

# Frequently Asked Questions about Noise... and Answers

## What initiates a traffic noise study?

Traffic noise studies are conducted when one or more of the following conditions occur:

- (1) an existing roadway is expanded;
- (2) an existing roadway's alignment is substantially altered; or
- (3) a new roadway is proposed.

The SR 528 PD&E Study will evaluate the widening of SR 528 from the existing four lanes to six lanes.

## When must FDOT consider noise abatement?

State and Federal standards require noise abatement to be considered if existing and/or projected future traffic noise levels approach or exceed the Federal Highway Administration's Noise Abatement Criteria or a substantial increase over the existing noise levels is expected.

## Why aren't noise measurements taken during rush hour?

Traffic noise is speed related. As vehicles move faster, they produce more noise. When traffic is stop-and-go or at low speed, traffic noise levels are usually lower.

## Why does it seem noisier late at night and early morning?

Because the surrounding areas are in fact quieter at those times, the masking effect of other noise does not screen the traffic noise. This usually makes the traffic noise more noticeable than at other times of the day.

## Why is there a barrier on the other side of the highway or just down the road and not in my area?

There are many factors that affect noise levels or abatement measures even when traffic volumes are the same. Each area is evaluated independently from others to account for differences. These differences can occur when the terrain changes, the highway curves in a different direction, and/or the highway elevation changes or access openings prevent noise wall effectiveness. Also, barriers are sometimes constructed privately and not by FDOT.

## What are the effects of vegetation on traffic noise?

Vegetation has a minimal effect on traffic noise. In order for vegetation to provide a perceptible noise reduction it must be at least 100 feet thick and extremely dense. You must not be able to see through the vegetation in order for any reduction to occur.

## Can you construct a noise wall for safety reasons?

Noise walls are not intended to be safety or aesthetic barriers. There are other reliable methods, such as guardrails, to protect against vehicles running off the road. All improvements, whether to reduce noise or enhance safety, have to meet specific criteria and be justifiable on their own merits.

## What happens after the PD&E Study? Are further considerations given to noise abatement measures?

It is during the PD&E Study that noise abatement considerations are addressed for the first time. If an abatement measure is determined to be both "feasible and reasonable", FDOT makes a commitment to further evaluate the measure during Design. It is during the Design phase that construction documents are prepared and finalized. When the documents are at about 60% complete, engineering details are sufficient to allow a detailed assessment of the roadway improvements and any abatement measure. Barrier engineering factors such as constructability, maintainability, safety, utility conflicts, drainage, and access management are considered. If the abatement measures still prove to be "feasible and reasonable", FDOT will present these measures to the community for input. Once accepted, all "feasible and reasonable" abatement measures are then incorporated into the final design plans.

## What Can You Do?

We encourage you to get involved in the PD&E study process. Your input, along with the technical evaluations, provide the basis for final recommendations. To learn more about the study as well as to share your thoughts and ideas, you may contact:

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# Noise Fact Sheet



for the SR 528  
Project Development and Environment (PD&E) Study  
From SR 520 to Terminal B Interchange  
Orange and Brevard Counties, Florida

## Noise Study Steps

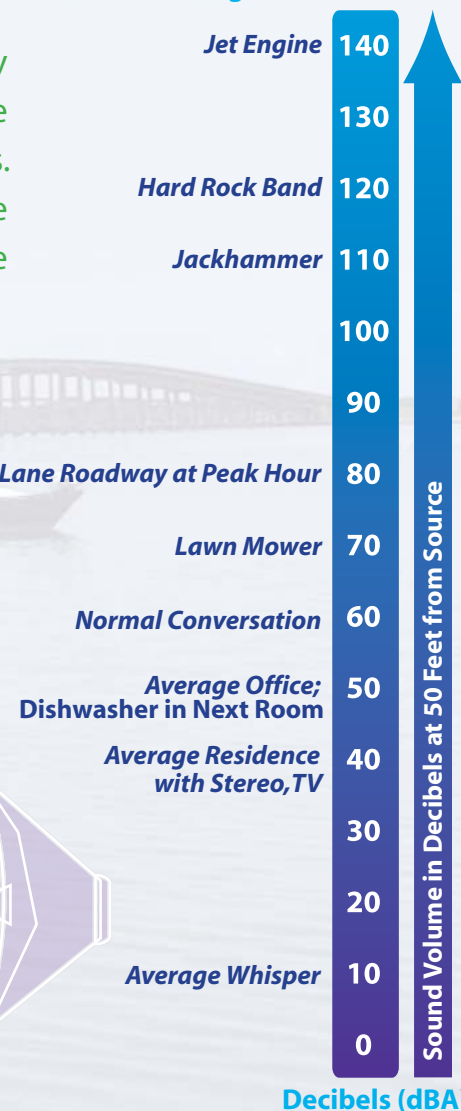
Several steps are needed to fully assess potential traffic noise impacts and abatement measures. The information here shows those steps and how they fit into the overall study.

## Sound vs. Noise

Sound is created when an object moves. The movement causes vibrations, which reach our ears as sound. Noise is unwanted sound and is perceived differently by each person. Sound and noise are quantified in units called decibels (dB).

For highway traffic noise, an adjustment is made of the high and low pitched sounds to approximate the way an average person hears sound. This adjustment is known as the A-weighted scale (dBA). The graphic to the right provides a range of those sounds found in our everyday lives.

### Range of Sound Levels



# Data Collection

## Identify Noise Sensitive Sites

Noise sensitive sites are defined as properties where there is frequent outdoor human activity and where a lowered noise level would be of benefit. Examples are: homes, parks, schools, and places of worship. The number and locations of the noise sensitive sites adjacent to SR 528 will be recorded during field reviews of the project. This information will be used to map their locations in the computer prediction model.

## Measure Existing Traffic Noise

These measurements are used only to validate the computer prediction model, making sure that it accounts for specific conditions within the corridor. This activity involves: measuring noise level; using a sample period of three repetitions of ten minutes each; and recording any outside influences in sound levels, like birds, horns, airplanes.

## Validate the Noise Model

This step ensures that the noise model shows that the measured noise levels are the same as the modeled noise levels. A difference of no more than  $3\pm$  dBA is allowed. Once the accuracy of the model is verified, the model is run to predict traffic noise levels for the project area.

# Noise...

## Run the Noise Model

By inputting the data collected, the model is run to calculate traffic noise levels for the following scenarios.

### *Three different scenarios are considered:*

1. Existing noise environment;
2. Future noise environment, in year 2030 after the project is complete and open to the public (known as "Build"); and
3. Future noise environment, same time frame but without the project in place (known as "No Build").

## Identify, if any, Affected Noise Sensitive Sites

A noise sensitive site is said to be affected when the site is predicted to experience traffic noise levels that approach or exceed the Noise Abatement Criteria (NAC) or when future traffic noise levels resulting from the proposed roadway project are predicted to exceed existing levels by 15 dBA or more. In Florida, the NAC are exceeded when traffic noise levels reach or exceed 66 dBA. For the SR 528 study, the noise sensitive sites identified are residences and recreational areas.

# Refinements

## Traffic Noise Abatement Considerations

When a noise impact is identified, noise abatement must be considered. Noise abatement (defined as ways to reduce noise) is evaluated for noise sensitive sites affected by SR 528 traffic noise. This evaluation addresses the "feasibility and reasonableness" of providing the abatement.

To be considered feasible, the abatement measure must provide at least a 5 dBA reduction to an affected noise sensitive site. Also reviewed are engineering constraints that may not allow an abatement measure to be implemented, such as safety constraints.

The evaluation of reasonableness is guided by the FDOT's responsibility to use prudent judgment when considering the expenditure of public funds. In determining whether an abatement measure is "feasible and reasonable", 21 criteria are considered. A list of these criteria is provided below.

If an abatement measure is determined to be both "feasible and reasonable", the FDOT makes a commitment to further evaluate the measure during Design, the phase of work that follows the PD&E Study. It is during the Design phase that construction documents are prepared and finalized.

## Criteria used to Determine Feasibility and Reasonableness

- Relationship of Future Levels to the Noise Abatement Criteria
- Insertion Loss (reduction of noise level due to abatement)
- Safety
- Community Desires
- Accessibility
- Land Use Stability
- Local Building Codes and Ordinances
- Views of Locally Elected Officials
- Noise Level Increases from Existing to Future "Build" Conditions
- Noise Level Changes from Future "No Build" and "Build" Conditions
- Antiquity
- Constructability
- Maintainability
- Aesthetics
- Right-of-Way Needs
- Construction Cost
- Utilities
- Drainage
- Special Land Use Considerations
- Other Environmental Impacts
- Additional Considerations