



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

TRAFFIC AND CONSTRUCTION NOISE
ANALYSIS AND ABATEMENT POLICY

April 18, 2011 Issued
July 13, 2011 Effective
August 1, 2012 Revised – Addendum # 1 Effective
September 26, 2012 Revised

INTRODUCTION

This document presents the State of Nevada, Department of Transportation (NDOT) *Traffic and Construction Noise Analysis and Abatement Policy* (Policy) for highway traffic and construction noise. It was completed in the spirit of the Federal Highway Administration (FHWA) *Everyday Counts Initiative*.

The Policy defines NDOT's application of the FHWA Noise Standard as contained in 23 Code of Federal Regulations (CFR) Part 772 and current *Highway Traffic Noise: Analysis and Abatement Guidance* (FHWA Noise Guidance). These are incorporated by reference and can be accessed on the FHWA Highway Traffic Noise website:

http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/. Refer to these for additional information on definitions, applicability, traffic noise prediction, analysis of traffic noise impacts, analysis of noise abatement, federal participation, information for local officials, and construction noise.

PURPOSE

The Policy presents NDOT's program to define and implement 23 CFR 772.

DEFINITIONS

Definitions are presented in 23 CFR 772.5 and the FHWA Noise Guidance and include terminology used in this Policy. NDOT defined terminology include:

Acoustical Feasibility: 5 dB(A)- L_{eq} (h).

Approach level: 1 decibel, A-weighted [dB(A)] 1-hour equivalent sound level [L_{eq} (h)] less than the Noise Abatement Criteria (NAC) for Activity Categories A to E when determining a traffic noise impact

Benefitted Receptor: The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dB(A), but does not exceed the noise reduction design goal.

Date of Public Knowledge: The date of approval of the Categorical Exclusion (CE), the Finding of No Significant Impact (FONSI), or the Record of Decision (ROD).

Noise reduction design goal: 7 dB(A)- L_{eq} (h).

Substantial noise increase: 15 dB(A)- L_{eq} (h) over existing noise levels.

APPLICABILITY

The Policy applies to Federal and Federal-aid highway projects as outlined in 23 CFR 772.7 and the FHWA Noise Guidance. NDOT does not support or utilize a Type II noise program. If assistance is needed to evaluate the applicability of the Policy or the FHWA noise standard,

consult with the NDOT Environmental Services Division Chief and the FHWA Nevada Division, Environmental Program Manager.

TRAFFIC NOISE PREDICTION

The traffic noise prediction is described in 23 CFR 772.9 and the FHWA Noise Guidance. NDOT does not allow the use of noise contour lines. Field measurements shall capture the anticipated worst hourly traffic noise impact. The posted speed limit shall be used to predict highway traffic noise levels.

ANALYSIS OF TRAFFIC NOISE IMPACTS

The traffic noise impact analysis is described in 23 CFR 772.11 and the FHWA Noise Guidance. NDOT has established the “approach level” to be 1 dB(A) less than the NAC for Activity Categories A to E when determining a traffic noise impact. NDOT has defined the “substantial noise increase” to be 15 dB(A)- $L_{eq}(h)$ (1-hour equivalent sound level) over existing noise levels. The “substantial noise increase” is independent of the absolute noise level. The noise analysis will determine all traffic noise impacts from the project. In addition to the methodology presented in the FHWA Guidance, NDOT further defines the traffic noise analysis as follows.

Receptor locations for highway traffic noise analysis shall typically be at ground level, or first-floor, and at an exterior area where frequent human activity occurs, between the right-of-way line and building. Impacted receptors will be identified or grouped by unique identification numbers. For an Activity Category B receptor, upper floors and balconies will be analyzed if those areas qualify as an exterior area of frequent human use. Activity Category B, multi-family dwelling units, shall be analyzed by identifying exterior areas of frequent human use and ascertaining capacity limits.

NDOT will evaluate eligible Activity Categories C and D areas by utilizing the “equivalent number of residences” method. This shall be completed in the manner of the example below taken from the FHWA *Highway Traffic Noise: Analysis and Abatement Guidance*.

This approach involves identifying the representative lot size of residential development and dividing the land area of portion of the park that is within the study area by the area of the representative lot size. For example, the typical lot size in a community is 60'x120' or 7,200 square feet (SF). Noise modeling predicts noise impacts from the project to a distance of 350'. A park in the community is adjacent to the project and has 1000' of frontage. The total impacted area of the park is 350,000 (SF). Divide this by the typical lot size of 7,200 SF for an equivalent number of receivers equal to 48.6. The park is representative of 49 receivers.

Activity Category E will be analyzed in the manner applied to Activity Category B, multi-family residences.

ANALYSIS OF NOISE ABATEMENT

Analysis of traffic noise abatement is described in 23 CFR 772.13 and the FHWA Noise Guidance. NDOT will primarily consider noise barriers, typically concrete, for traffic noise abatement. Absorptive treatments will not be utilized. NDOT will not consider cost averaging. NDOT does not participate in the FHWA Quiet Pavement Program.

FEASIBILITY

The feasibility of noise abatement is described in 23 CFR 772.13(d)(1) and the FHWA Noise Guidance. NDOT considers a traffic noise abatement measure that abates at least 5 dB(A) for 75% of the first, or front, row of impacted receptors as acoustically feasible.

Engineering feasibility affecting the final design and placement of sound barriers may be controlled by various factors including: topography, barrier height, access requirements, existing roadways, utilities, drainage, maintenance, other noise sources, safety considerations, or other project specific factors. Engineering feasibility will be evaluated according to the current edition of the American Association of State Highway Transportation Officials (AASHTO) publication "A Policy on Geometric Design of Highways and Streets", (a.k.a. AASHTO Green Book). Sound barrier design requirements are also addressed in project contract documents and per the NDOT Structure Division's *Structures Manual*, 2008 at <http://www.nevadadot.com/uploadedFiles/structuresmanualcover.pdf> or contact the Structural Design Division at 1-775-888-7540.

REASONABLENESS

Reasonableness is described in 23 CFR 772.13(d)(2) and the FHWA Noise Guidance. Three criteria are used to evaluate the reasonableness of mitigation being considered. The points-of-view of the benefitted property owners and residents, the cost effectiveness of the abatement measure, and the noise reduction design goal. NDOT has defined the traffic noise reduction design goal as 7 dB(A).

Noise barriers will be constructed as modeled and designed unless the benefitted receptors are opposed to their construction. As part of the public involvement process, NDOT will solicit input from all the benefitted receptors. To be considered, responses from benefitted receptors shall be in writing and clearly identify the respondent's status with the property and validate their standing to participate. The responses received shall be evaluated according to the following.

The preferences of benefitted receptors will be weighted as follows:

- Those receiving a 7 dB(A) reduction or greater in projected noise levels shall receive three points.
- Those receiving a 6 dB(A) reduction in projected noise levels shall receive two points.
- Those receiving a 5 dB(A) reduction in projected noise levels shall receive one point.

If opposing views over the traffic noise abatement measure develops between the property owner of a benefitted property and its legal occupant(s), the preference of the property owner will take precedence.

To alter the proposed traffic noise abatement measure, two criteria must be met. First, to initiate reconsideration of the proposed measure, a qualifying response from a majority (50%, plus one [1]) of all the valid identified benefitted receptors must be received. If a response is not received from a valid benefitted receptor, it will be recorded as being in agreement with and supporting the proposed traffic noise abatement measure. Second, using the scoring system above, the tallied results must support any change to the proposed traffic noise abatement measure.

A cost-benefit analysis will be prepared to evaluate abatement measures. A maximum construction cost of \$40,000 (2011 dollars) is allotted per benefitted receptor (i.e., dwelling, equivalent unit) that satisfies Policy criteria. This allowance will be evaluated every five years and compared with construction price indices to derive equivalent adjustments. Adjustments to the allowance will be by approved addendum to the Policy.

FEDERAL PARTICIPATION

Federal participation is described in 23 CFR 772.15 and the FHWA Noise Guidance.

INFORMATION FOR LOCAL OFFICIALS

Information for local officials is described in 23 CFR 772.17 and the FHWA Noise Guidance. Local officials will be informed of potential traffic noise impacts to land adjacent to a proposed highway project to protect future noise sensitive land development from becoming incompatible with traffic noise levels. This will be accomplished during the NEPA process and presented on NDOT's website.

After the date of public knowledge, NDOT will be available for analyzing changes in traffic noise impacts, when appropriate. Traffic noise abatement for development adjacent to the highway occurring after this date is the responsibility of local municipalities. Provision for such noise abatement becomes the responsibility of local communities and private developers.

CONSTRUCTION NOISE

Construction noise is described in 23 CFR 772.19. Procedures to minimize construction noise impacts, while considering traffic impacts, will be addressed on a project-by-project basis. When reasonable and feasible, project traffic noise abatement measures will be constructed as early in the project as possible to provide mitigation from construction noise impacts.

POLICY APPROVALS AND REVISIONS

FHWA policy approvals are included in Appendix A. Policy revisions are included in Appendix B. Addendum #1 will apply to eligible projects initiated on or after August 1, 2012. The Policy was revised September 26, 2012, by removing the appendices containing 23 CFR Part 772 and the FHWA Noise Guidance and replacing with a weblink.

APPENDIX A
Policy Approvals



STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
1263 S. Stewart Street
Carson City, Nevada 89712

BRIAN SANDOVAL
Governor

April 18, 2011

SUSAN MARTINOVICH, P.E., *Director*

In Reply Refer to:

MR. DEL ABDALLA
ENVIRONMENTAL PROGRAM MANAGER
FEDERAL HIGHWAY ADMINISTRATION
705 NORTH PLAZA STREET, SUITE 220
CARSON CITY, NV 89701-0602

Request for Approval and Acceptance of
NDOT's Traffic and Construction Noise
Analysis and Abatement Policy

Dear Mr. Abdalla:

This letter requests the Federal Highway Administration, Nevada Division's formal approval and acceptance of the NDOT "Traffic and Construction Noise Analysis and Abatement Policy" (Policy). In addition to you, the Policy has been reviewed by Mr. Mark Ferroni (FHWA Headquarters) and Ms. Stephanie Stoermer (FHWA Resource Center) and has been found to conform to the 23CFR772 final rule. A copy of the final Policy is attached, with appendices. In addition, an electronic copy of the Policy (with appendices of current versions of documents) was submitted to you via e-mail on April 18, 2011.

If you have any questions or need additional information, please contact me at 775-888-7686.

Sincerely,

A handwritten signature in black ink that reads "Steve M. Cooke".

Steve M Cooke, P.E., Chief
Environmental Services Division

SMC/dlh

Attachment



U.S. Department
of Transportation
**Federal Highway
Administration**



RECEIVED

MAY 4 2011

Nevada Division

DIRECTOR'S OFFICE

705 N. Plaza Street
Suite 220
Carson City, NV 89701
775-687-1204

May 3, 2011

In Reply Refer To:
HDA-NV

Susan Martinovich, P.E.
Director, Nevada Department of Transportation
1263 South Stewart Street
Carson City, Nevada 89712

Subject: Request for Approval of NDOT's Traffic and Construction Noise Analysis and
Abatement Policy

Dear Ms. Martinovich:

The Nevada Department of Transportation's April 18, 2011 letter requested FHWA to approve NDOT's "Traffic and Construction Noise Analysis and Abatement Policy" (Policy). We reviewed and hereby approve the policy. The effective date for implementing the new policy is July 13, 2011.

Sincerely,

Susan E. Klekar
Division Administrator





STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

1263 S. Stewart Street
Carson City, Nevada 89712

BRIAN SANDOVAL
Governor

SUSAN MARTINOVICH, P.E., *Director*

July 2, 2012

In Reply Refer to:

MR. DEL ABDALLA
ENVIRONMENTAL PROGRAM MANAGER
FEDERAL HIGHWAY ADMINISTRATION
705 NORTH PLAZA STREET, SUITE 220
CARSON CITY, NV 89701-0602

Request for Approval and Acceptance of
NDOT's Traffic and Construction Noise
Analysis and Abatement Policy
Revision - Addendum #1

Dear Mr. Abdalla:

This letter requests the Federal Highway Administration (FHWA), Nevada Division's formal approval and acceptance of the revised NDOT "Traffic and Construction Noise Analysis and Abatement Policy, Addendum #1 - Qualifications Necessary to Perform Traffic Noise Analysis" (Policy). Addendum #1 (attached) was reviewed and approved by you and Mr. Mark Ferroni (FHWA Headquarters) on June 26, 2012. The effective date for implementing Addendum #1 will be August 1, 2012.

An electronic copy of the revised Policy will be submitted to you and Mr. Ferroni via e-mail on receipt of the FHWA formal approval. If you have any questions or need additional information, please contact me at 775-888-7686.

Sincerely,

A handwritten signature in cursive script that reads "Steve M. Cooke".

Steve M. Cooke, P.E., Chief
Environmental Services Division

SMC/DLH/tkb

Attachment





U.S. Department
of Transportation
**Federal Highway
Administration**



Nevada Division

July 19, 2012

705 N. Plaza Street, Suite 220
Carson City, NV 89701
Phone 775 687-1204
Fax 775 687-3803

In Reply Refer To:
HENV-NV

Mr. Steve Cooke
Chief, Environmental Services Division
Nevada Department of Transportation
1263 S. Stewart Street
Carson City, NV 89712

Subject: Request for Approval and Acceptance of NDOT's Traffic and Construction Noise
Analysis and Abatement Policy revision-Addendum # 1

Dear Mr. Cooke:

The Nevada Department of Transportation's (NDOT) July 2, 2012 letter requested approval of NDOT's "Traffic and Construction Noise Analysis and Abatement Policy Revision-Addendum #1". The addendum was prepared by NDOT's Environmental Services Division and reviewed by FHWA Headquarters and the FHWA Nevada Division office. Based on our review of the policy, we approve NDOT's Noise Policy Revision-Addendum #1. The effective date for implementing Addendum # 1 is August 1, 2012.

Sincerely,

Abdelmoez Abdalla
Environmental Program Manager

ec: Mark Ferroni, FHWA

APPENDIX B
Policy Revisions

ADDENDUM #1

Qualifications Necessary to Perform Traffic Noise Analysis

Only individuals qualified in the field of highway traffic noise impact analysis shall be responsible for the highway traffic noise analysis for NDOT's transportation improvement projects. In order to be considered qualified; the person performing the analysis must have demonstrated experience in conducting noise analyses for transportation improvement projects and must have exhibited a working knowledge of the procedures and policies outlined in:

- The Federal regulation (23 CFR 772) and its accompanying noise guidance material developed by FHWA (current version),
- The NDOT Traffic and Construction Noise Analysis and Abatement Policy (current version), and
- Report Number FHWA-PD-96-046, "Measurements of Highway-Related Noise," (current version)

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

The qualified individual must also have successfully completed, been involved in the development and/or instruction, or demonstrate equivalent experience for the following:

- Highway traffic noise analysis training provided by FHWA and/or the National Highway Institute (NHI), and
- Training on the most currently approved FHWA noise analysis computer model(s).

FHWA/NDOT-recognized training courses can be found at:

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

A copy of the certificate of training or documentation of equivalent experience must be included in their employer's prequalification packet. Refresher and additional training may be necessary as a result of advanced highway traffic noise modeling technologies and changes in highway traffic noise policy and/or procedure.

Effective date: August 1, 2012