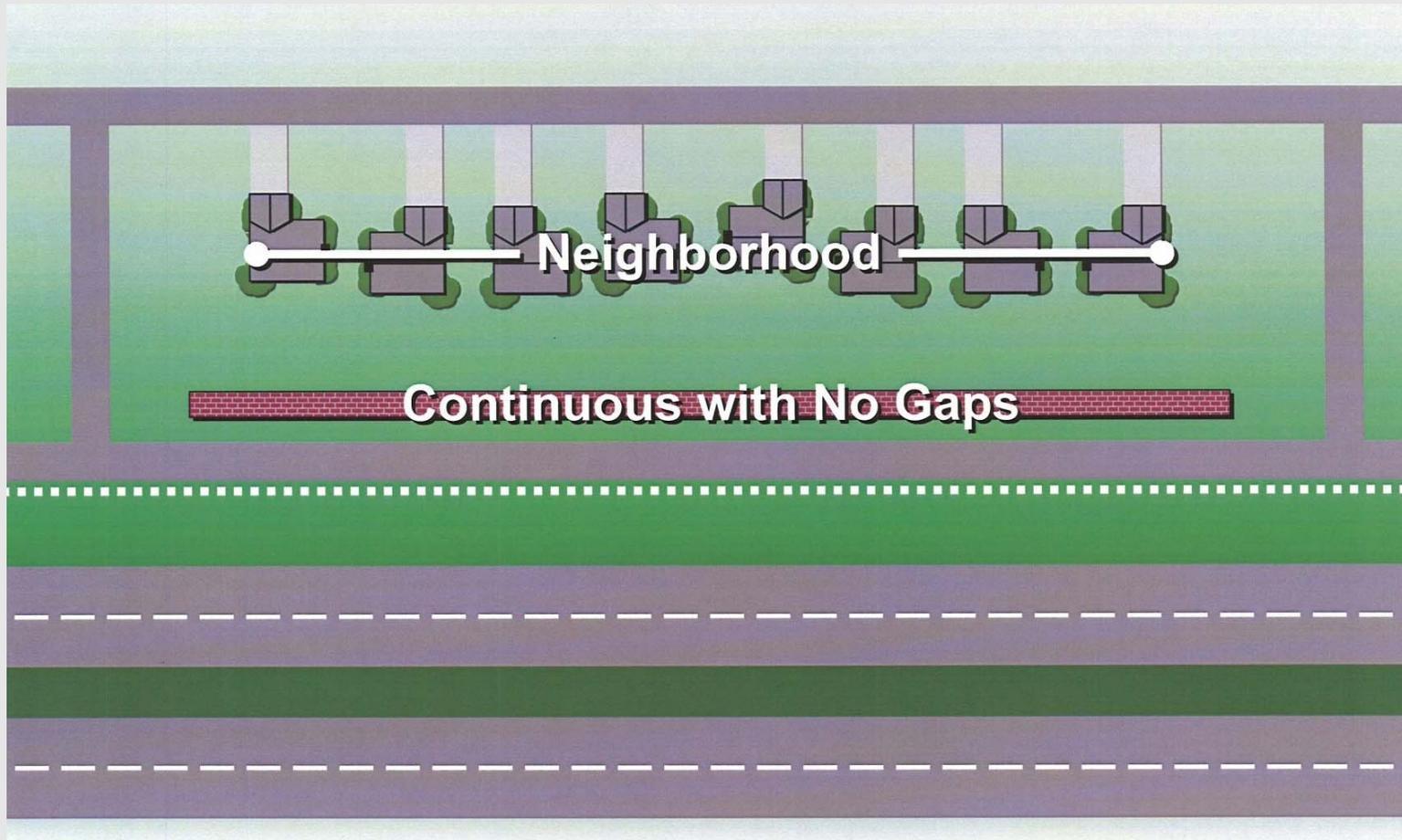


Reasonableness Requirements

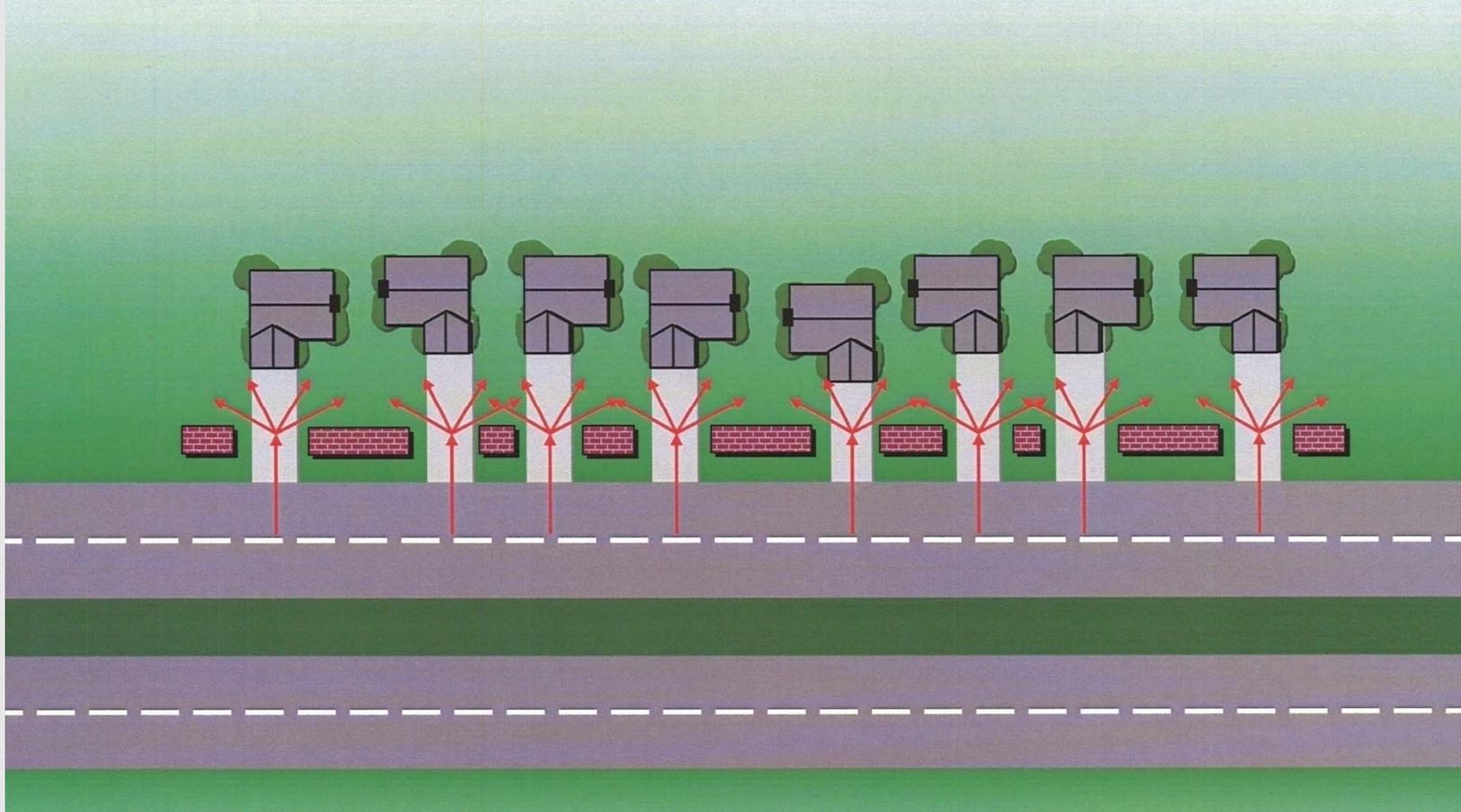
- Cost/benefit analysis where total cost of noise barrier is \$25,000 (or less) per benefitted receiver.
- Noise reduction design goal where at least one first row receiver (residence) achieves at least a 7 dBA reduction in noise.
- Opinion of the benefitted receiver(s) where the final decision to construct noise barrier or not is by a simple majority vote.



Noise Barriers **MOST** Likely to be Feasible and Reasonable

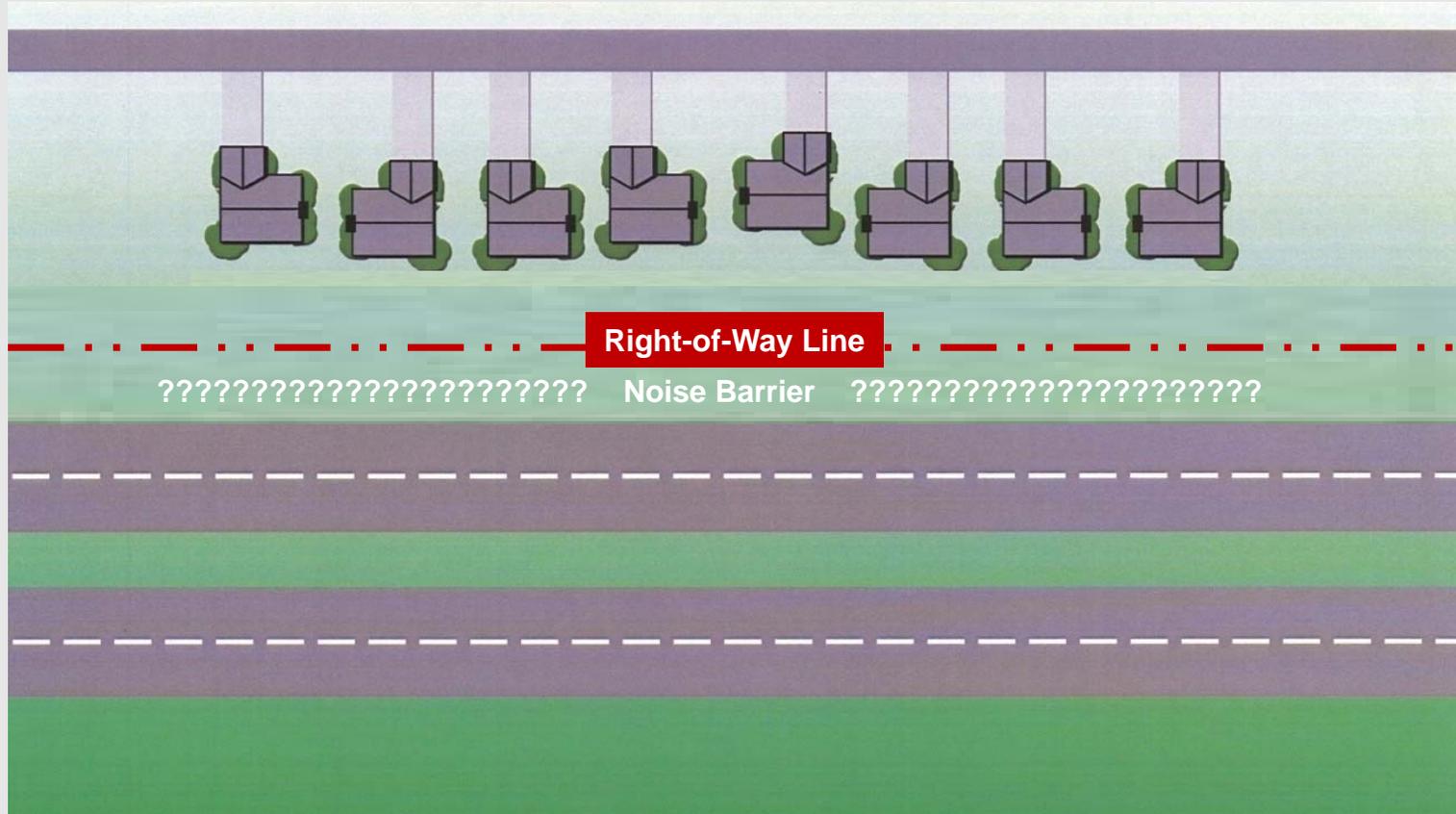


Noise Barriers **NOT** Likely to be Feasible and Reasonable

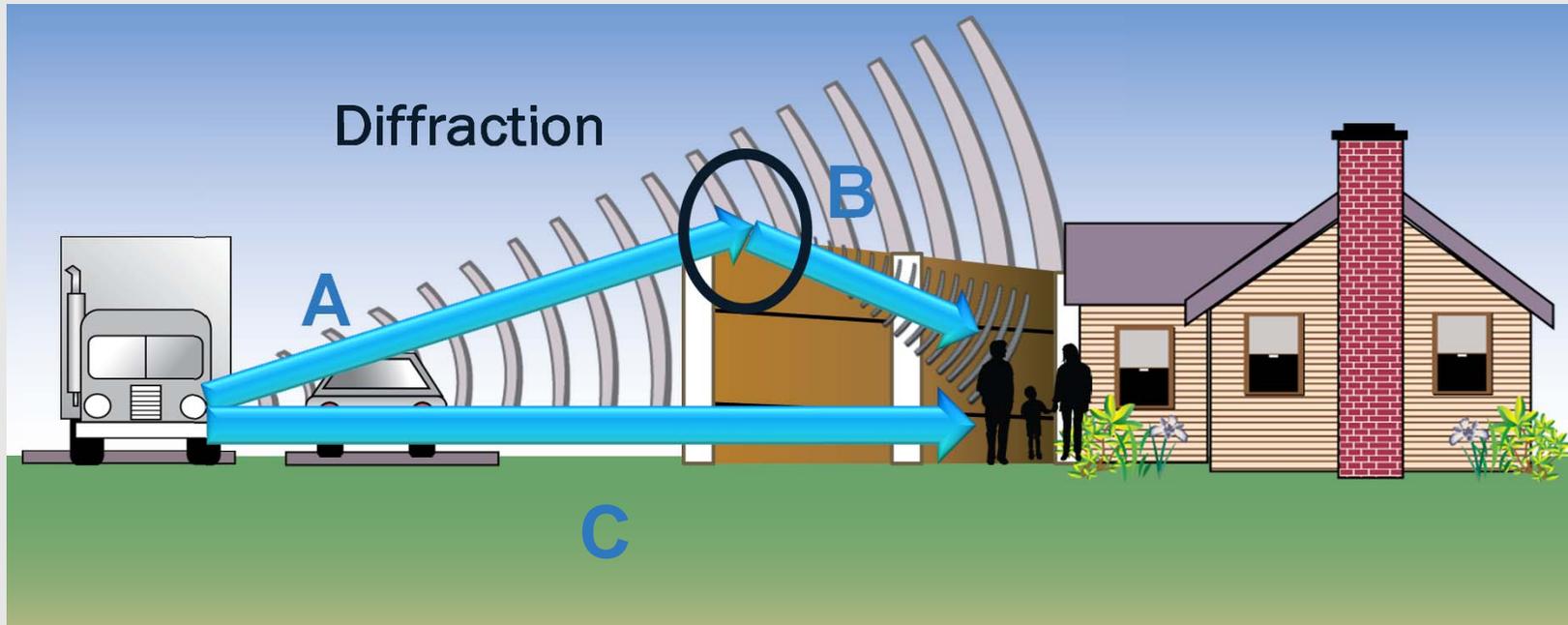


Public Involvement

Consent of a **Majority** of Adjacent Property Owners



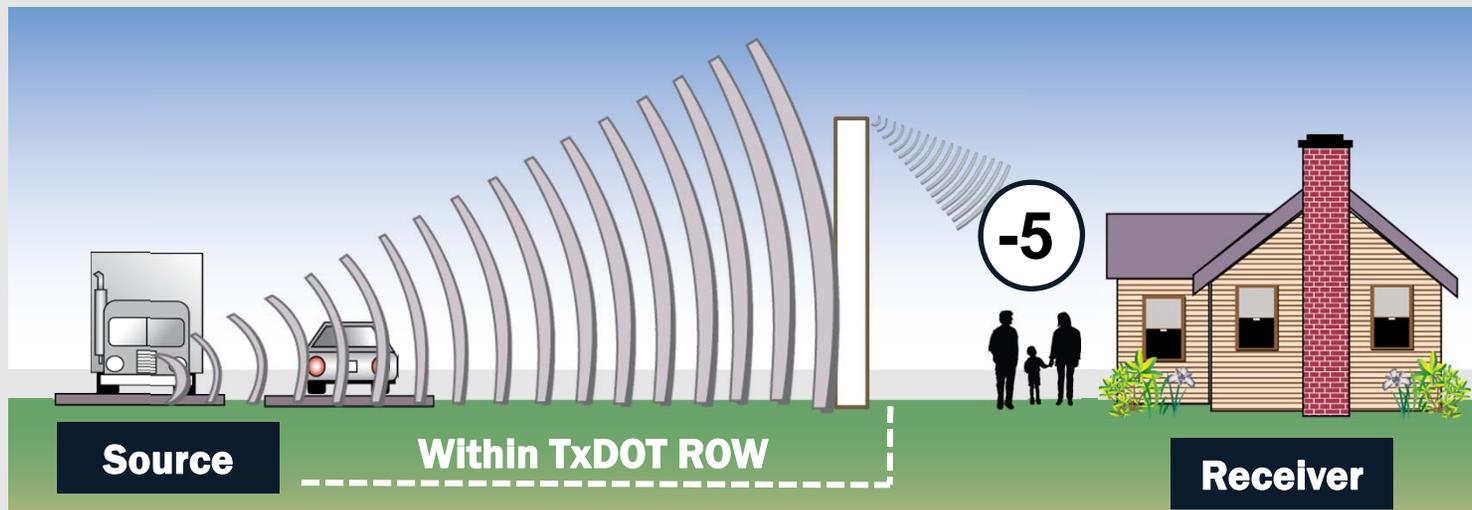
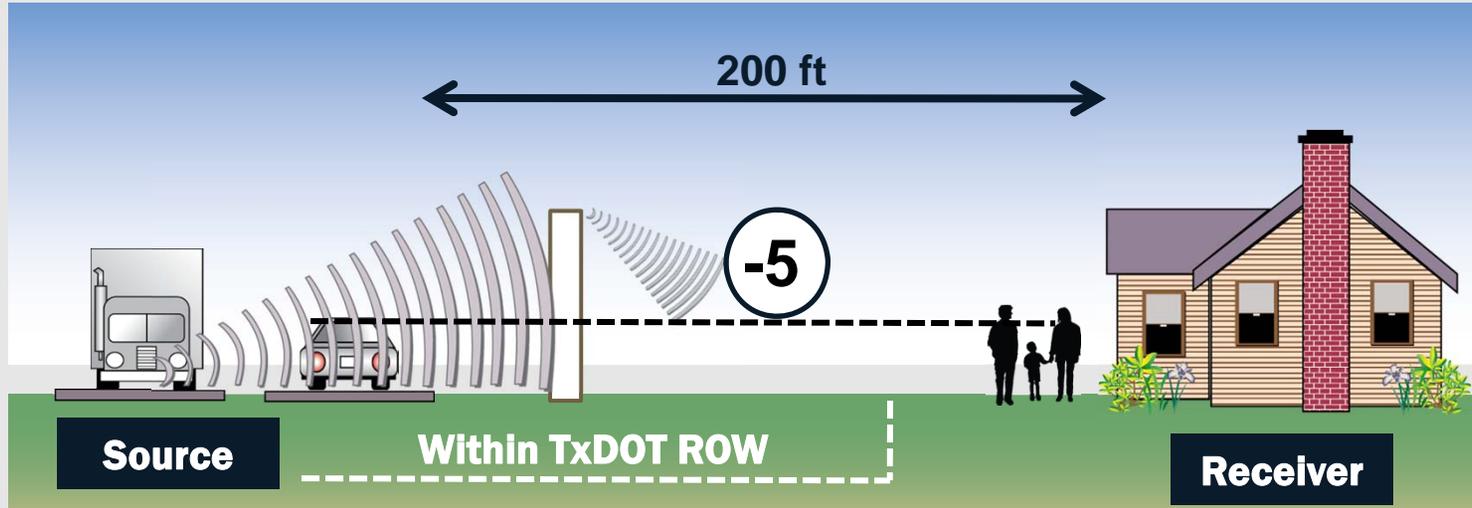
How Noise Barriers Work



$$A + B > C$$

= Longer Path Length

When Noise Barriers are **MORE** Effective



Noise Barrier Considerations

PROS:

- Noise barriers reduce the impacts of traffic noise.
- Aesthetically pleasing appearance and ability to blend in with the surrounding environment.
- Allow for continued access to activity areas from the highway for routine and emergency traffic.
- Ensure motorist and pedestrian safety by allowing for adequate visibility around the noise barrier.
- Avoidance of utilities.

CONS:

- Could restrict views.
- May result in feelings of confinement.
- Potential loss of air circulation, sunlight, and night lighting.
- Limited access to nearby streets.
- Potential negative impacts to businesses by restricting views and access by customers.

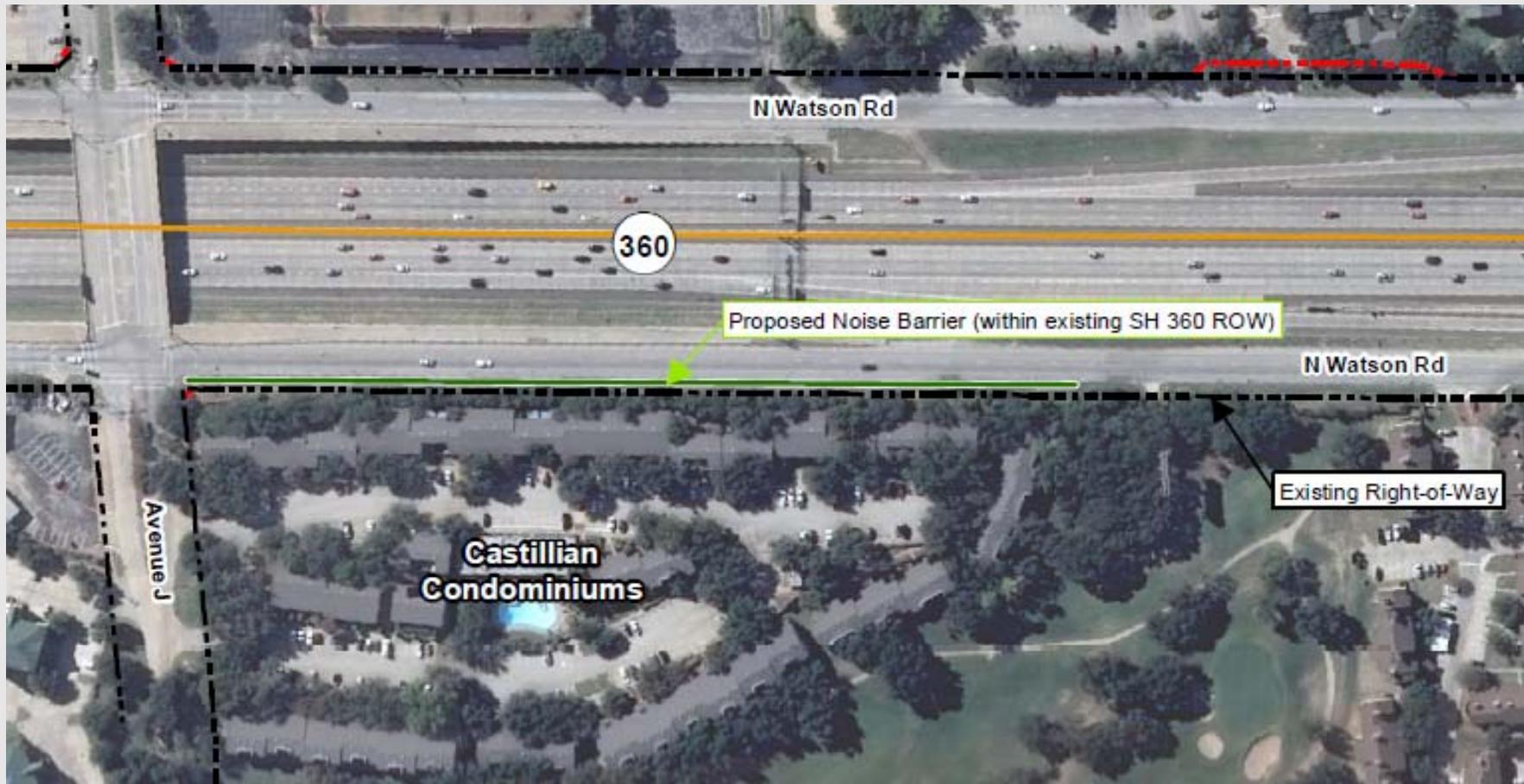
Traffic Noise Analysis

- A receiver is a point that represents a location of the frequent human activity area for a property. A representative receiver is a receiver that is reported for one or more receivers (a subdivision, set of condominiums, etc.).
- Analysis modeled traffic noise levels at 26 representative receivers along the project for 2015 and 2035 based on traffic volumes, types of vehicles and speeds, as well as roadway and terrain features.
- Results: 13 of the 26 representative receivers would have noise impacts.
- Noise abatement is considered for residences when predicted noise levels are 66 dB(A) or above.

Traffic Noise Analysis Continued

- For the Castillian Condominiums adjacent to SH 360, the model (TNM) calculated existing sound levels to be 73 dB(A) and the 2035 sound levels to be 75 dB(A).
- A noise barrier (965 feet long and 14 feet tall) is recommended to abate traffic noise for the Castillian Condominiums.
- The TNM model estimated that the proposed noise barrier would help reduce noise levels for several receivers by an average of approximately 7.1 dB(A) for first row receivers.

Noise Barrier Location Map



Noise Barriers

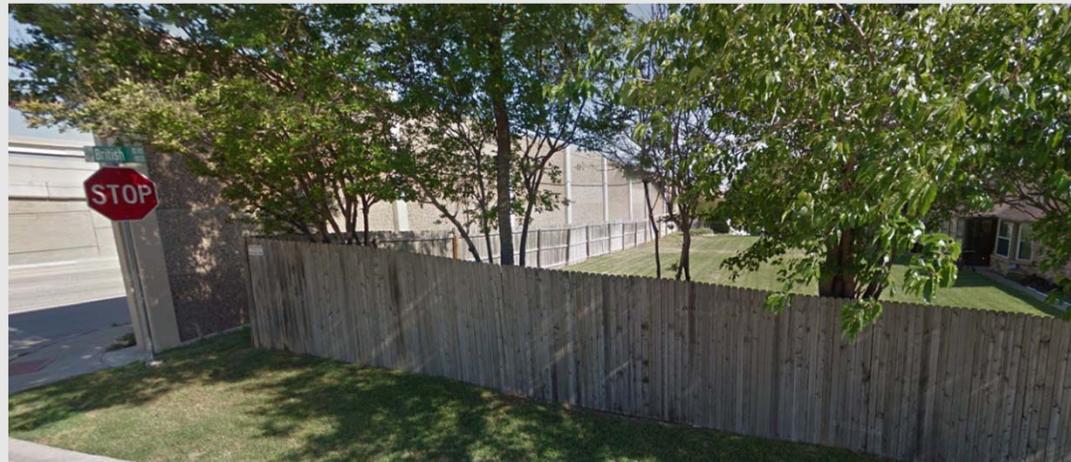
- Proposed noise barrier location is as shown on the exhibits and in the mail-out map.
- Noise barrier to be constructed within TxDOT SH 360 existing right-of-way (ROW) with the IH 30/SH 360 Interchange Project.
- Vegetation and fences outside of the existing ROW would not be removed; however, tree limbs and shrubs within the ROW will need to be trimmed or removed for noise barrier construction.
- Existing entrance to the condominiums would remain from Avenue J.
- The IH 30/SH 360 Interchange Project was let for construction earlier this month in November 2015.

Similar Noise Barrier Aesthetics – SH 161 at British Boulevard

Roadway Side



Residential 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.
- The final aesthetic style was coordinated between TxDOT project engineers and the City of Arlington and City of Grand Prairie.
- TxDOT will maintain the noise barrier.
- The proposed noise barrier would not be built without the approval of a majority vote (>50%) by ballot of the adjacent condominium owners.

Ballots must be postmarked by:

Tuesday, December 1, 2015

What Happens After December 1st?

- Tally up the votes received.
- If approved by majority vote, the noise barrier would be planned to be constructed as part of the IH 30/SH 360 Interchange Project.
- Construction of the noise barrier is not scheduled until 2018, if approved by majority vote.
- Since it is expected to be several years before the barrier would be constructed, TxDOT plans to update the ballot and hold an additional vote before the construction materials would need to be ordered.

**Thank you for your interest in the
IH 30/SH 360 Interchange Project.
Questions?**

**For Questions or Concerns After This
Workshop Please Contact:**

Ms. Elisa Garcia at 817.370.6718

For Additional Information Visit:

**[http://www.txdot.gov/inside-txdot/
projects/studies/fort-worth/i-30.html](http://www.txdot.gov/inside-txdot/projects/studies/fort-worth/i-30.html)**