

# **APPENDIX I**

## **PUBLIC INVOLVEMENT MATERIALS**

# NOISE BOARDS

# HOW DOES NCDOT DECIDE WHICH COMMUNITIES GET NOISE WALLS?

## EVALUATION

For the first step in the process, NCDOT goes to areas that may be affected by increased noise from a proposed highway project and uses special equipment to monitor existing noise.

Next, using complex computer modeling, we predict expected noise changes at these locations after the road is built and traffic increases. Vehicle types and speeds play a significant role in estimating loud noises. Trucks create more noise than cars. Additionally, the faster the vehicle speed, the louder the noise.

Then, we must determine which noise-sensitive locations were in place or had building permits issued before the Date of Public Knowledge and, therefore, are eligible for noise reduction.

If the anticipated noise increase is MORE than the levels defined by NCDOT policy, we begin to consider possible ways to reduce the noise, such as with noise walls and earth berms, at all eligible locations.

## CONSIDERATIONS

Once NCDOT has completed the technical evaluation, they also consider the following questions:

- Will a noise wall reduce the noise enough to justify its construction?  
Sometimes, a noise wall will not reduce the noise enough.
- Is a noise wall technically realistic?  
Every road is different – sometimes the terrain makes building a wall very difficult.
- How many people will benefit from a noise wall? Is this number high enough to justify the cost?  
Sometimes, the state cannot afford to build a wall because the cost is too high when compared to the benefits received.
- Do property owners and tenants who would receive a predicted noise level reduction with the proposed noise wall actually want the wall?

## LIKELIHOOD OF QUALIFYING FOR A NOISE WALL

HIGH DENSITY



MORE LIKELY, BECAUSE A WALL COULD REDUCE NOISE AT MANY HOUSES.

LOW DENSITY



UNLIKELY, BECAUSE THE COST OF THE WALL WOULD BE HIGH WHEN CONSIDERING HOW FEW HOUSES WOULD BENEFIT

DISTANCE



UNLIKELY, BECAUSE EVEN THOUGH THERE ARE MANY HOUSES, THEY ARE TOO FAR FROM THE HIGHWAY FOR A NOISE WALL TO REDUCE ENOUGH NOISE.

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# MEASURES TO REDUCE TRAFFIC NOISE

There are many ways to reduce noise. Noise walls are one option, but berms and highway design can help reduce noise, as well. Sometimes, noise walls will not reduce the noise because of the location of the road. Each new road must be examined individually to determine what measures can be taken.

## ARE THERE ALTERNATIVES TO NOISE WALLS?

*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—if homes are set back from the road or are separated from the road by other development, the noise levels may be lower.
- Earth Berm—a sloping mound of earth running parallel to the highway. Because of the amount of land required, a berm is not usually the most practical solution to highway noise.
- Pavement design—research is being conducted on how different types of pavement might reduce traffic noise.
- Types of vehicles/speed limits—noise can be reduced with lower speed limits and truck restrictions on a road. However, reducing the speed limit below the appropriate speed for which the road is designed will have only a moderate affect on traffic noise.
- Building insulation—noise insulation in buildings, such as replacing doors and windows or adding insulation to walls and attics.

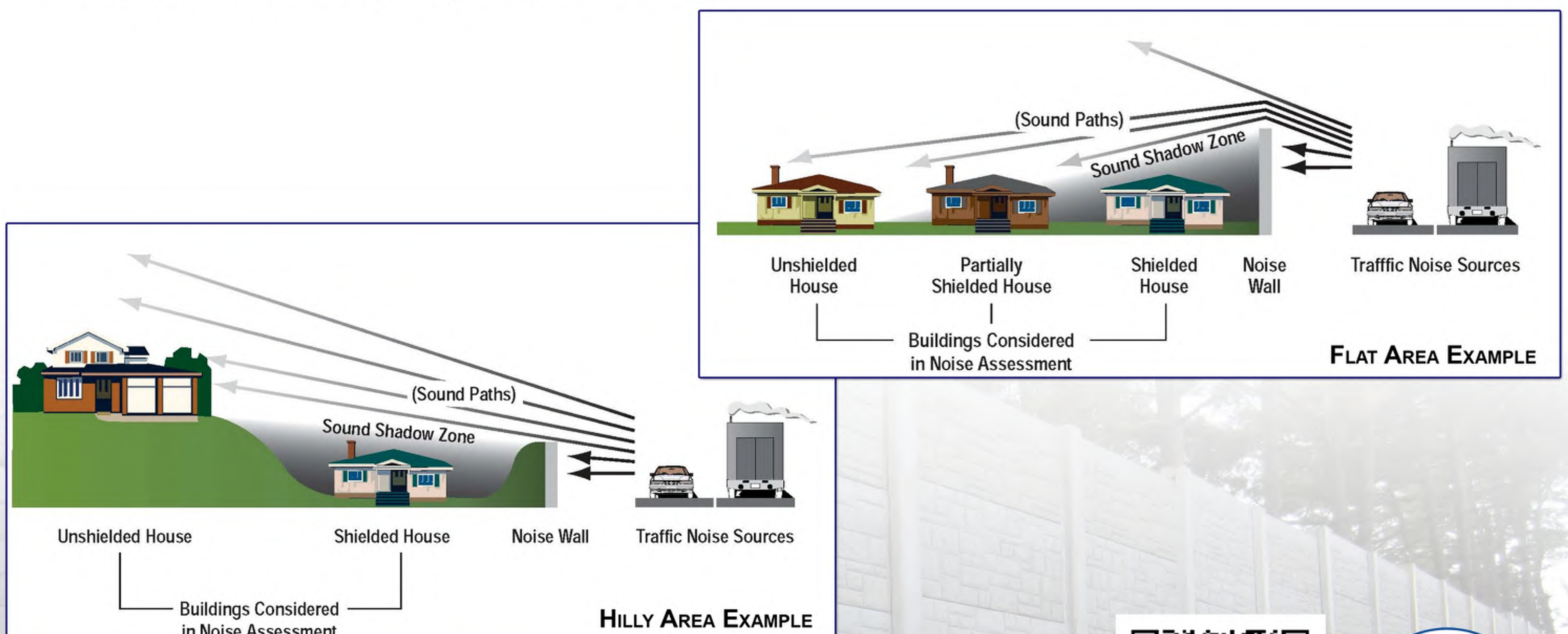
## WHEN DO NOISE WALLS WORK?

Sounds travels very much like water or light. It follows the easiest path over, under, and around things in its path. The farther away from the source of the sound, the lower the noise. Noise walls are usually only effective for buildings less than 500 feet from the highway.

Noise walls do not work if the source of the noise can be seen. 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 noise walls located between buildings and a road. In both cases, the wall will shield one of the houses but will not shield them all.

Noise walls do not completely eliminate all noise.



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# WHEN IS TRAFFIC NOISE CONSIDERED?

Whenever a highway project uses state or federal funds, the potential for increased traffic noise—and how to reduce it—must be evaluated. Whenever traffic noise impacts are predicted, noise abatement (typically in the form of noise walls) must be considered.

Potential traffic noise increases are evaluated only for buildings 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 a future project. After this date, the federal and state governments are no longer responsible for providing noise reduction for new development along the proposed highway project. NCDOT strongly encourages local governments and private landowners to ensure that noise-compatible designs are used for development permitted after the “Date of Public Knowledge.”

- If a road project was approved BEFORE September 2, 2004—this date is based on either the approval of the Final Environmental Document or the Design Public Hearing (whichever is later).
- If a road project was approved ON or AFTER September 2, 2004, this date is the same as the Final Environmental Document.

## WHERE DO I FIND MORE INFORMATION?

For more information about NCDOT’s noise policy and how it is applied, or about how noise is measured, call or email us

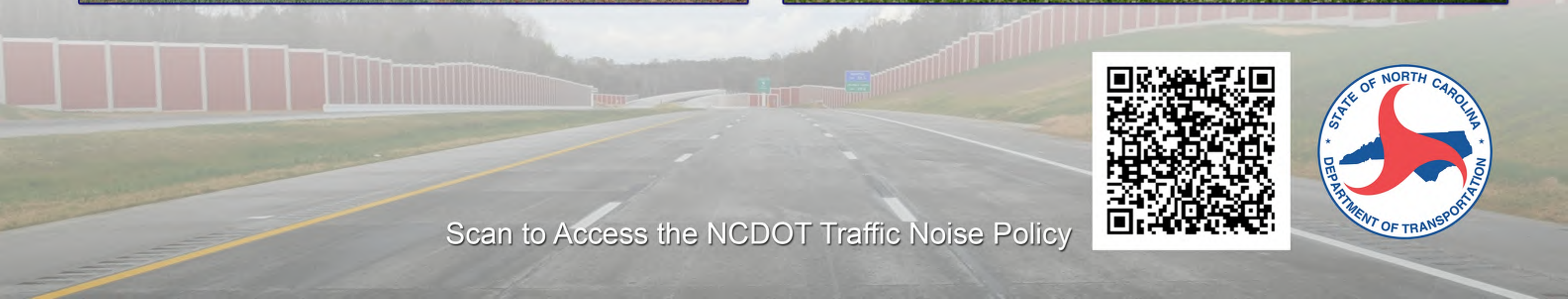
Detailed noise analysis information can also be found at the Federal Highway Administration’s website, <http://www.fhwa.dot.gov/environment/noise>.

### North Carolina Department of Transportation

Traffic Noise & Air Quality Group  
Human Environment Section  
1598 Mail Service Center  
Raleigh, N.C. 27699-1598

Phone: 919-707-6000

E-mail: [www.ncdot.gov/contact](http://www.ncdot.gov/contact)



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# NOISE HANDOUT

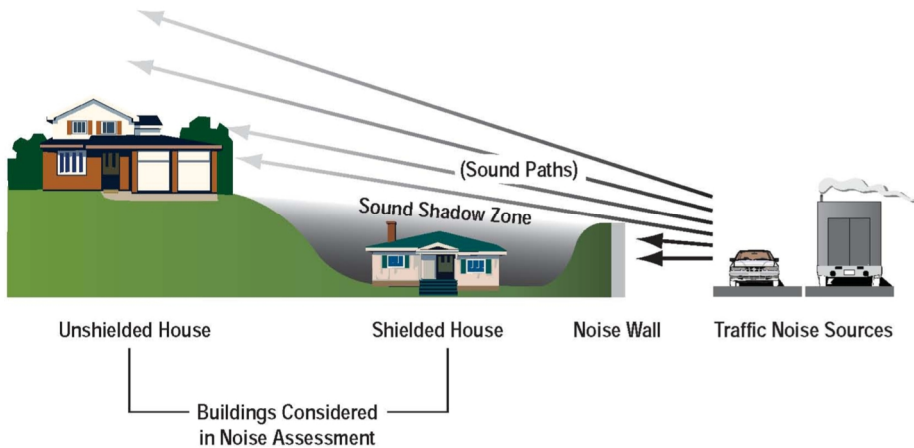
## WHEN DO NOISE WALLS WORK?

Sounds travels very much like water or light. It follows the easiest path over, under, and around things in its path. The further away from the source of the sound, the lower the noise.

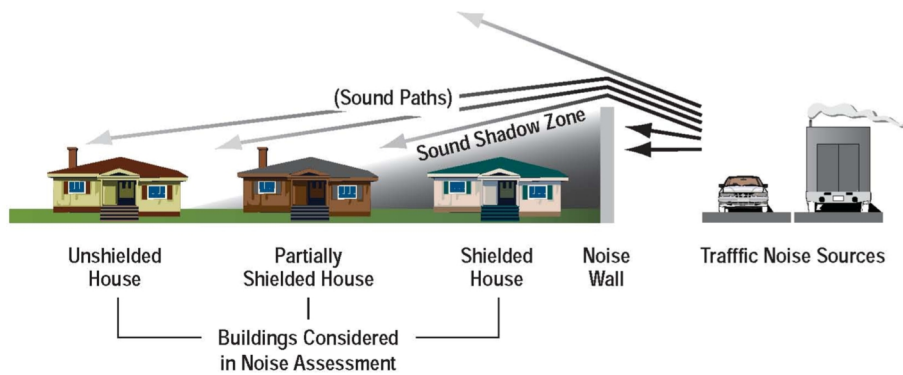
Noise walls do not work if the source of the noise can be seen. The noise will simply travel through that opening much like water will flow through a crack in a dam. If a building is located higher than a noise wall, the noise will flow over the wall to the building.

The graphics below show two examples of noise walls located between buildings and a road. In both cases, the wall will shield one of the houses but will not shield them all.

Noise walls do not completely eliminate all noise.



**Hilly Area Example**



**Flat Area Example**



# Answering Your Questions About HIGHWAY TRAFFIC NOISE



## MEASURES TO REDUCE TRAFFIC NOISE

There are many ways to reduce noise. Noise walls are one tool, but berms and highway design can help reduce noise as well. Sometimes, noise walls will not reduce the noise because of the location of the road. Each new road must be examined individually to determine what measures can be taken. This pamphlet will briefly describe 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?

For more information about NCDOT's noise policy and how it is applied, or about how noise is measured, call or email us. Detailed noise analysis information can also be found at Federal Highway's website, <http://www.fhwa.dot.gov/environment/noise>.

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## WHEN ARE NOISE WALLS CONSIDERED?

- Whenever a highway project uses state or federal funds, the potential for increased traffic noise—and how to reduce it—must be evaluated. Whenever traffic noise impacts are predicted, noise abatement (typically in the form of noise walls) must be considered.
- Potential traffic noise increases are evaluated for any building 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 notified of the future path of the road.

- If a road project was approved BEFORE September 2, 2004—this date is based on either the approval of the Final Environmental Document or the Design Public Hearing (whichever is later).
- If a road project was approved ON or AFTER September 2, 2004, this date is the same as the Final Environmental Document.

The Final Environmental Document could be a Categorical Exclusion (CE), State or Federal Finding of No Significant Impact (FONSI), or State or Federal Record of Decision (ROD).

## HOW IS TRAFFIC NOISE EVALUATED?

- For the first step in the process, NCDOT experts go to homes, churches, businesses, etc. that may be affected by a proposed highway project and use special equipment to monitor existing noise.
- Next, using complex computer modeling, we predict expected noise changes at these locations once the road is built and traffic increases.
- Then we must determine which noise-sensitive locations were permitted before the Date of Public Knowledge and, therefore, are eligible for noise reduction.
- If the anticipated noise increase is MORE than the level defined by NCDOT policy, we begin to consider possible ways to reduce the noise, such as with noise walls and earth berms, at all eligible locations.

## ARE THERE ALTERNATIVES TO NOISE WALLS?

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—if homes are set back from the road or are separated from the road by other development, the noise levels may be lower.
- Earth berm—a sloping mound of earth running parallel to the highway. Because of the amount of land required, a berm is not usually the most practical solution to highway noise.
- Pavement design—research is being conducted on how different types of pavement might reduce traffic noise.
- Types of vehicles/speed limits—noise can be reduced with lower speed limits and truck restrictions on a road. However, reducing the speed limit below the appropriate speed based on the design will have only a moderate affect on traffic noise and may actually increase the number of accidents on the roadway.
- Building insulation—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 has completed the technical evaluation, they also consider the following questions:

- Will a noise wall reduce the noise enough to justify its construction? Sometimes, a noise wall will not reduce the noise enough.
- Is a noise wall technically realistic? Every road is different – sometimes the terrain makes building a wall difficult.
- How many people will hear a difference in noise? Is that number high enough to justify the cost? Sometimes, the state just cannot afford to build a wall because the cost is too high when compared to the benefits received.
- 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.
- Are alternatives to noise walls available?

