

NJDOT HIGHWAY TRAFFIC NOISE POLICY TECHNICAL APPENDIX

23 CFR 772 is the guiding document for all proposed highway projects that require analysis of or abatement of highway traffic noise.

Eligibility Criteria for Consideration of Noise Abatement

1. A traffic noise impact is defined as occurring when the predicted traffic noise levels approach (1 dBA) or exceed the noise abatement criteria (Appendix A) or when the predicted traffic noise levels substantially exceed (10 dBA) the existing noise levels.
2. For Type I projects, residential houses or developments must have obtained final site plan approval prior to the environmental document approval date to be considered in the cost effectiveness evaluation.
3. The Department will seek Federal participation for funding of Type II projects, and use the same eligibility and technical criteria as Type I projects.

Technical Criteria for Inclusion of Noise Abatement

1. The noise barrier insertion loss (dBA reduction) goal shall be to obtain a 5-10 dB noise reduction.
 - a. A minimum of 5 dBA reduction is necessary for a barrier to be approved.
 - b. The design goal of a barrier system will be to achieve the above noise reductions with an 18' average wall height.
2. The Department will consider a cost of up to \$40,000 per residential dwelling (adjusted every 5 years for inflation) to be cost effective using a \$20/sq. ft. cost for Type I and \$25/sq. ft. for Type II. Severe noise impacts, with absolute noise levels above 76 dB or a 20dB increase over existing, will be given additional consideration when evaluating cost effectiveness.

Dwellings which receive a 3-5 dB reduction but are not noise impacts will be considered as Supplemental Benefits through a ½ weighting in the cost effective evaluation.

Structural Criteria

1. Based on maximum wall height and risk management, the following Wind Loading Design shall be used for Design as shown on the attached Table 48-1 and 48-2.

Aesthetics Considerations

1. In general, Architectural Treatments and Landscaping shall be used to reduce visual impact and deter graffiti.
2. The Department shall rely on standardized wall types and designs for typical noise barrier applications.

Specialized or tailored wall systems may be considered by the Department for special situations, when deemed to be cost beneficial.

3. In general, the Department shall propose, for comment by the community, Architectural Treatment(s) for proposed noise barriers. Changes in architectural treatment based on input from the community shall be considered by the Department provided that:
 - a. The cost of the Architectural Treatment does not increase the cost of the barrier by more than 5%.
 - b. The Architectural Treatment does not have any adverse maintenance or safety impacts.

- NOTE:**
- 1) Other higher cost Architectural Treatments may be approved by the Department, provided the community pays for the additional costs above the 5% cap associated with the proposed treatment.
 - 2) The Department will have final approval on any recommendations by the community.

Community Involvement in the Barrier Process

Early communication with the community regarding possible noise abatement is made at the start of the noise study process. Throughout the development of the project, the New Jersey Department of Transportation (NJDOT) will meet with local officials and impacted residents, present information on the nature of highway traffic noise, the effects of noise barriers in attenuating traffic noise and types of noise barriers that may be considered. Specific details - location, length, height, aesthetic treatment, landscaping, maintenance, drainage, safety, etc. - of noise barriers being studied will also be discussed.

NJDOT will then request a resolution from the local elected officials regarding the abatement

proposal. NJDOT will not construct any barrier without the support of local government resolution.

Coordination with Local Officials

In an effort to prevent future traffic noise impacts on currently undeveloped lands, at the conclusion of the Final Noise Study, NJDOT shall inform local officials, within whose jurisdiction the highway project is located, of the following:

- a. The best estimation of future noise levels (for various distances from the highway improvement) for both developed and undeveloped lands or properties in the immediate vicinity of the project.
- b. Information that may be useful to local communities to protect future land development from becoming incompatible with anticipated highway noise levels.

APPENDIX A

***Table 1 - Noise Abatement Criteria**

Hourly A-Weighted Sound Level - decibels (dBA) L_{eq}

<u>Activity Category</u>	<u>L_{eq}(h)</u>		<u>Description of Activity Category</u>
A	57 (Exterior)	60 (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	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, activesports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	-	--	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

***Source - 23 CFR 7.7.2.**

APPENDIX B

Noise Wall Design Criteria

Table 48-1

Minimum Wind Pressure on Sound Barriers Not Located on Structure (See Note 1)

distance from average level of adjoining ground surface to centroid of loaded area in each height zone, ft.	C	Minimum Pressure, psf, for Indicated Wind Velocity, mph			
		80	90	100	110
0-14	0.59	20	25	31	37
14-29	1.00	33	42	52	63
over 29	1.10	37	46	57	69

NOTE 1: If wall height exceeds the clear horizontal distance from face of noise barrier to travelway or any residence Table 48-2 shall be used for wind loading.

Table 48-2

Minimum Wind Pressure on Sound Barriers Located on Bridge Structures, Retaining Walls or Traffic Barriers

Distance from average level of loading ground to centroid of loaded area in each height zone, ft	C	Minimum Pressure, psf, for Indicated Wind Velocity, mph			
		80	90	100	110
0-14	0.80	27	34	42	50
14-29	1.00	33	42	52	63
over 29	1.10	37	46	57	69

APPENDIX C

DEFINITIONS

Design Year - The future year used to estimate the probable traffic volume for which a highway is designed. A time ten to twenty years, from the start of construction is usually used.

Environmental Document Approval Date - Will be the date of the ROD, FONSI or CE.

dBA - A-weighted decibel, unit used to measure noise which best corresponds to the frequency response of the human ear.

FHWA - Federal Highway Administration

Impacted Receiver - Any receiver which has a loudest hour Leq that approaches (within 1 dB) or exceeds the Noise Abatement Criteria for the corresponding land use category or exceeds the existing noise levels by 10 dB. See 23 CFR 772 for the description of land use categories.

Insertion Loss - The amount of noise reduction provided by a noise barrier.

Leq - A time measure that accounts for the moment to moment fluctuations in noise levels due to all sources during that time period.

Noise Abatement - Any measure implemented to reduce highway traffic noise levels that achieves at least 5 dba reduction.

Noise Abatement Criteria (NAC) - Numerical noise criteria promulgated by the Federal Highway Administration and published in 23 CFR 772.

Noise Barrier - A solid structure designed to reduce exterior traffic noise levels at a ground level property adjacent to the highway.

Receiver - Precise location of outdoor activity on any property which is considered to contain noise sensitive land use. A complete list of noise sensitive land uses may be found in 23 CFR 772.

Type I Noise Barrier - A noise barrier designed to abate traffic noise from the construction of a new highway or the physical alteration of an existing highway which significantly changes the alignment or increases the number of through traffic lanes.