NOISE ANALYSIS POLICY

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I. BACKGROUND

A. The Federal Highway Administration (FHWA) issued a directive on June 12, 1995 stating that within one year from this date the Department must adopt a written statewide noise policy and have it approved by the FHWA. The policy must demonstrate substantial compliance with the Federal noise regulation, Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772 as well as with the reissued FHWA Policy and Guidance document dated June 1995. This traffic and construction noise policy and procedures should be a guide for judgment in decision making on noise matters during the project development process.

B. A formal, written noise policy can assist in the management of the highway traffic noise analysis and abatement decision making process. It will allow for more uniform and equitable treatment of problems and issues and provide a rational basis for decision making. It will help the traffic noise analyst by serving as a reminder and a guide for management decision making and by documenting the decision making process to aid in answering questions raised by the general public and elected officials.

II. PURPOSE

To provide specific policy and procedures for noise studies and noise abatement recommendations pursuant to 23 CFR 772 and to be in substantial conformance with the intent and provisions of the FHWA noise regulation.

III. APPLICABILITY
A. This policy applies to all Type I projects as defined by the regulation. A Type I project is a proposed Federal-aid highway project for the construction of a highway on new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes. In the absence of State legislation or regulation on this subject, the policy applies to all State funded projects which meet the Type I criteria.

B. The development and implementation of Type II projects will not be considered without separate additional funding provided by the Legislature for this specific purpose. A Type II project is a proposed highway project for noise abatement on an existing highway commonly called a "retrofit" noise abatement project. In any event, when Type II projects are proposed with or without Federal-aid highway participation, the provisions of Sections 772.9(c), 772.13, and 772.19 of 23 CFR 772 shall apply.

C. Type II noise abatement measures will be approved only for projects that were approved before November 28, 1995, or are proposed along land where substantial construction predated the existence of any highway. The granting of a building permit must have occurred prior to right-of-way acquisition for the original highway. Further, noise abatement measures will not be approved at locations where such measures were previously determined not to be reasonable and feasible for a Type I project.

IV. ANALYSIS

A. The traffic noise analysis shall include the following steps for each alternative under detailed study and the null alternative:

1. Identification of existing activities, developed lands, and undeveloped lands for which development is planned, designed, and programmed which may be affected by noise from the highway. Existing land use on both sides of the proposed highway project for its entire length must be assigned on an area (rather than a set of points or sites) basis to one of the Activity Categories listed in Table 1 of the Federal regulation. In addition, particularly sensitive individual noise receptors, such as schools, churches, hospitals, libraries, auditoriums, parks, and preserved natural areas shall be identified on a site-by-site basis within the areas delineated above. These identifications shall include not only the type (e.g., residential, nonresidential, other, etc.) but the number or extent of activities. The extent of the traffic noise impact on the people living near the highway project cannot be evaluated correctly without quantification of the existing activities.

   The date when the public is officially notified of the adoption of the location of a
proposed highway project is the "date of public knowledge." This date establishes when the Department is no longer responsible for providing noise abatement for new development which occurs adjacent to the proposed highway project. The "date of public knowledge" shall be the date of approval of the project’s Categorical Exclusion (CE) determination, the Finding of No Significant Impact (FONSI), or the Environmental Impact Statement (EIS) Record of Decision (ROD). Undeveloped lands shall not be considered as planned, designed, and programmed until the date of issuance of a building permit.

2. Existing noise levels shall be determined throughout the project study area by field measuring noise levels using the procedures specified in the current edition of the Department’s manual, "Field Measurement of Existing Noise Levels." In certain cases, calculated existing levels may be used on very minor projects where impacts and abatement are clearly not anticipated.

3. Future traffic noise levels shall be determined for each alternative under detailed study, including the null alternative. These calculated levels shall be consistent with the FHWA Highway Traffic Noise Prediction Model (Report No. FHWA-RD-77-108) and shall use the STAMINA 2.0 computer program or a replacement model and software issued subsequently by the FHWA. In predicting noise levels and assessing noise impacts, traffic characteristics which will yield the worst hourly traffic noise impact on a regular basis for the design year shall be used.

4. Traffic noise impacts shall be determined for each alternative. Impacts occur when the predicted future traffic noise levels approach within one decibel or exceed the Noise Abatement Criteria (NAC) or when the predicted future traffic noise levels substantially exceed the existing levels by six or more decibels. Note that there are two ways in which an impact may occur. Either way constitutes an impact after which no discrimination between the two is needed nor desired. As in item 1 above, these determinations shall be quantified and include the type and number (e.g., residential, nonresidential, other, etc.) of dwelling units and properties impacted.

This definition of traffic noise impact also applies to 100% State funded highway projects which meet the Type I criteria. The impact definition applies further to highway projects which are not Type I but are subject to NEPA or SEQRA requirements. In this latter case, however, it must be the project itself that creates the noise impact and not pre-existing conditions. Note, however, that this application is intended to determine a traffic noise impact and should not be used for the purpose of determining a "significant" noise impact. For non-highway NEPA or SEQRA projects, a noise impact will not normally occur if the noise increase, as a result of the project, is less than three decibels.
5. Noise abatement measures must be examined and evaluated for all areas where traffic noise impacts are determined to occur. In determining and abating traffic noise impacts, primary consideration is to be given to exterior areas. Abatement will usually be necessary only where frequent human use occurs and a lowered noise level would be of benefit. In those situations where there are no exterior activities to be affected by the traffic noise or where exterior activities are far from or physically shielded from the roadway in a manner that presents an impact on exterior activities, the interior criterion shall be used as the basis of determining the traffic noise impacts.

B. If a traffic noise impact is identified, the abatement measures listed below must be considered:

1. Traffic management measures such as traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.

2. Alteration of horizontal and vertical alignments.

3. Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers.

4. Construction of noise barriers (including landscaping for aesthetic purposes) within the highway right-of-way.

5. Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to pre-empt development which would be adversely impacted by traffic noise. This measure may be included in Type I projects only.

6. Noise insulation of publicly owned school buildings which are off the highway right-of-way in connection with a Department construction project undertaken with Federal-aid. The Commissioner must determine that it is in the best interest of the State considering, among other factors, the cost and feasibility of other alternatives for this measure to be recommended.

C. When noise abatement measures are being considered, every reasonable effort shall be made to obtain substantial noise reductions. A substantial noise reduction should be of the order of ten decibels; however, abatement must provide a minimum reduction of at least seven decibels at the properties with the greatest reductions. The FHWA Noise Barrier Reduction Optimization Procedures (OPTIMA), FHWA-DF-82-001A, April, 1982, in conjunction with STAMINA 2.0 or a replacement model and software issued subsequently by the FHWA,
shall be used to determine noise barrier heights and lengths.

D. Noise abatement measures which are determined to be feasible and reasonable must be incorporated into the plans and specifications for the project. Feasibility deals primarily with engineering considerations, e.g., can a barrier be built given the topography of the location; can a substantial noise reduction be achieved given certain access control, drainage, safety, or maintenance requirements; are noise sources other than from the project present in the area, etc. As a minimum, feasibility must include the practical capability of the measure being built as well as achieving a substantial reduction. Reasonableness should be based on a number of factors, not just one criterion. The overall noise abatement benefits must be determined to outweigh the overall adverse social, economic, and environmental effects and the costs of the noise abatement measures.

E. Reasonable cost shall be determined using a cost index based on total cost per dwelling unit benefitted, as well as the unit cost per square meter (m²) of the noise barrier material installed for both walls and berms. In the case of a berm, the height and the length with the total cost should be used to obtain a surrogate surface area unit cost. For a unit cost of $100 per m² or lower, a cost index of $25,000 per benefitted dwelling unit should be used. For a unit cost of $200 per m² or higher, a cost index of $50,000 per benefitted unit should be used. For unit costs between $100 and $200 per m², interpolate between $25,000 and $50,000 per dwelling unit, e.g., $160 per m² would yield a $40,000 per benefitted dwelling unit limit. All dwelling units whether owner occupied or rented; detached, duplex, or mobile homes; and multi-family apartment units should be counted if they are benefitted, regardless of whether or not they were identified as impacted. The threshold of noise reduction which establishes a "benefitted" property is at least five decibels determined at a point where frequent human use occurs and a lowered noise level would be of benefit.

F. The views of the impacted residents will be a major consideration in reaching a decision on the reasonableness of abatement measures to be provided. The residents should be contacted using one or more of these methods: informational meetings in the neighborhood, direct mailings with return envelopes, telephone surveys, or even door-to-door inquiries. A resolution passed by local government may supplement and document the views of the impacted residents, but it should not be the only determiner or a substitute for the methods mentioned above. Although the views should be determined and addressed during the preliminary design phase of project development, the residents’ views on the desirability and acceptability of abatement need to be re-examined periodically during the final design phase prior to PS&E approval.

G. In summary, the criteria to determine feasibility and reasonableness of noise abatement must contain as a minimum the following items:
1. The amount of noise reduction provided. This must be a substantial reduction in the order of ten decibels with at least seven decibels insertion loss at the properties with the greatest reductions.

2. The number of dwelling units benefitted. The threshold of noise reduction which establishes a benefitted property is at least five decibels determined at a point where frequent human use occurs and a lowered noise level would be of benefit regardless of whether or not the property was identified as impacted.

3. The cost of the abatement. A cost index between $25,000 and $50,000 per benefitted dwelling unit depending on the unit cost of the barrier should be used (see Section IV. E. above).

4. The views of the impacted residents. The residents should be contacted during the preliminary design phase of project development and their views re-examined periodically during the final design phase prior to PS&E approval.

5. The absolute noise levels. As part of the impact determination, predicted future traffic noise levels without abatement are compared with the NAC.

6. The change in noise levels. As part of the impact determination, predicted future traffic noise levels without abatement are compared with existing levels.

7. The timing and consideration of development along the highway for Type II project eligibility (see Sections III.B. and III.C. above, as well as Section IV.H. below).

H. In the case of Type II noise abatement projects, all the procedures previously mentioned apply. In addition, noise abatement measures will be approved only for projects that were approved before November 28, 1995, or are proposed along land where substantial construction predated the existence of any highway. The granting of a building permit must have occurred prior to right-of-way acquisition for the original highway. Further, noise abatement measures will not be approved at locations where such measures were previously determined not to be reasonable and feasible for a Type I project. It is the responsibility of the respective Regional Offices to be certain that appropriate local officials in their jurisdiction are aware of these requirements. The installation of noise barriers or alterations to existing publicly owned school buildings to provide for noise reduction meets the criteria for a CE and normally does not require any further NEPA approvals (23 CFR 771.117(c)(6)).

I. Before the adoption of a FEIS or a FONSI, the Department must identify the following:
1. Noise abatement measures which are feasible and reasonable and which are likely to be incorporated in the project, and

2. Noise impacts for which no apparent solution is a available.

This identification ties the FHWA noise regulation to the NEPA and SEQRA requirements for noise study approach and technical methods to be used only (see Note, Section IV.A.4.). An important point is that the requirements for the DEIS are the same as the Final. The choice of the word "likely" was deliberate. If a decision maker is to make an informed decision and if the public is to be made aware of the impacts, the Department must make its abatement intentions known. If the Department later decides that abatement is not recommended, this decision should have strong documented support.

J. A statement of "likelihood" for each barrier should be included in the environmental document. The following is an illustration of some appropriate words:

Based on the studies done so far, the Department recommends abatement in the form of a ___ meter high noise barrier along the ____ side of __________ between __________ and __________ for a length of ___ meters (for each barrier section). These initial indications of likely recommended barriers are based upon a preliminary design for a barrier cost of $____________ that will reduce the noise level of ___ decibels for ___ dwelling units (again, for each barrier section). If it subsequently develops during the final design phase that these conditions have changed substantially, the barriers may no longer be recommended and not included in the project’s contract plans. A final decision on the recommendations will be made upon completion of the project design and the public involvement processes.

Decibel reduction levels and, if needed, cost per dwelling unit benefitted should also be shown for each barrier section that does not meet the feasible or reasonable criteria and will, therefore, not be recommended.

V. LOCAL OFFICIALS

A. Coordination with and providing information to local officials is an important part of noise control and the prevention of future impacts. Highway traffic noise should be reduced through a program of shared responsibility. Local government should use their power to regulate land development in such a way that particularly noise sensitive land uses are either prohibited from being located adjacent to a highway or that developments are planned, designed, and constructed so that traffic noise impacts are minimized. Thus, local
government officials need to know what noise levels to expect from a highway and what techniques they can use to prevent future impacts. This Federal requirement is frequently neglected or overlooked.

B. The Department shall inform local officials within whose jurisdiction the highway project is located of the following:

1. The best estimation of future highway traffic noise levels for both developed and undeveloped lands in the immediate vicinity of the project. This can usually be done by providing local government with a copy of the environmental document containing the noise study. The future traffic noise levels may be provided in either tabular or contour form.

2. Information that may be useful to local communities to protect future land development from becoming incompatible with anticipated highway noise levels. A copy of "The Audible Landscape" generally provides more than enough information and may require some additional guidance as to applicable sections and techniques.

3. Eligibility for Type II projects as described by Federal law and regulation and by this policy (see sections 3.B, 3.C., and 4.H above). The critical importance of substantial construction predating the right-of-way acquisition for the original highway and the availability of separate additional funding provided by the Legislature for this specific purpose must be communicated and emphasized.

VI. CONSTRUCTION NOISE

A. The following general steps are to be performed for all Type I and II projects:

1. Identification during the project development studies of land uses or activities which may be affected by noise from construction of the project.

2. Determine the abatement measures which are needed for the plans and specifications to minimize or eliminate adverse construction noise impacts to the community.

3. Incorporate the needed abatement measures in the contract plans and specifications.


B. The following items should be considered to ensure that potential construction noise impacts
are given adequate treatment during highway project development.

1. Calculation of construction noise levels are not needed at all receptor locations. If a construction noise impact is anticipated at a particularly sensitive receptor, a noise level calculation for certain noisy construction or demolition operations may be done.

2. An indication of the noise levels associated with certain types of construction equipment can be obtained from existing literature and presented in the noise analysis. The temporary nature of the noisy operations should be noted.

3. Using a common sense approach, the noise analysis should identify measures to abate potential construction noise impacts. Low-cost, easy-to-implement measures should be incorporated into the project contract plans and specifications.

4. Major urban projects usually require more extensive analysis. Particularly sensitive receptors should be identified and construction noise impacts determined. A construction noise impact will not normally occur at levels under $L_{eq} = 80$ dBA or $L_{eq} = 85$ dBA in New York City. Abatement measures should be thoroughly discussed and, where appropriate, incorporated into the project’s contract plans and specifications.

5. In some cases there may be local laws or ordinances which govern construction noise levels or hours. New York City has a local law that is quite restrictive in many areas. Although the State is not subject to local police power and, therefore, the Department is not generally subject to local noise control ordinances, nevertheless, the existence of those laws should be investigated during project development and every effort made to comply with their provisions during construction.

VII. REVISIONS

This policy shall be reviewed every three years. Appropriate revisions shall be considered and adopted.