

**Alaska Department of Transportation & Public Facilities**  
**Alaska Environmental Procedures Manual**

**Noise Policy**

**April 2011**



# STATE OF ALASKA

## DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE DESIGN & ENGINEERING SERVICES DIVISION

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April 14, 2011

Mr. David Miller  
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Federal Highway Administration  
Alaska Division  
709 West 9<sup>th</sup> Street, Rm 851  
P.O. Box 21648  
Juneau, AK 99802

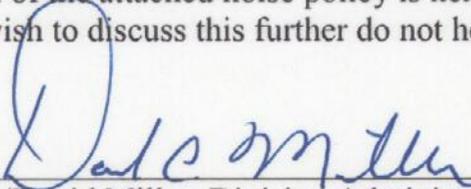
Reference: DOT&PF Noise Policy

Dear Mr. Miller:

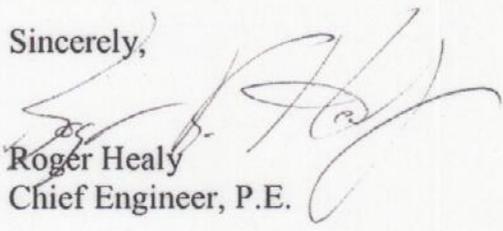
The Alaska Department of Transportation and Public Facilities (ADOT&PF) hereby submits a copy of the DOT&PF Noise Policy dated April 2001 for review and approval by the Federal Highway Administration Alaska Division. We would like to thank your staff and Mark Ferroni of your Washington D.C. office for your review and comments on previous drafts. These comments have been incorporated into this version of the document. This policy is in response to changes in 23 CFR 772. It is our intent that this noise policy will go into effect upon your approval of this policy.

Your approval of the attached noise policy is hereby requested. If you have any questions or wish to discuss this further do not hesitate to contact Ben White of my office.

Approved: \_\_\_\_\_

  
(David Miller, Division Administrator, FHWA Alaska Division)

Sincerely,

  
Roger Healy  
Chief Engineer, P.E.

Enclosure: DOT&PF Noise Policy (April 2011)

*"Providing for the safe movement of people and goods and the delivery of state services."*

## INTRODUCTION

This document contains the Alaska Department of Transportation and Public Facilities (DOT&PF) noise policy on highway traffic noise and construction noise. This policy describes DOT&PF's implementation of the requirements of the Federal Highway Administration (FHWA) Noise Standard at 23 Code of Federal Regulations (CFR) Part 772 (see Appendix A). This policy also addresses how traffic noise is considered on state funded projects. It applies to both design-build and design-bid-build projects. DOT&PF developed this policy and submitted it to FHWA for their review and concurrence.

Noise is defined as unwanted sound. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. Sound is composed of various frequencies, but the human ear does not respond to all frequencies. Frequencies to which the human ear does not respond must be filtered out when measuring highway noise levels. Since noise is measured on a logarithmic scale, an increase 10 dB in the sound pressure level will be perceived by an observer to be a doubling of the sound whereas a decrease in 10 dB will be perceived as a halving of the sound. For example, a sound at 70 dB will be perceived as twice as loud as a sound at 60 dB.

The level of highway traffic noise depends on three things: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of the traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The loudness of traffic noise can also be increased by defective mufflers or other faulty equipment on vehicles. Any condition (such as a steep incline) that causes heavy laboring of motor vehicle engines will also increase traffic noise levels. In addition, there are other more complicated factors that affect the loudness of traffic noise. For example, as a person moves away from a highway, traffic noise levels are reduced by distance, terrain, vegetation, and natural and manmade obstacles. While traffic noise is not usually a problem for people who live more than about 450 feet (150 meters) from heavily traveled freeways or more than about 90-180 feet (30 to 60 meters) from lightly traveled roads) there may be incidences (ex. quiet settings, rural areas, etc.) where people can detect highway noise over greater distances.

During the rapid expansion of the Interstate Highway System and other roadways in the 20th century, communities began to recognize that highway traffic noise and construction noise had become important environmental impacts. In the 1972 Federal-aid Highway Act, Congress required FHWA to develop a noise standard for new federal-aid highway projects. While providing national criteria and requirements for all highway agencies, the FHWA Noise Standard gives highway agencies flexibility that reflects state-specific attitudes and objectives in approaching the problem of highway traffic and

construction noise. This policy contains DOT&PF's policy on how highway traffic and construction noise impacts are defined, how noise abatement is evaluated, and how noise abatement decisions are made.

In addition to defining traffic noise impacts, the FHWA Noise Standard requires that noise abatement measures be considered when traffic noise impacts are identified for Type I federal projects, as defined in 23 CFR 772.5. For a more detailed definition of a Type I project see the definitions section of this policy. Noise abatement measures that are found to be feasible and reasonable must be constructed for Type I federal projects. Feasible and reasonable noise abatement measures are eligible for federal-aid participation at the same ratio or percentage as other eligible project costs. The DOT&PF has accepted the federal definition of a Type I project for all state-funded projects as well.

Federal regulations also include standards for Type II federal projects. A Type II federal project is defined as a federal or federal-aid highway project for noise abatement on an existing highway. For a Type II project to be eligible for federal-aid funding, the state highway agency must develop and implement a Type II program in accordance with 23 CFR 772.7(e). Type II programs are entirely voluntary. The DOT&PF has elected not to participate in a Type II program to retrofit existing state highways with noise abatement.

Type III federal projects are those that neither meet the definitions of Type I or Type II and for which a noise analysis is not required and no consideration of noise abatement is warranted. The DOT&PF has accepted the federal definition of a Type III projects for all state-funded projects as well.

## **PURPOSE**

This policy describes the DOT&PF program to implement 23 CFR 772. Where FHWA has given DOT&PF flexibility in implementing the standard, this policy describes the DOT&PF approach to implementation. This policy also defines how the DOT&PF addresses traffic noise in the design and construction of state-funded projects.

## **NOISE STANDARDS**

This policy outlines the DOT&PF program to implement the FHWA Noise Standards found in 23 CFR 772. It also describes how the DOT&PF addresses traffic noise on state-funded projects. These standards include traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials.

The State of Alaska does not have any traffic noise regulations. It is the DOT&PF policy to follow the federal standards for traffic noise prediction requirements, and noise analyses. Federal noise abatement criteria are followed to determine whether noise

impacts exist and if abatement is feasible and reasonable, however, the decision to provide noise abatement on state funded project follows slightly different procedures (discussed the section of this policy entitled *State-Funded Projects*).

## **DEFINITIONS**

The federal noise regulations definitions are located at 23 CFR 772.5. These regulations are located in Appendix A.

Benefited Receptor. The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dBA

Common Noise Environment. A group of receptors within the same Activity Category in Table 1 that are exposed to similar noise sources and levels; traffic volumes, traffic mix, and 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 Categorical Exclusion (CE), the Finding of No Significant Impact (FONSI) the Record of Decision (ROD), or in the case of a state-funded project, approval of the State Environmental Checklist.

Design Year. The future year used to estimate the probable traffic volume for which a highway is designed.

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. It should be for the existing year of analysis.

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

Federal-aid Project: Any project utilizing federal funds for one or more phases (i.e., Environmental, Design, Right of Way, or Construction) or that is otherwise subject to federal approval.

First Row Receivers: Closest residences or business impacted by noise from the highway facility.

Impacted Receptor: The recipient that has a traffic noise impact.

L10: The sound level that is exceeded 10 percent of the time (the 90<sup>th</sup> 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 receptors and benefited receptors.

Noise Barrier: A physical obstruction constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise level, including stand alone noise walls, noise berms (earth or other material), and combination berm/wall systems.

Noise Reduction Design Goal: The optimum desired dBA noise reduction determined from calculating the difference between future build noise levels with abatement, to future build noise levels without abatement. The noise reduction design goal of the DOT&PF is 7dBA.

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.

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

Residence: A dwelling unit, either a single family residence or each dwelling unit in a multifamily dwelling.

Resident: Someone who resides at a dwelling unit. May not necessarily be the owner of the dwelling unit.

State-funded project: A project that is solely funded by state monies appropriated by the Alaska State Legislature and requires no federal approvals for implementation.

Statement of Likelihood: A statement provided in the environmental clearance document based on the feasibility and reasonableness analysis completed at the time the environmental document is being approved.

Substantial Construction: The granting of a building permit, prior to right-of-way acquisition or construction approval, for the highway.

Substantial noise increase: One of two types of highway traffic noise impacts. For a Type I project, DOT&PF considers an increase in noise levels of 15 dBA in the design year over the existing noise level to be a substantial noise increase.

Traffic Noise Impacts: Design year build condition noise levels that approach or exceed the NAC listed in Table 1 in 23 CFR 772 for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels. The DOT&PF defines “approach” as 1 dBA below the FHWA noise abatement criteria and a “substantial” noise increase as a 15 dBA increase over existing noise levels.

Type I Project:

- (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 HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
- (4) The addition of an auxiliary lane, except 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; or,
- (7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
- (8) If a project is determined to be a Type I project under this definition, the entire project area as defined in the environmental document is a Type I project.

Type II Project: For a Type II project to be eligible for federal-aid funding, the highway agency must develop and implement a Type II program in accordance with section

772.7(e). The DOT&PF has elected not to participate in the voluntary Type II program at this time<sup>1</sup>, so the retrofitting of noise barriers on existing roads is not currently done.

Type III Project: A federal or federal aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis or consideration of noise Abatement.

## **APPLICABILITY**

This DOT&PF policy applies to all Type I federal highway projects in the State of Alaska, that is, any projects that receive federal-aid funds or are otherwise subject to FHWA approval. They include federal projects that are administered by Local Public Agencies (LPAs) as well as DOT&PF.

This policy also applies to all Type I state-funded projects, and all Type I projects proposed by Toll Road Authorities in the State of Alaska. Presently, the Knik Arm Crossing Toll Authority (KABATA) is the only such authority in the State<sup>2</sup>. This policy applies to state-funded design-build and design-bid-build projects. This policy does not apply to Type III state-funded maintenance and operations activities and projects. In general, the same methods are followed in the identification of noise impacts for state-funded projects as with federal-aid projects. For state-funded projects, results of noise analyses will be documented in the State Projects Environmental Checklist. If noise abatement is determined to be feasible and reasonable, the Regional Environmental Manager will make a noise abatement recommendation to the Preconstruction Engineer. The Preconstruction Engineer will decide whether the recommended abatement measure will be constructed on state-funded projects. Abatement will be provided only if it meets the feasibility and reasonableness criteria of this policy and the state-funded appropriation can accommodate this expenditure.

The requirements of this policy apply uniformly and consistently to all Type I federal projects, Type I state-funded projects, and Type I Toll Authority projects within the State of Alaska.

DOT&PF has elected not to participate in the voluntary Type II noise program. Consequently, the retrofitting of existing roads with noise abatement is not done by the Department, unless there is a special appropriation by the State Legislature for such abatement and the Department is designated the responsible agency for the project. In those cases, the noise abatement measures being proposed must meet the feasibility

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<sup>1</sup> The Knik Arm Crossing Toll Authority (KABATA) has developed a PA that indicates that if Noise Abatement Criteria are exceeded then there will be noise barriers retrofitted to the project.

<sup>2</sup> Projects that come out of KABATA are state-funded, they follow the noise abatement procedures for State-funded projects, whereas if they are federally funded, they follow the procedures for federal projects.

and reasonableness criteria of this policy. Any disputes with this provision of the policy and state lawmakers should be resolved by the DOT&PF Commissioner.

Type III projects are those projects that neither meet the definition of a Type I or Type II project nor require a noise analysis or consideration of noise abatement.

If there are any questions about whether a project is subject to this policy or the FHWA Noise Standard, contact the Regional Environmental Manager. Disagreements on these determinations should be directed to the Statewide Environmental Manager. Due to the long lead time necessary to complete a traffic noise study, the need for a noise study should be determined early in project scoping.

### **TRAFFIC NOISE PREDICTION**

The most recent version of the FHWA Traffic Noise Model (TNM), or other model found acceptable to FHWA, pursuant to 23 CFR 772.9, will be utilized for all noise predictions. The use of TNM Look-up Tables or any other model unacceptable to FHWA is prohibited. Existing noise levels and future design year noise levels must be predicted for all reasonable build alternatives carried forward in the National Environmental Policy Act (NEPA) document. The future design year noise levels for the No-Build alternative must also be predicted to satisfy documentation requirements of NEPA.

The average pavement type must be used for all noise predictions unless the DOT&PF obtains FHWA approval to use a different pavement type.

The use of noise contour lines can only be used for project alternative screening or for land use planning purposes. Noise contour lines cannot be used for determining traffic noise impacts. DOT&PF will use FHWA's Traffic Noise Model most recently available version to develop noise contours. The predictions will be for worst case hour noise conditions. Generally, worst case hour are traffic levels at Level of Service (LOS) C or D, rather than heavy traffic volumes. In heavily congested urban areas, the peak traffic period (often LOS E or F) may not represent the worst noise conditions. For example, speeds may be low and heavy truck volumes may drop as truckers try to avoid severe congestion. Seasonal traffic variations should also be considered when determining the worse case hour noise condition. The Project Manager should consult with appropriate traffic and planning staff and review the annual traffic report in order to determine the appropriate volumes and speeds to use in the analysis. This input and any assumptions must be documented in the noise analyses report. DOT&PF will use a design hourly volume (DHV) that correlate with Level C or D rather than peak hour traffic. This will require coordination with Planning and Traffic to collect this information.

The input parameters for the TNM noise predictions should be documented in the noise analysis report. Input parameters should be approved by the DOT&PF Environmental Impact Analyst prior to modeling. All prediction results will be rounded off to the closest whole number (i.e., 67.5 dBA will be rounded up to 68 dBA, 67.4 dBA will be rounded down to 67dBA).

## **ANALYSIS OF TRAFFIC NOISE IMPACTS AND NOISE MEASUREMENTS**

It is the DOT&PF Policy to utilize TNM noise predictions to model existing and future worst case noise levels. Actual measurements of existing noise levels are only utilized to validate TNM or other models acceptable to FHWA.

### Noise Measurements

All noise measurements will be taken with an ANSI Type 1 or 2 integrating sound level meter and will be A-weighted.

For proposed highways on new alignments where no highway currently exists, noise measurements will be taken at representative receptor locations along the proposed route in order to determine the existing noise level.

In general, noise measurements will be taken during either the morning or evening peak traffic periods; or if LOS E or F exist, DOT&PF will use the traffic levels at Level of Service (LOS) C or other time period to replicate the model. Noise measurements may be taken outside the peak traffic periods for the sole intent of validating the TNM or other model acceptable to FHWA. Noise measurements will follow FHWA procedures for measuring traffic noise<sup>3</sup>. The locations, date, time, weather (sky cover, approximate temperature, wind speed and direction, precipitation and snow cover), a description of ground cover (hard or soft site), and traffic conditions (number of vehicles, percentage medium and heavy trucks, motorcycles) will be recorded on each measurement data sheet. Average traffic speeds can be estimated or measured and should also be noted on the data sheet. A map depicting the measurement site relative to the road and adjacent buildings must be provided (use actual measurements or locations using GPS, estimated locations are not acceptable). Sufficient information should be provided to allow re-creation of the measurements if necessary.

Two fifteen minute measurements will be taken at each receptor. Any noise sources other than highway sources should be noted on the dated sheet.

### Model Validation

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<sup>3</sup> FHWA Final Report – *Measurement of Highway – Related Noise*, 1996 [FHWA-PD-96-046DOT-VNTSC-FHWA-96-5]

Noise measurements will be taken at representative locations throughout the proposed project corridor. Locations of the measurements must be approved by the DOT&PF Environmental Impact Analyst prior to being taken. Traffic counts will be taken simultaneously with noise measurements. The actual traffic counts, vehicle types, and speeds (estimated or measured) collected during the measurements will be utilized as input to TNM for the purpose of validation. Noise prediction results will be compared with actual measured results. Differences between the actual and predicted noise measurements within  $\pm 3\text{dBA}$  will be considered acceptable. If the difference is greater than  $3\text{dBA}$ , DOT&PF will coordinate with FHWA for direction. Either the model input will be reevaluated at those locations to ensure an accurate representation of site geometry and input, the noise measurements will be retaken, or shielding factors<sup>4</sup> might be input into TNM to offset these differences. Once the model is determined to be valid the existing, Design Year Build (for all reasonable alternatives) and No-Build Noise Levels can be predicted.

### Noise Predictions and Impact Assessment

DOT&PF gives primary consideration to exterior areas of frequent human use. Noise levels should typically be measured and/or predicted at exterior areas that receive frequent human use at the first row of structures (i.e., residences and/or businesses). These include patios or balconies of residential receivers. If access cannot be obtained to take measurements on private property, then a location close to the highway right of way line should be utilized. Measurements should not occur any closer than 10 feet from a building or fence, because the object can reflect noise. The location of receptors for noise predictions should be located at areas that receive frequent human use rather than at the right of way line. Preferably, the receptor locations will be at locations that will remain after construction of the proposed facility. Typically, a receptor location should not be selected if the location will not exist after construction of the proposed project because the basis for comparison would be lost. However, there may be some receptors that are relocated with one Build Alternative and remain with another, so it is not always possible to select receptor location that will exist after the construction of the preferred alternative.

For Type I projects, a traffic noise analysis is required for all build alternatives under detailed study in the NEPA process. All reasonable alternatives that have been carried forward for detailed analysis within the categorical exclusion documentation, environmental assessment or environmental impact statement and NOT rejected as unreasonable during the alternatives screening process will be analyzed for noise impacts. For Environmental Impact Statements or other studies that will examine broad corridors, the appropriate scope and methodology of the noise analysis should be

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<sup>4</sup> Shielding factors are to be used only as an absolute last attempt option. In just about every case reviewing the location to ensure accuracy will either correct the differences. If not, then shielding factor is used as an adjustment factor that is applied to the single receiver to bring it into the 3 dB(A) range.

discussed with FHWA and other participating agencies early in the project planning process.

For state-funded Type I projects a similar method of analysis will be followed. The preferred alternative carried forward in the State Environmental Checklist will be evaluated for noise impacts.

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 and is subject to these noise analysis requirements.

For Type I projects, the noise study area will be consistent with project limits, beginning of the project to the end of the project based on logical termini for that specific project (Beginning of Project to End of Project). The noise analysis must include analysis for each Activity Category present in the study area.

## **LAND USE CATEGORIES**

Federal land use activity categories are defined by 23 CFR 772. DOT&PF has accepted the FHWA definition of these activity categories.

Activity Category A: Lands on which serenity and quiet are of extraordinary significance and serve an important public need. DOT&PF must submit justifications to FHWA on a case-by-case basis to designate any lands as Category A. Proposals and justifications for designating land as Activity Category A will be submitted from the Regional Environmental Manager through the state's FHWA Division Office and FHWA Headquarters.

Activity Category B: Residential - exterior areas of single-family and multi-family homes. Noise receptors should be located in areas that receive frequent human use (i.e., patios, balconies, playgrounds, gardens, etc.).

Activity Category C: Non-residential exterior areas of lands such as active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare 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, etc. Receptors should be located in areas that represent the area that receives the most frequent human use. Noise measurements and predictions will be taken at an outdoor location that is representative of the typical use for this area that receives the most frequent use. For structures, noise measurements and predictions will be taken at a location that is representative of the exterior area that receives the

most frequent use. Since the impact determinations are based on each area of frequent human use, then the number of areas impacted would be calculated and an equivalent number of residential units would be calculated to assess the feasibility and reasonableness of any abatement measures. Equivalent number of residential units will be calculated by determining the average residential lot size for the vicinity and then dividing this into the non-residential area for a total amount of residential units. For example: if a park has an area of 87,120 square feet, and the average residential lot size is 60 feet by 200 feet or 12,000 square feet then we would use 8 equivalent residential units to assess the feasibility and reasonableness of a proposed abatement measure.

Activity Category D: Includes interiors of auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios. The impact determination will be based on the area of frequent human use; therefore the number of those areas that are impacted would be carried over to feasibility and reasonableness. For example: If a daycare center has 15 various areas of frequent human use (building and open space), but only 10 are impacted then 10 equivalent residential units would be used for the feasibility and reasonableness determination. An indoor analysis shall only be done after exhausting all reasonable outdoor analysis options. If there are no exterior areas that receive frequent human use then representative interior measurements may be appropriate if determined by DOT&PF. Permission will be obtained from property owner to take interior noise measurements at a designated receptor. Measurements will be taken with windows closed and open if possible. Traffic counts will be taken concurrent with the measurements.

Activity Category E: Exteriors of Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F or other developed lands that are less sensitive to highway noise. Noise measurements and predictions will be taken at a location that is representative of the exterior area that receives the most frequent use. The impact determination would be based on the total number of units within the complex, and/or the capacity limit of the facility. For example: If a hotel has 45 units and two meeting areas with a total capacity of 100 people each, then the number of receptors used for feasibility and reasonableness would be 200+ the 45 units.

Activity Category F: Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship-yards, utilities (water resources, water treatment, electrical), warehousing, and other land uses that are not sensitive to highway traffic noise. No highway noise analysis is required under 23 CFR 772 at Activity Category F land uses. For example, no noise analysis is required at locations that typically generate excessive levels of noise themselves or where the activities taking place on them are not considered noise

sensitive<sup>5</sup> ) Proposals for designation of properties as Category F Activity Categories must be approved by the Environmental Impact Analyst assigned to the project.

Activity Category G: (Undeveloped lands that are not permitted) Land permitted for development (that is, a building permit has been issued on or before the date of public knowledge), that land shall be analyzed under the Activity Category for that type of development.

For land not permitted for development by the date of public knowledge (approval date of NEPA document or State Environmental Checklist), DOT&PF shall determine future noise levels pursuant to 23 CFR 772.17(a). The results shall be documented in the project environmental documentation and in the noise analysis report. The analysis should report the distance - measured from the proposed edge of the traveled way - to the Noise Abatement Criteria (NAC) for all exterior land use categories. Any noise abatement for such lands shall not be eligible for federal-aid participation.

#### **DOT&PF DEFINITION OF “APPROACH THE NAC”**

The DOT&PF defines “approach the NAC” as 1 dBA less than the NAC for Activity Categories A-E in Table 1 that is located in Appendix B of this policy.

A traffic noise impact may occur even if the future noise level is lower than the existing noise level. If the future noise level is 1 dBA less than or higher than the NAC for the activity category, then a noise impact exists.

#### **DOT&PF DEFINITION OF “SUBSTANTIAL INCREASE OVER EXISTING NOISE LEVEL”**

DOT&PF defines a “substantial increase over existing noise level” as 15 dBA over existing noise levels. A substantial increase is independent of the absolute noise level. A substantial increase over existing noise level is a noise impact, even if the future noise level does not approach or exceed the NAC.

The traffic noise analysis will identify all measurement sites with the predecessor capital letter M (i.e., M-1, M-2, M-3, etc.). All receptor sites where existing and future noise levels are being predicted and where noise measurements were not taken will be identified with the predecessor capital letter R (i.e., R-1, R-2, R-3, etc.). Receptors where noise impacts are predicted to exist will be identified by receptor identification number in the analyses report. Locations of the receptors will be identified on a map or

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<sup>5</sup> FAA does require noise analyses for certain types of airport projects, but this policy only applies to Highway Projects.

figure of appropriate scale and described in the text (physical location, address, GPS coordinates, etc.).

The following information will be identified in the noise analysis for each receptor:

- Receptor identification number
- Activity Category designation
- Specific noise abatement criteria for the receptor's activity category as modified by DOT&PF approach definition (i.e., For Activity Category B, the modified NAC would be 66dBA. For Activity Category E, it would be 71 dBA).
- Predicted existing noise level. It should be for the existing year of the analysis.
- Predicted future Design Year No-Build Noise Level
- Predicted future Design Year Build Noise Level for all reasonable alternatives
- Identification of whether a noise impact exists or will exist at this receptor in the future with and without the project.

## **ANALYSIS OF NOISE ABATEMENT MEASURES**

A decision on whether to provide or not to provide a noise abatement measure must not be arbitrary or capricious. The basis for the decision must be documented and supportable, particularly if the decision is not to provide abatement and the affected residents want an abatement measure to be constructed. The decision must be based upon consistent and uniform application of this policy.

Noise abatement measures will be considered only when the existing or predicted future traffic noise levels approach or exceed the FHWA Noise Abatement Criteria (Table 1), or when the predicted future traffic noise levels (Design Year) of a build alternative results in a substantial increase over the existing traffic noise levels. DOT&PF considers a predicted noise level of 1 dBA below the FHWA Noise Abatement Criteria as the condition of "approach".

When traffic noise impacts are identified, then noise abatement shall be considered and evaluated for acoustic feasibility and reasonableness. On a federal Type I project, then the DOT&PF will construct it as a part of the project. For state Type I projects, if noise abatement is considered feasible and reasonable, then the Regional Environmental Manager will make a noise abatement recommendation to the Preconstruction Engineer. The Preconstruction Engineer will decide whether the recommended abatement measure will be constructed. Abatement will be provided on state funded projects only if the Preconstruction Engineer determines that the state funded appropriation can accommodate an expenditure on a noise abatement measure.

DOT&PF policy is that abatement for Activity Category A, B, C, D or E needs to be feasible and reasonable on their own merits. DOT&PF does not provide noise abatement measures for Activity Category F or G land uses unless it is necessary to

protect adjacent sensitive land uses (for example if there is an Activity Category F or G land use that is wedged into the project area that includes sensitive land uses, then by default it will be evaluated for abatement). Land uses not sensitive to highway traffic noise, and undeveloped lands will not be provided noise abatement.

Undeveloped land that is permitted for development (that is, a building permit has been issued on or before the date of public knowledge) will be analyzed under the Activity Category it has been permitted for. For example, if the undeveloped land is permitted to be developed for residential land use (Activity Category B), then it will be considered residential property in the analysis.

The following design principles from the *“Guide on Evaluation and Abatement of Traffic Noise, American Association of State Highway and Transportation Officials, 1993 and “FHWA Highway Noise Barrier Design Handbook”, Federal Highway Administration, December 2000* will be considered when determining whether to provide noise abatement at impacted receptors.

Noise barriers will be designed such that they do not pose a hazard to birds or other wildlife (i.e., clear panel barriers such as glass or plexiglass should not be used unless there is some means incorporated into the panel to prevent bird collisions).

## **FEASIBILITY AND REASONABLENESS ANALYSIS**

The two required criteria to consider when evaluating the incorporation of noise abatement measures into a specific project are acoustic feasibility and reasonableness. A noise abatement measure will be determined acoustically feasible and reasonable as discussed below.

### **Acoustic Feasibility Criteria**

Acoustic feasibility deals primarily with physics and engineering considerations (i.e., can a substantial noise reduction be achieved given the conditions of a specific location; is the ability to achieve noise reduction limited by factors such as topography, access requirements for driveways or ramps, the presence of cross streets, or other noise sources in the area).

1. Noise abatement measures are not feasible if a minimum of 5 dBA or more reduction cannot be achieved for at least 50 percent of the front row dwelling units. Noise abatement measures which do not achieve at least a 5 dBA reduction are not prudent expenditures of public funds as any less of a reduction is not easily detected by most people.

2. Noise abatement measures are not feasible if they create a safety hazard to the driving public, protected receptors or maintenance personnel. The Regional Environmental Manager will consult with the Design and Maintenance & Operations Sections when making this decision. The abatement measure should be consistent with the following general design principles:

- Noise abatement measures should be located beyond the recovery zone of the traveled way; if a noise abatement measure is within 30 feet of the traveled way, a traffic barrier may be warranted.
- Noise abatement measures should not block the recommended site distance (Alaska Highway Preconstruction Manual, Chapter 11) between vehicles and intersecting roadways or on/off-ramps.
- Protrusions on noise abatement measures near a traffic lane should be avoided.
- Facings on noise abatement measures that can become dislodged, or barrier components that could shatter during an accident, or facings that create excessive glare should be avoided.
- Access should be provided to all sides of noise abatement measures to allow for maintenance activities to take place.

All noise abatement measures should consider the design principles in the “*Guide on Evaluation and Abatement of Traffic Noise*”, AASHTO, 1993.

- a) Maintenance factors relating to replacement of materials damaged by impact, cleaning the noise barrier, and maintenance associated with adjoining landscape should be considered when determining feasibility.
- b) Barrier access points for emergencies or water sources needed during emergencies should be considered.
- c) Minimum setback distances and placement of noise abatement measures located at on/off-ramps and intersections should be based upon stopping sight distances, which depend on driver reaction time and deceleration rate.
- d) Placement of noise abatement measures should be a sufficient distance from the travel way to assure adequate space for storage of plowed snow and to assure that the abatement measure can withstand the additional loads that may result from blown snow being both thrown and piled up against the noise abatement measure.
- e) Noise abatement measure design should minimize shading highways in critical areas so that sunlight can melt ice or snow on the shoulders and travel lanes.

## **Reasonableness Criteria**

Reasonableness is a more subjective criterion than feasibility. It implies that common sense and good judgment were applied in arriving at a decision. Reasonableness should be based on a number of factors, not just one criterion. FHWA noise regulations define three mandatory reasonableness factors that must be evaluated for a noise abatement measure to be considered reasonable. They are:

- A. Viewpoints of the property owners and residents of the benefitted receptors
- B. Cost Effectiveness
- C. Noise Reduction Design Goal

The DOT&PF considers these three mandatory reasonableness factors to determine reasonableness. The following optional reasonableness factors can only be used to increase the cost allowed only on state-funded projects:

- A. Date of development
- B. Length of time receivers have been exposed to highway traffic noise impacts
- C. Exposure to higher absolute traffic noise Levels
- D. Changes between existing and future build conditions
- E. Percentage of mixed zone development
- F. Use of noise compatible planning concepts by the local government

No single DOT&PF reasonableness factor shall be used to determine that a noise abatement measure is unreasonable.

1. Cost Effectiveness (federal mandatory criterion). The noise abatement measure cost is no more than \$32,000<sup>6</sup> per receptor, based upon the design engineer's estimate. This is determined by counting all receptors (including owner-occupied, rental units, mobile homes, and businesses) benefitted by the noise abatement measure in any subdivision and/or given development, and dividing that number into the total cost of the noise abatement measure. A benefitted receptor is defined as the recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dBA. Each unit in a multi-family building will be counted as a separate receptor. Cost per benefitted receptor must be reanalyzed at a regular interval not to exceed 5 years.

When the design engineer determines abatement measure cost, the estimate will include all items necessary for the construction of the noise abatement measure. Examples of cost items that should be included are traffic control, drainage modification, foundations, retaining walls and right-of-way. Include a cost item

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<sup>6</sup> This figure was updated during DOT&PF 2009 development of a noise guideline to reflect inflation numbers of previous policies as well as updated with more current information that was provided by region offices.

only if it is directly related to the construction of the noise abatement measure<sup>7</sup>. If a necessary a project feature, such as a retaining wall is included, then that cost will not be added into the noise abatement construction cost estimate. If the project incorporates visual mitigation such as the use of a transparent barrier with surface texture, the additional cost will not be included in the abatement construction cost estimate for the purpose of determining reasonableness. Aesthetic treatments, such as artwork, re-vegetation, landscaping and barrier treatments will not be included in the abatement measure cost estimate for the purpose of determining reasonableness.

The cost per benefited receptor must be adjusted for inflation. Use the most recent annual composite price index available from the FHWA Office of Program Administration [www.fhwa.dot.gov/programadmin/pricetrends.cfm](http://www.fhwa.dot.gov/programadmin/pricetrends.cfm). The latest price index that FHWA developed is from 2006. This will be used until FHWA provides more current index. In the event that FHWA does not provide a more current index, DOT&PF will use the 2006 index and adjust it for inflation as necessary. This will be accomplished by determining the ratio between the 2006 annual composite index (221.3) and the most recent annual composite index available at the time of the completion of the Noise Abatement Recommendation Worksheet and adjust the \$32,000 cost accordingly. DOT&PF will also take into consideration the actual costs associated with project costs completed within the time since 2006 in determining a more accurate cost per benefited receptor.

2. Views of the property owners and residents (federal mandatory criterion) that benefit from noise abatement measures. To determine the desires of benefited households and property owners, DOT&PF will contact all benefited households and property owners to determine the level of interest for a noise abatement measure. This contact could be in the form of a mail out questionnaire, phone call survey, or door to door interviews whichever is most practical and cost effective for the size of the proposed project. At least 60 percent of households and property owners surveyed must want the noise abatement measure. The term "household" is used instead of residents because a single dwelling unit could have more or less inhabitants than another. The idea is not to give a dwelling unit with multiple inhabitants more consideration than one with fewer inhabitants. Also, property owners are also included as the dwelling units might be rentals. The property owner should have a say in whether noise abatement is provided to their property.

3. Noise reduction design goal (federal mandatory criterion). The DOT&PF noise reduction design goal is 7dBA. 50 percent or more of the benefitted receptors in the first row of structures must achieve this design goal for the noise abatement

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<sup>7</sup> DOT&PF will need to provide proof to the FHWA Division Office that the cost of any of these are solely and directly related to the noise abatement measure

to be considered reasonable. The DOT&PF goal is to provide more than the minimum 7 dBA reduction to a majority of the benefitted receptors in the first row of structures. This design goal is not extended to benefitted receptors beyond the first row of structures, as the further one gets from the noise barrier the more difficult it is to obtain a 7 dBA reduction.

The following criteria only apply to those state funded projects:

1. Development vs. Highway Timing (State funded only criterion). At least 50 percent of impacted receptors in the development (subdivision, apartment complex, etc.) were built before initial construction of the highway. The date of development is an important part of the determination of reasonableness. More consideration is given to developments that were built before the highway was built.
2. Development Existence (State funded only criterion). At least 50 percent of impacted receptors in the development have existed for at least 10 years. More consideration is given to residents who have experienced traffic noise impacts for long periods of time.
3. Absolute Predicted Build Noise Level (State funded only criterion). The predicted future build noise levels are at least 66 dBA. More consideration should be given to areas with higher absolute traffic noise levels. Absolute noise levels typically found along highways, 60-75 dBA, are deemed undesirable and cause complaints from adjacent residents. In general, the higher the absolute noise, the more complaints.
4. Relative Predicted Build Noise Level (State funded only criterion). The predicted future build noise levels are at least 10 dBA greater than the existing noise levels. More consideration is given to areas with larger increases over existing noise levels. This gives greater consideration to projects for highways on new location and major reconstruction than it does to projects of smaller magnitude. For most people, a 3 dBA increase is barely perceptible, a 5 dBA increase is readily perceptible, and a 10 dBA increase doubles the perceived loudness of the noise.
5. Build vs. No-Build Noise Levels (State funded only criterion). The future build noise levels are at least 5 dBA greater than the future no-build noise levels. More consideration should be given to areas where larger changes in traffic noise levels are expected to occur if the project is constructed than if it is not.

6. Land use (State funded only criterion). Land use is not changing rapidly and there are local ordinances or zoning in place to control the new development of noise sensitive land uses adjacent to transportation corridors.

### **Noise Abatement Recommendation Worksheet**

A noise abatement recommendation worksheet (Appendix B) will be filled out for each noise receptor in the noise study. The Regional Environmental Manager will approve and sign the worksheets. If an abatement measure is determined not feasible, then the reasonableness analysis section of the Worksheet does not need to be completed. Likewise, if it determined that the abatement measure is not reasonable, the feasibility portion of the checklist will not have to be filled out. DOT&PF will only implement a noise abatement measure if it has been determined both feasible and reasonable. The Regional Environmental Manager will recommend or not recommend that a noise abatement measure be implemented. The recommendation worksheet will be submitted to the Project Manager (PM) who will sign the recommendation worksheet. If the PM does not approve the recommendation then the Preconstruction Engineer will resolve the dispute. The Preconstruction Engineer only needs to sign the noise abatement recommendation worksheet if quiet pavements are recommended as abatement on State-funded projects. The Regional Environmental Manager will ensure that the recommendation is included in the project's environmental document.

### **NOISE ANALYSIS REPORT**

The results of the noise analysis will be presented in noise analysis report. The report will discuss the purpose of the study, the methods utilized, the results of the study, any proposed mitigation recommendations and a statement of likelihood. The noise analysis will be appended to the environmental document. The following general format will be followed for noise analysis reports.

*Cover Page*

*Table of Contents*

*Summary*

*Project Background*

*Purpose of Study*

*Methods*

*Model*

*Validation Process*

*Description of Land Use Categories along the Corridor*

*Results*

*Identification of Noise Impacts*

*Noise Abatement Analysis*

*Abatement Recommendations*

*Statement of Likelihood*

*Construction Noise*

*Conclusion*

*Appendices*

*DOT&PF NOISE POLICY*

*Model- run inputs/outputs (optional)*

During the detailed design of the proposed project, the recommendations for noise abatement made in the environmental document will be reevaluated to determine if they are still valid. If it is determined that any noise abatement measure recommendation is no longer valid, then the affected public will be notified and the environmental document reevaluated or supplemented as appropriate.

### **NOISE ABATEMENT MEASURE REPORTING PER 23 CFR772.13(f)**

DOT&PF will maintain an inventory of all constructed noise abatement measures and report to FHWA per the requirements of 23 CFR 772.13(f). The inventory shall include the following parameters:

- 1) Type of abatement and cost (overall cost, unit cost per/sq. ft.);
- 2) Average height;
- 3) Length;
- 4) Area;
- 5) Location (state, city, route);
- 6) Year of construction;
- 7) Average insertion loss/noise reduction as reported by the model in the noise analysis; NAC category(s) protected;
- 8) Material(s) used (precast concrete, berm, lock, cast in place concrete, brick, metal, wood, fiberglass, combination, plastic (transparent, opaque, other); features (absorptive, reflective, surface texture); foundation (ground mounted, on structure); project type (Type I, other federal funding, state funding, local funding).

### **INFORMATION REQUIRED FOR NEPA DECISION**

Prior to CE approval or issuance of a FONSI or ROD for a Type I project, the DOT&PF must identify,

- The noise abatement measures that are feasible and reasonable, and are likely to be incorporated into the project; Noise impacts for which no abatement appears to be feasible and reasonable; and
- The NEPA documentation shall identify the locations where noise impacts will occur, where noise abatement is feasible and reasonable, and the locations that have no feasible and reasonable abatement.

Statement of likelihood The statement of likelihood should identify the preliminary locations of feasible and reasonable abatement and a statement that the final noise abatement recommendation will be made after the final design and public involvement processes are complete. This statement of likelihood will be included in all NEPA documentation and noise analyses reports:

“As a result of the feasibility and reasonableness analysis conducted as a part of the environmental document, the DOT&PF proposes to incorporate the following noise abatement measures (type, locations) into the proposed project. These noise abatement recommendations are preliminary and based upon the feasibility and reasonableness analysis completed at the time the environmental document. Final recommendations for noise abatement will be based upon the feasibility and reasonable analysis conducted during the detailed design of the project. Any changes in the final abatement recommendations will result in the reevaluation of the approved NEPA document and the solicitation of additional public comment”.

### **THIRD PARTY FUNDING OF NOISE ABATEMENT**

For federal projects, third party funding CANNOT be used to make up the difference in cost between the reasonable cost allowance and the actual cost. Third party funding can only be used to pay for additional features such as landscaping, aesthetic treatments, etc. for noise barriers that meet cost-effectiveness criteria.

### **FEDERAL PARTICIPATION FOR TYPE I FEDERAL PROJECTS**

Federal Funds may be used for Noise Abatement measures when traffic noise impacts have been identified, and abatement measures have been determined to be feasible and reasonable pursuant to 23 CFR 772.13(d).

The following noise abatement measures may be considered for incorporation into a Type I project to reduce traffic noise impacts. The costs of such measures may be included in federal-aid participation project costs with the federal share being the same as that for the system on which the project is located.

- (1) Construction of noise barriers, including acquisition of property rights, either within or outside the highway right-of-way. Landscaping is not a viable noise abatement measure.
- (2) Traffic management measures including, but not limited to, 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.
- (3) Alteration of horizontal and vertical alignments.

(4) Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise.

(5) Noise insulation of Activity Category D land use facilities listed in Table 1.

Post-installation maintenance and operational costs for noise insulation are not eligible for federal-aid funding.

Quieter pavement is currently not listed in federal regulations (23 CFR 772) as a noise abatement measure for which federal funding may be used. Consequently, quiet pavements cannot be used as noise abatement on federal-aid projects.

DOT&PF may consider quieter pavement to reduce traffic noise on a state-funded project. However, the decision to provide such a measure will be decided by the Preconstruction Engineer as described elsewhere in this policy.

### **INFORMATION FOR LOCAL OFFICIALS**

In an effort to prevent future traffic noise impacts on currently undeveloped lands and to maintain compatibility between highways and future development, DOT&PF will inform local officials whose jurisdiction is within the highway project of the best estimation of future noise levels for both developed and undeveloped properties in the immediate vicinity of the project. In addition, information on federal-aid, non-eligibility of noise abatement for lands permitted for development after the date of public knowledge will also be provided to local officials. This usually will be accomplished by providing a copy of either the project's noise analysis or the approved environmental document to the local government. This information may also be provided through the plat review process.

### **CONSTRUCTION NOISE**

For all Type I Federal and State Projects, it is the policy of DOT&PF to:

- (a) Identify land uses or activities that may be affected by noise from construction of the project. The identification is to be performed during the project development studies.
- (b) Determine the measures that are needed in the plans and specifications to minimize or eliminate adverse construction noise impacts to the community. This determination shall include a weighing of the benefits achieved and the overall adverse social, economic, and environmental effects and costs of the abatement measures.
- (c) Incorporate the needed abatement measures in the plans and specifications.

The Regional Environmental Manager will work with the Design Engineering Manager to reduce construction noise by requiring the contract specifications include the statement that all construction equipment be properly maintained and have mufflers in acceptable working condition. In the event that construction noise complaints occur during the

course of construction activities, measures will be taken by the Construction Project Engineer to resolve the problem to the extent practical. Measures might include locating stationary construction equipment as far from nearby noise sensitive receivers as possible, shutting off idling equipment, rescheduling construction operations to avoid periods of noise annoyance, notifying nearby residents whenever extremely noisy operations will be occurring, and installing permanent or portable acoustic abatement measures around stationary construction noise sources.

In some cases there are no alternatives to conducting construction activities during the night, on weekends, or on holidays. When deemed necessary, the Department will make every effort to notify the public prior to conducting these activities. The public involvement in these cases should occur during design and throughout the construction duration. In some communities, local ordinances may restrict noise generating activities. Where this is the case, the Department and its contractor will comply with local noise ordinances and acquire any necessary noise permits for these activities prior to their initiation.

### **STATE-FUNDED PROJECTS**

In general, the same methods are followed in the identification of noise impacts for state-funded projects and federal-aid projects. Results of noise analyses will be documented in the State Projects Environmental Checklist. If noise abatement is determined to be feasible and reasonable, then the Regional Environmental Manager will make a recommendation to the Preconstruction Engineer. The Preconstruction Engineer will decide whether the recommended abatement measure will be constructed. Abatement will be provided only if it meets the feasibility and reasonableness criteria of this policy and the state funded appropriation can accommodate this expenditure.

### **SUPERCEDEENCE**

This policy is effective upon signature and replaces the Department's March 1996 Noise Policy and the April 2009 Traffic Noise Abatement Guidance. This policy is applicable to any project that does not have an approved NEPA document prior to its implementation.

**WEBLINKS as of November 2010.**

<http://www.fhwa.dot.gov/environment/noise/>

FHWA *Highway Traffic Noise: Analysis and Abatement Guidance* June 2010 is available at the following website

[http://www.fhwa.dot.gov/environment/noise/regulations\\_and\\_guidance/analysis\\_and\\_abatement\\_guidance/guidancedoc.pdf](http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/guidancedoc.pdf)

Noise Model Web site at the following URL <http://www.fhwa.dot.gov/environment/noise/index.htm>.

**APPENDIX A**  
FHWA 23 CFR 772,

## APPENDIX B

### NOISE ABATEMENT CRITERIA TABLE

#### FHWA NOISE ABATEMENT CRITERIA from 23 CFR 772 Table 1

#### Hourly A – Weighted Sound levels decibels (dBA)<sup>8</sup>

<u>Activity Category</u>	<u>Activity Leq(h)</u>	<u>Criteria<sup>9</sup> L10</u>	<u>Evaluation Location</u>	<u>Description of Activity Category</u>
A	57	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 <sup>10</sup>	67	70	Exterior	Residential.
C <sup>3</sup>	67	70	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	55	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	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F.
F	None	None	None	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	None	None	None	Undeveloped lands that are not permitted.

<sup>8</sup> Either Leq(h) or L10(h) (but not both) may be used on a project

<sup>9</sup> The Leq(h) or L10(h) Activity Criteria

<sup>10</sup> Includes undeveloped lands permitted for this activity category.

## APPENDIX C

# Feasibility and Reasonableness Worksheet Example HIGHWAY TRAFFIC NOISE ABATEMENT FOR PROJECT:

*Receiver ID No.(s):*

*Location/Description:*

*Activity Category type:*

*Noise Abatement Criteria for this Activity Category(Leq) (Table 1 DOT&PF Noise Policy):*

*Existing Noise Level (Leq):*

*Future Build Noise Level (Leq):*

*Future No-Build Noise Level:*

*Has a noise impact been identified (If yes continue filling out worksheet. If no, no noise abatement is required. Sign worksheet and recommend no noise abatement)?:* Yes No

*Highway Traffic Noise Abatement Feasibility and Reasonableness Analysis:*

### **Feasibility**

Is the proposed noise abatement measure acoustically feasible?	Yes	No
Is the proposed noise abatement measure engineering feasible	Yes	No

### **Reasonableness**

Is the proposed noise abatement measure considered reasonable?	Yes	No
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### **Federal Mandatory Factors**

- 1 **Cost Effectiveness.** Is the abatement measure cost effective?
- 2 **Views of Benefited Residents and Property Owners.** Do at least 60 percent of the impacted residents and property owners surveyed desire noise abatement?
- 3 **Noise reduction design goal?** Does the noise abatement measure provide 7 dBA reduction to 50 percent or more of the benefitted receptors in the first row of structures?

### **DOT&PF Mandatory Factors (State funded only)**

4. **Development vs. Highway Timing.** Were at least 50 percent of benefitted receptors in the development built before highway construction?
- 5 **Development Existence.** Have at least 50 percent of benefitted receptors in the development existed for at least 10 years?
- 6 **Absolute Predicted Build Noise Level.** Are the predicted future build noise levels at least 66dBA?
- 7 **Relative Predicted Build Noise Level.** Are the predicted future build noise levels at least 10 dBA greater than the existing noise levels?
- 8..**Build vs. No-Build Noise Levels.** Are the future build noise levels at least 5 dBA greater

than the future No-Build noise levels?

**9..Land Use.** Is the land use changing rapidly and are there local ordinances or zoning in place to control the new development of noise sensitive land uses adjacent to transportation corridors?

Is Noise Abatement recommended for this impacted receptor(s)?

What type of noise abatement is recommended? (Note – The use of quiet pavements is not an approved noise abatement measure on Federal- Aid Projects. Quiet pavements can be utilized as an abatement measure on State-funded projects with the approval of the Regional Preconstruction Engineer)

What is the basis for this recommendation?

\_\_\_\_\_  
Regional Environmental Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
DOT&PF Project Manager

\_\_\_\_\_  
Date

I have determined that the use of quiet pavement to mitigate noise impacts on a state-funded project is within the cost constraints of the legislative appropriation for the proposed project.

\_\_\_\_\_  
Preconstruction Engineer <sup>11</sup>

\_\_\_\_\_  
Date

<sup>11</sup> The Preconstruction Engineer’s signature is only required if quiet pavements are recommended on State-funded projects. The Preconstruction Engineer must determine whether the incorporation of quiet pavements into the State-funded project is within the cost constraints of the legislative appropriation