



CDOT follows FHWA regulations and guidelines, and the *CDOT Noise Analysis and Abatement Guidelines* for assessing traffic-related noise. These guidelines establish “noise abatement criteria,” that is, noise level standards above which noise-reducing actions should be considered. These standards are used for determining the noise impacts of a project as well as assessing potential mitigation for impacted areas. Noise abatement criteria vary depending on the activity that occurs on a property. The noise abatement criteria for different activity categories are shown in the table below.

CDOT noise abatement criteria are expressed in A-weighted decibels (dBA). An A-weighted decibel is a unit of measure corresponding to the way the human ear perceives the magnitude of sounds at different frequencies.

According to CDOT guidelines, a traffic noise impact at a location occurs when (1) predicted noise levels at that location exceed the noise abatement criteria, shown in the table below or (2) predicted noise levels exceed the current noise level by 10 dBA or more (even though the predicted levels may not exceed noise abatement criteria). This definition reflects the FHWA position that traffic noise impacts can occur under either of two separate conditions: (1) when noise levels are unacceptably high (absolute level); or (2) when a proposed highway project will substantially increase the existing noise environment (substantial increase).

CDOT’s guidelines state that noise mitigation should be considered for any property, typically called a receptor in noise studies, where traffic noise impacts will occur according to the criteria explained above. Information about mitigation measures is provided on the back of this page.

CDOT Traffic Noise Abatement Criteria

Activity Category	$L_{eq}^{(1)}$ (dBA)	Description of Activity Category
A	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	71 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

⁽¹⁾ Road noise changes from moment to moment, but one can describe the noise energy over time in terms of its “equivalent level” (abbreviated L_{eq}). The L_{eq} is a single level that has the same sound energy as the fluctuating level over a stated time period. The L_{eq} used for the noise abatement criteria is the hourly A-weighted equivalent level for the “noisiest hour” of the day in the design year.

(Continued on back of sheet)



To be included in a project, a proposed noise mitigation measure must first be found to be feasible. A summary of the feasibility criteria is as follows:

- The proposed mitigation measure must be predicted to achieve at least 5 dBA of noise reduction at front row receptors (that is, the row of properties closest to the road).
- The proposed mitigation measure must not create any “fatal flaw” safety or maintenance issues such as reduced sight distances, shadowing of ice-prone areas, interference with snow/debris removal, or crash hazards.
- If the mitigation measure is to be a barrier, such as a wall, it must be possible to construct it in a continuous manner. Gaps in noise barriers, e.g. for driveways, significantly degrade their performance.

If a mitigation measure is found to be feasible, it is then analyzed for its “reasonableness.” A summary of the reasonableness criteria is as follows:

- The cost/benefit index of the proposed measure should not exceed \$4,000 per dB of reduction per benefited receptor.
- The predicted design year noise levels should equal or exceed the Noise Abatement Criteria shown in the table on the front of this sheet.
- At least 50% of the affected properties should approve of the proposed measure.
- Land use in the affected area should be at least 50% Category B (refer to the Noise Abatement Criteria table on the front of this sheet).

Noise walls were determined to be a feasible mitigation measure for the US 6 and Wadsworth project. As such CDOT is proposing to construct 11,000 feet of new noise walls and reconstruct 1,700 feet of existing noise barriers. The total cost of the walls is estimated to be \$4.8 million (at \$30 per square foot). Fifteen-foot tall noise walls are proposed east and west of the US 6/Wadsworth interchange. Four-foot tall concrete barriers are proposed on the bridge. Noise walls will provide noticeable noise reduction at 330 residences (receptors). Typical noise reduction for residences is as follows:

- The first row of homes adjacent to US 6 would experience an average noise reduction of 11 decibels.
- The average noise reduction for second row receptors is 9 decibels.
- Third row receptors would experience an average noise reduction of 7 decibels.
- Homes 1,000 feet or farther from US 6 would not experience any change in noise conditions from noise walls.