

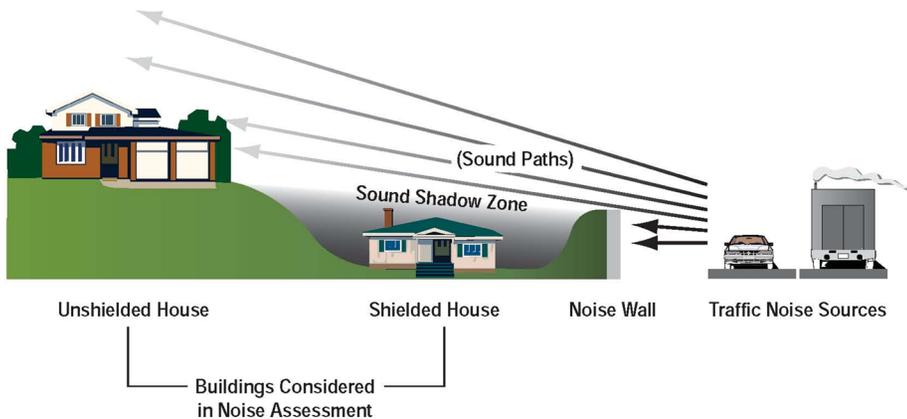
WHEN DO NOISE WALLS WORK?

Sounds travels very much like water or light, following the easiest path over, under, and around things in its path. The further people are away from the source of the sound, the lower the noise level they will hear.

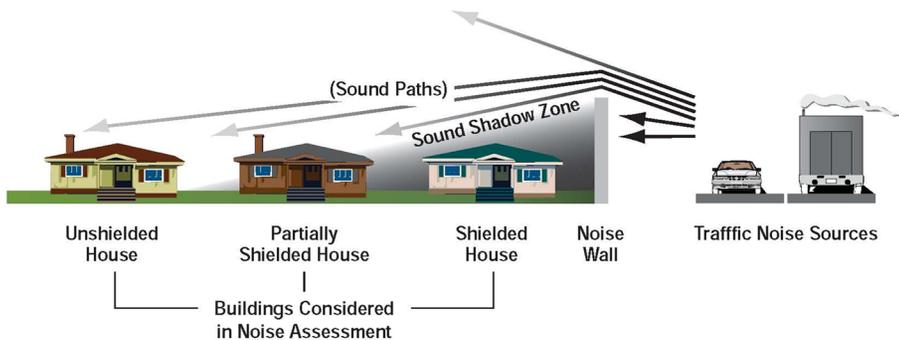
Noise walls do not work if the source of the noise can be seen. They will also not work if there are gaps in the wall. The noise will simply travel through that opening much like water will flow through a crack in a dam. If a building is located higher than a noise wall, the noise will flow over the wall to the building.

The graphics below show two examples of when noise walls located between houses and a road will or will not shield the houses.

Noise walls do not completely eliminate all noise.



Hilly Area Exam



Flat Area Example



Answering Your Questions About HIGHWAY TRAFFIC NOISE



HOW DOES NCDOT ADDRESS TRAFFIC NOISE?

There are many ways to reduce traffic noise. Noise walls are one tool, but earth berms and highway design modifications can help reduce traffic noise as well. Sometimes, noise walls simply will not reduce noise levels because of the location of the road, nearby buildings and other surrounding features such as hills and valleys. Each new road must be examined individually to determine what measures can be taken. This pamphlet briefly describes how NCDOT determines when a noise wall should be built, and provides contact information if you have more questions.

WHERE DO I FIND MORE INFORMATION ABOUT NCDOT'S TRAFFIC NOISE POLICY?

NCDOT's Traffic Noise Policy can be found at <https://goo.gl/fK1nkP>

Call or e-mail us for more information about NCDOT's noise policy and how it is applied. Detailed noise analysis information can also be found at the Federal Highway Administration noise website, <http://www.fhwa.dot.gov/environment/noise>

North Carolina Department of Transportation

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WHEN ARE NOISE WALLS CONSIDERED?

When a project adds new travel lanes or substantially alters the location of an existing road, potential increases in traffic noise must be evaluated. If traffic noise is predicted to reach certain levels in the future after the project is in place, noise reduction measures (typically noise walls) must be considered.

Potential traffic noise increases are evaluated for noise-sensitive locations permitted before the “Date of Public Knowledge.”

WHAT IS THE “DATE OF PUBLIC KNOWLEDGE?”

This is the date that the public (and local government) is officially notified of the future path of the road.

The Date of Public Knowledge is the approval date of the Final Environmental Document, which can be a Categorical Exclusion (CE), State or Federal Finding of No Significant Impact (FONSI), or State or Federal Record of Decision (ROD).

Development permitted after the Date of Public Knowledge is not eligible for noise abatement.

HOW IS TRAFFIC NOISE EVALUATED?

To begin the process, noise experts go to homes, churches, schools, parks, and other noise-sensitive land uses that may be affected by a proposed highway project and use sound meters to measure existing noise.

Next, using complex computer software, these noise measurements are then used to develop state-of-the-art models that accurately represent local site conditions. Then the project design and anticipated future traffic volumes are added to the models so that future noise levels can be predicted.

Noise-sensitive locations eligible for noise reduction are identified based on the Date of Public Knowledge.

If the predicted noise increase is MORE than the level defined by NCDOT policy, ways to reduce the noise are considered at all eligible locations.

ARE THERE OTHER OPTIONS TO REDUCE NOISE?

Other options may also help reduce traffic noise. Some of these may be provided by NCDOT, and others are alternatives that might be considered by private developers or homeowners.

- **Land use design** – setting homes back further from the road or separating them from the road by other development that is not noise-sensitive may reduce traffic noise levels.
- **Earth berms** – long mounds of soil built parallel to a highway. Because of the amount of land required and the land’s cost, berms are rarely the most practical solution to highway noise.
- **Pavement types**—research is continually being conducted to develop different types of pavement that might reduce traffic noise.
- **Types of vehicles/speed limits**—noise can be reduced with lower speed limits and truck restrictions on a highway. However, reducing the speed limit below the appropriate speed for which a highway is designed will have only a moderate effect on traffic noise and may actually increase the number of accidents on the roadway.
- **Building insulation** – upgrading noise insulation in buildings, such as replacing doors and windows or adding insulation to walls and attics.

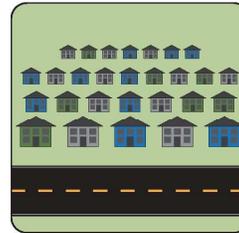
HOW DOES NCDOT DECIDE WHICH COMMUNITIES GET NOISE WALLS AND WHICH DO NOT?

Once NCDOT completes the technical evaluation, it also considers the following questions:

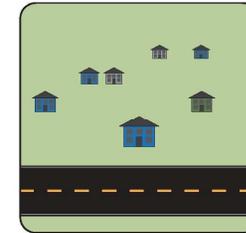
- Will a noise wall reduce the sound enough to justify its construction? Sometimes, a noise wall simply will not reduce the noise enough.
- Is a noise wall technically realistic? Every road is different – sometimes the terrain or other obstacles such as utilities makes building a wall difficult.
- How many people will benefit from a reduction in noise? Is the number high enough to justify the cost? The state cannot justify the expense if the cost is too high when compared to the benefits received. Noise walls currently cost about \$3 million per mile.
- Does a simple majority of property owners and tenants who receive a predicted noise level reduction due to construction of a noise wall actually want the wall? Public preference for or against a wall is obtained through a balloting process.

WHAT AFFECTS THE LIKELIHOOD OF A NOISE WALL BEING RECOMMENDED?

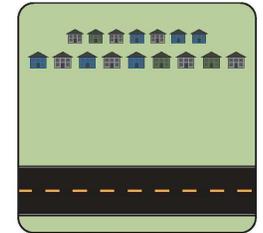
Density and distance are among the factors that affect the likelihood of a wall.



Likely – a wall could reduce noise at many houses.



Unlikely – the cost of a wall would be high compared to how few houses would benefit



Unlikely— although there are many houses, they are too far from the highway for a wall to reduce noise enough.