

Air & Noise

Noise – Definitions

The definitions below are from the GDOT noise policy and have further defined certain criteria for use in Georgia. They may vary from the definitions found in 23 CFR 772.

Benefitted Receptor

The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dB(A). Receptors do not need to be designated as impacted by traffic noise to be considered benefitted.

Common Noise Environment

A group of receptors within the same Activity Category in Table 1 (below) that are exposed to similar noise sources and levels; traffic volumes, traffic mix, and traffic speed; and topographic features. Generally, common noise environments occur between two secondary noise sources, such as interchanges, intersections, and cross-roads.

Date of Public Knowledge

The date of approval of the National Environmental Policy Act (NEPA) document (Categorical Exclusion [CE] determination, the Finding of No Significant Impact [FONSI], or the Record of Decision [ROD]), as defined in 23 CFR part 771. Federal participation in noise abatement measures will not be considered for lands that are not permitted by the date of public knowledge.

Design Year

The future year used to estimate the probable traffic volume for which a highway is designed (Georgia highways are typically designed to function for 20 years beyond the year a project is opened to traffic.)

Existing Noise Levels

The worst noise hour resulting from the combination of natural and mechanical sources and human activity usually present in a particular area.

Feasibility

The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

Impacted Receptor

A noise receptor that has a traffic noise impact in the design year build condition. See receptor and receiver definitions below.

L10

The sound level that is exceeded 10 percent of the time (the 90th percentile) for the period under consideration, with L10(h) being the hourly value of L10.

Leq

The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

Multifamily Dwelling

A residential structure containing more than one residence. Each residence in a multifamily dwelling shall be counted as one receptor when determining impacted and benefitted receptors.

NEPA Document

The Categorical Exclusion, Environmental Assessment/Finding of No Significant Impact, or Environmental Impact Statement/Record of Decision as defined in 23 CFR 771.

Noise Abatement Criteria (NAC)

A numerical impact criteria issued by the FHWA, published in 23 CFR 772 as Table 1, is included below:

Table 1 – Noise Abatement Criteria

Activity Category	Activity Leq(h)	Evaluation Location	Activity Description
A	57	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	Residential
C	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F
F	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	-	-	Undeveloped lands that are not permitted

[Hourly A-Weighted Sound Level decibels, dB(A)]

Note: These sound levels are only to be used to determine impact. These are the absolute levels above which abatement must be considered. Noise abatement is designed to achieve a substantial noise reduction. Noise abatement is not designed to achieve the noise abatement criteria.

Noise Barrier

A structure that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers traffic noise levels, including stand-alone noise walls, noise berms (earth or other material), and combination berm/wall systems.

Noise Reduction Design Goal

The optimum desired dB(A) noise reduction determined from calculating the difference between future build noise levels with abatement, and future build noise levels without abatement. The noise reduction design goal shall be at least 7 dB(A). GDOT has selected a design goal of 7 dB(A).

Permitted

A definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of a building permit.

Property Owner

An individual or group of individuals that holds a title, deed, or other legal documentation of ownership of a property or a residence.

Reasonableness

The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

Receiver

A discrete point modeled in the Traffic Noise Model (TNM) program that can be considered representative of many receptors.

Receptor

A discrete or representative location of a noise sensitive area(s), for any of the land uses listed in Table 1 (see page 3).

Residence

A dwelling unit. Either a single-family residence or each dwelling unit in a multifamily dwelling.

State-Funded Projects with a Federal Action

For historic properties located within federal jurisdiction (i.e. U.S. Army Corps of Engineers, Federal Transit Administration, etc.), 36 CFR Part 800 applies. Consideration includes “the introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features... [36 CFR 800.5 (v)]”. Noise impacts must be considered for all eligible historic properties in any federally permitted action.

State-Funded Projects without a Federal Action.

For historic properties subject to Georgia Code Section 12-16-2 (Environmental Policy Act of 2006 referenced in SB 346) audible effects will be taken into consideration when adverse effects are likely given the project type (Type A or B, as defined on page 6). The effects of highway traffic noise can diminish the viability of an eligible historic property’s use. The thresholds for noise tolerance for state-funded projects were guided by the Noise Control Act (1972).

Statement of Likelihood

A statement provided in the NEPA document based on the feasibility and reasonableness analysis completed at the time the environmental document is being approved.

Substantial Construction

In Georgia, this is defined as granting of a building permit prior to approval of the NEPA document.

Substantial Noise Increase

One of two types of highway traffic noise impacts. For a Type I project, an increase in noise level of 15 dB(A) in the design year over the existing noise level is considered substantial.

Traffic Noise Impacts

Design year build condition noise levels that approach or exceed the NAC listed in Table 1 (page 3); or design year build condition noise levels that create a substantial noise increase over existing noise levels. A noise level which approaches the NAC is defined as 1 dB(A) less than the applicable NAC value.

Type I Project

Only Type I projects are considered for noise analysis and abatement. If any segment or component of an alternative meets the definition of a Type I project, then the entire alternative is considered to be Type I.

A Type I project is defined as follows:

1. The construction of a highway on new location; or,
2. The physical alteration of an existing highway where there is either:
 - i. Substantial Horizontal Alteration: A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
 - ii. Substantial Vertical Alteration: A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
3. The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a (high occupancy vehicle lane, high occupancy toll lane, bus lane, or truck climbing lane); or,
4. The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
5. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
6. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
7. The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

Type II Project

A federal or federal-aid highway project for noise abatement on an existing highway. GDOT does not have a policy of abating noise on existing highways, and therefore does not have a program for Type II projects.

Type III Project

A federal or federal-aid highway project that does not meet the classifications of a Type I or Type II project. Because noise impacts from Type III projects are expected to be negligible, these projects do not require the preparation of a noise study or abatement of highway noise impacts.

Type A Project

A state-funded project where traffic noise changes and/or increases have the potential to affect Georgia or National Register-eligible historic resources. Type A Projects include the following:

1. The construction of a highway on new location; or,
2. The physical alteration of an existing highway where there is either:
 - i. Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
 - ii. Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway, raising a bridge height by more than 5 feet, or by altering the topography between the highway traffic noise source and the receptor; or,
3. The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a (high occupancy vehicle (HOV) lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
4. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
5. The addition of a new weigh station.

Type B Project

State-aid highway projects that do not meet the classifications of a Type A project. Type B projects do not require the preparation of a noise study or the determination of audible effects for historic properties. Type B projects include, but are not limited to, the following:

1. Bridge replacements with no horizontal or vertical alignment/elevation shifts of changes

2. Bridge maintenance/rehabilitation
3. Road maintenance (resurfacing, pavement markers, etc.)
4. Signage projects
5. Addition of right-turn lanes
6. Lighting projects
7. Intelligent Transportation Management Systems projects

Validation

Process of verifying the accuracy of the traffic noise model inputs by measuring noise levels in the field and comparing the measured levels to the noise levels predicted in the model under the same traffic conditions. The difference between the results of the model and the noise levels measured in the field must be within 3 dB(A) for the model to be considered validated. Should the difference exceed 3 dB(A), the Noise Specialist must assess whether additional variables must be considered within the noise model, if possible, or if additional environmental noise sources (non-traffic noise sources) may have influenced the results of the field measurements.

Guidebook Revision History

Revision Description	Relevant Sections	Revision Date
Initial Publication	All	5/22/2019
Revision Table Added	Last Page	9/17/2020