# Noise Abatement

# UDOT 08A2-01

Effective: November 6, 1987

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## Purpose

To establish the policy and procedure for conducting traffic noise studies, implementing noise abatement measures and coordinating with local municipalities and the public to verify that all feasible and reasonable mitigation measures are incorporated into projects to minimize noise impacts and protect the public health and welfare.

## Policy

The Utah Department of Transportation (UDOT, Department) recognizes a commitment to minimize noise impacts generated by highway traffic that may adversely impact human activity and the quality of life of residents located in the vicinity of heavily traveled roads. UDOT will install noise abatement measures according to the guidelines and requirements set forth in the "Procedures" section of this Policy. This Policy was developed by UDOT and reviewed and concurred with by the Federal Highway Administration (FHWA). The highway traffic noise prediction requirements, noise analysis, and noise abatement criteria in this Policy are consistent with federal regulation *23 CFR 772 - Procedures for Abatement of Highway Traffic Noise and Construction Noise* and *Utah Administrative Code R930-3- Highway Noise Abatement.*

## Definitions

**Abatement**

A reduction in noise level resulting from implementation of a mitigation measure.

**Approach Criteria**

1 decibel (dBA) lower than the appropriate Federal Highway Administration (FHWA) noise abatement criteria.

**Auxiliary Lane**

Generally a lane between a highway entrance ramp and an exit ramp.

**Benefited Receptor**

A noise sensitive receptor that receives a noise reduction of at least 5 dBA. The number of benefited receptors will be used in determining if a noise abatement measure has a reasonable cost.

**CFR**

The Code of Federal Regulations.

**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), as defined in 23 CFR 771. For State-funded projects, the Date of Public Knowledge is the date of approval of the environmental document.

**Decibel (dB)**

A unit for measuring sound levels derived from the difference between sound pressure levels.

**Decibel, A-weighted Scale (dBA)**

Sound levels are typically measured using a statistically weighted scale (*dB*). The A-weighted scale most closely represents the range of human hearing; highway sound levels are described using the A-weighted scale (*dBA*).

**Design Year**

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

**Design Noise Level**

The worst hour traffic noise level likely to occur throughout the life of the project. Level of Service (LOS) C traffic volumes will be used to calculate design noise levels unless the Director of Environmental Services approves the use of another LOS for a specific project.

**Existing Noise Levels**

The worst hourly noise level currently occurring from natural and mechanical sources and human activity in the project area generally occurring around the morning and afternoon peaks.

**Feasibility**

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

**Front-Row Receptor**

A noise-sensitive receptor that is located adjacent or nearest to the transportation facility.

**FHWA**

Federal Highway Administration

**Impacted Receptor**

A receptor that has or is predicted to have noise levels approaching or higher than the noise abatement criteria threshold for the appropriate category, or which is predicted to receive a substantial noise increase, defined as 10 dBA or more over *existing noise levels*.

**Leq**

The equivalent (energy average) steady-state sound level which in a

stated period of time contains the same acoustic energy as the time-varying sound level during that time period.

**Leq(h)**
The hourly value of Leq.

**Level Of Service (LOS)**
The relationship between traffic volume and traffic speed.

**Multifamily Residence**
A residential structure containing more than one residence. Each residence in a multifamily dwelling is counted as one receptor when determining impacted and benefited receptors.

**Municipality**
A city, town, county, etc., having its own incorporated government for local affairs.

**Noise Abatement Criteria (NAC)**
Criteria established by FHWA based on land use type that defines when noise impacts occur.

**Noise Barrier**
A wall between the highway noise source and the noise sensitive receptor(s) constructed to lower noise.

**Noise Sensitive Receptor**
Any property where frequent exterior human use occurs and where a lowered noise level would be of benefit. For Activity Category D, in situations where there are no exterior activities to be affected by the traffic noise, the interior of the building will be used to identify a noise-sensitive receptor.

**Permitted**
A commitment to develop land evidenced by a formal building permit issued to a developer by the local agency of authority.

**Property Owner**
The current owner of record at the appropriate County Recorder's Office.

**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).

**Receiver**
An object in the noise model

**Residence**

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

**Sensitive Land Uses**

Lands defined as NAC activity categories A, B, C, D or E in Table 1.

**Substantial noise increase**

An increase in noise levels of 10 dBA in the predicted noise level over the existing noise level.

**Statewide Transportation Improvement Program (STIP)**

A five-year plan of highway and transit projects for the State of Utah. The STIP is UDOT's official work plan for developing projects through design to construction.

**Substantial Horizontal Alteration**

A project that halves the distance between the traffic noise source and the closest receptor, compared between the existing condition and the future build condition.

**Substantial Vertical Alteration**

A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source by either altering the vertical alignment of the highway or by altering the topography between the highway and the receptor.

**Type I Project**

A project in conjunction with new highway construction or existing highway construction that alters the horizontal or vertical alignment or increases the number of through-traffic lanes, as defined below in Background Section A.1.

**Type II Project**

A project commonly referred to as a "retrofit" project to provide noise abatement along an existing highway. UDOT does not provide a Type II program.

**Type III Project**

A project that is not classified as either a Type I or Type II project.

**UDOT Noise Abatement Criteria (NAC)**

The noise decibel (dBA) value reflecting the approach criteria of 1 dBA below the NAC values listed in 23CFR 772 for each land use category.

# Background

## A. Applicability

1. Type I Project - Noise abatement will be considered for all Type I Projects where noise impacts are identified. A Type I Project is one that includes any of the following:

    a. The construction of a highway on new location; or a substantial horizontal alteration or substantial vertical alteration of an existing highway; or,
    b. The addition of a through traffic lane, the addition of a through traffic lane that functions as a High Occupancy Vehicle (HOV) lane, High Occupancy/Toll (HOT) lane, bus lane or climbing lane; or,
    c. The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
    d. The addition or relocation of interchange lanes or ramps added to a quadrant to complete a partial interchange; or,
    e. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
    f. The addition of a new or substantial alteration of a weigh station, rest stop, ride share lot or toll plaza.
    g. If a project is determined to be a Type I Project under this definition, then the entire project area as defined in the environmental document is a Type I Project.

2. Type II Project - A project referred to as a “retrofit” project to provide noise abatement along an existing highway. The Utah Department of Transportation does not provide a Type II program.

3. Type III Project – A Type III project is one that does not meet the classification of a Type I or Type II project. Type III projects do not require a noise analysis.

## B. Analysis of Traffic Noise Impacts

1. Noise impact and abatement analyses will include lands within Land Use Activity Categories A, B, C, D and E (Table 1) only when development exists or has been permitted. A development will be defined as being permitted when a formal building permit has been issued prior to the date the final environmental decision document is approved.

2. The traffic noise analysis will include the following:

    a. Identification of existing activities, developed lands, and undeveloped lands for which development is permitted. (See Section B.1)
    b. Determination of existing worst case noise levels. Design noise levels are calculated using the posted speed limit and the Level of Service (LOS) identified in the traffic analysis to determine average worst hourly traffic noise unless the Director of Environmental Services approves the use of another LOS for any specific project.
    c. Determination of future worst case noise levels. Design noise

levels are calculated using the design speed for future year and Level of Service (LOS) C traffic volumes to determine average worst hourly traffic noise unless the Director of Environmental Services approves the use of another LOS for any specific project.

d. Determination of traffic noise impacts.

## Table 1
## Noise Abatement Criteria (NAC)
**[Hourly A- Weighted Sound Level decibels (dB(A))]**

| Activity Category | FHWA Criteria Leq(h) | UDOT Criteria[1] Leq(h) | Evaluation Location | Activity Description |
|---|---|---|---|---|
| A | 57 | 56 | Exterior | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 | 66 | Exterior | Residential |
| C | 67 | 66 | Exterior | Active sports 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 | 51 | 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 | 71 | Exterior | Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F. |
| F | - | - | | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing |
| G | - | - | | Undeveloped lands that are not permitted. |

1. Hourly A-weighted sound level in decibels reflecting a 1 dBA “approach” value below 23CFR 772 values

3. Primary consideration will be given to exterior areas where frequent human use occurs, in determining noise impacts. The interior of facilities may be evaluated if, following analysis of any outdoor activity areas, it is determined that exterior abatement measures are not reasonable or feasible or that such sites are far from or physically shielded from traffic noise impacts for Activity Category D.

4. UDOT considers a traffic noise impact to occur when either of the following situations is expected at a sensitive land use:

   a. The future worst case noise level is equal to or greater than the UDOT Noise Abatement Criteria (NAC) in Table 1 for each corresponding land use category, or;

   b. The future worst case noise level is greater than or equal to an increase of 10 dBA over the existing noise level. This impact criterion takes effect regardless of existing noise levels.

**Table 2**
**Sound Level Change vs. Relative Loudness**

| Sound Level Change | Relative Loudness |
|---|---|
| 1 dBA | No perceptible change |
| 3 dBA | Barely perceptible change |
| 5 dBA | Readily perceptible change |
| 10 dBA increase | Perceived as twice as loud |

5. Activity Categories F and G include lands that are not sensitive to traffic noise. There are no impact criteria for these land use types therefore noise abatement is not required. However, for Activity Category G, an estimate of the distance to the approach criteria must be provided to local governments. This may be accomplished by including a table or a figure displaying contours that show future noise levels. The distance from the edge of the roadway pavement to the where the worst hour $L_{eq}(h)$ levels of 66 dBA and 71 dBA occur must be shown.

## C. Analysis of Noise Abatement

The noise analysis will identify traffic noise impacts at sensitive receptors, which will then be considered for noise abatement. The overall goal of abatement is to obtain substantial noise reductions, which may or may not result in noise levels below NAC levels. The two relevant criteria to consider when identifying and evaluating noise abatement measures for mitigation are (1) feasibility and (2) reasonableness. Noise abatement will be provided only if it is determined to be both feasible and reasonable.

1. **Feasibility**

   The feasibility factors outlined below must collectively be achieved for a noise abatement measure to be considered "feasible." Failure to meet these factors will result in the noise abatement measure being deemed not feasible and therefore not included in the proposed project. It is important to note that even if all feasibility factors are achieved, noise abatement must still meet all reasonableness factors in order to be included in the project.

   a. Engineering Considerations – Engineering considerations such as safety, presence of cross streets, sight distance, access to adjacent properties, wall height, topography, drainage, utilities, maintenance access and maintenance of the abatement measure must be taken into account as part of establishing feasibility. Noise abatement measures are not intended to serve as privacy fences or safety barriers. Abatement measures installed on structures will not exceed 10-feet in height measured from the top of deck or roadway to the top of the noise wall. Noise walls will not be installed on structures that require retrofitting to accommodate the noise abatement measure.Noise abatement measures will be considered if the project meets the criteria established in this policy if structure replacement is included as part of the project. Abatement measures shall be consistent with general American Association of State Highway and Transportation Officials (AASHTO) design principles.

   b. Safety on Urban Non-Access Controlled Roadways - To avoid a damaged wall from becoming a safety hazard, in the event of a failure, wall height shall be no greater than the distance from the back of curb to the face of proposed wall.

   c. Acoustic Feasibility - Noise abatement must be considered acoustically feasible. This is defined as achieving at least a 5 dBA highway traffic noise reduction for at least 50% of front-row receptors.

      When noise abatement is determined feasible the Department will determine whether its construction is reasonable by thoroughly considering the wide range of criteria described below. The UDOT Noise Abatement Measure Recommendation Checklist (See Checklist in the Appendix) will be completed and a decision on

mitigation documented in the project file. The decision to recommend or not recommend noise abatement will normally be the responsibility of the Region Environmental Manager. Concurrence will be obtained from the Project Manager and the Region Pre-Construction Engineer.

2. **Reasonableness**

The reasonableness factors outlined below must collectively be achieved for a noise abatement measure to be considered "reasonable." Failure to achieve any of these factors will result in the noise abatement measure being deemed not reasonable and therefore not included in the project.

a. Noise Abatement Design Goal - Every reasonable effort should be made to obtain substantial noise reductions. UDOT defines the minimum noise reduction (design goal) from proposed abatement measures to be 7 dBA or greater for at least 35% of front-row receptors. In accordance with 23 CFR 772, no abatement measure shall be deemed reasonable if the noise abatement design goal cannot be achieved.

b. Cost Effectiveness – The cost of noise abatement measures must be deemed reasonable in order to be included in the project. Noise abatement costs are based on a fixed unit cost of $20 per square foot, multiplied by the height and length of the wall, in addition to the cost of any other item associated with the abatement measure that is critical to safety. The fixed unit cost is based on the historical average cost of noise walls installed on UDOT projects and is reviewed at regular intervals, not to exceed five years.

The cost effectiveness of abatement is determined by analyzing the cost of a wall that would provide a noise reduction of 5 dBA or more for a benefited receptor. A reasonable cost is considered to be a maximum of $30,000 per benefited receptor (Activity Category B) and $360 per lineal foot for Activity Categories A,C,D or E. If the anticipated cost of the noise abatement measure is less than the allowable cost, then the abatement is deemed reasonable.

c. Viewpoints of Property Owners and Residents - Viewpoints of property owners and residents (non-owners) must be solicited to determine if noise abatement is desired.

1. Balloting – As part of the final design phase of projects, the Department needs to establish whether property owners and residents are in favor of noise abatement measures. This process involves sending ballots to the following groups so they can indicate their preference for or against noise abatement measures:

a) All benefited receptors (property owners and

residents). A benefited receptor is one that would receive a reduction of 5 dBA or more as a result of noise abatement.

b) Receptors that border or that are directly adjacent, or both, to the end of a proposed noise wall that are not, by definition, benefited by the wall, will be allowed to cast a ballot.

The number of votes is established as follows:

- Owner occupied residences: The owner will have 1 vote.
- Rental homes, multi-family residences and apartments: The owner will have 1 vote per unit and the resident (non-owner) will have 1 vote for the unit.
- Day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures: The owner will have 1 vote.
- Commercial/industrial businesses: The owner will have 1 vote per unit and, if applicable, the tenant will have 1 vote for the unit.
- Mobile home parks: The mobile home owner will have 1 vote. The lot owner, if different than the home owner, will have 1 vote.

c) Properties owned by UDOT – It is the policy of UDOT to abstain from voting as a receptor and these votes will not be calculated in the denominator of total votes described in the Section C(2)(c)(2).

2. Assessing Ballots - When the votes are counted, property owners' votes will receive a multiplier factor of 5 compared to residents (non-owners) factor of 1. Any votes of residents (non-owners) from that property will be calculated as 20% of a vote if the owner votes to abstain.

Noise abatement will only be recommended if 75% of votes counted, favor noise abatement. The denominator used to calculate this percentage will equal the total number of votes. In addition, at least 75% of the total number of completed ballots must be returned to adequately assess if noise abatement measures are desired. Noise abatement measures will be deemed not reasonable if less than 75% of ballots are returned after balloting efforts are completed. .

Ballots sent by U.S. Mail are deemed by the Department as "due diligence" in notifying the affected property owners and residents of possible noise mitigation measures in their area. Ballots will be sent by U.S. Mail to each property owner of

record and each residing household or resident. Each ballot will include a deadline for return to the Department. A second ballot with a new deadline will be sent by Registered Mail for ballots sent but not returned by the deadline. There will not be another opportunity to address noise impacts, once a noise wall is deemed to be unfeasible or unreasonable, until such time that another Type I project impacts the same area.

Results of the Balloting will be mailed to the same recipients as described above.

3. Noise Receptor Locations
Noise receptor locations are normally restricted to exterior areas of frequent human use. Interior locations included in Activity Category D are only used when there are no outside activities, such as in churches, hospitals, or libraries. Noise receptor locations, typically, are chosen at areas between the right-of-way line and buildings where frequent human activity occurs, such as a patio, pool, or play area in the yard of a home. The selection of the area of frequent human activity will be made in coordination with the administrator of the Department's Noise Policy.

d. Noise Abatement Measures

1. The following abatement measures may be considered including a cost/benefit analyses to compare alternatives if a noise impact is identified:

a. Noise walls.
b. Noise insulation of Activity Category D land use facilities will be considered as a noise abatement measure when determined reasonable and feasible in accordance with 23 CFR
Instances may arise in which Department right-of-way is not the most prudent location for noise abatement measures, yet such measures can be feasible and reasonable, if built on adjacent property or adjacent public right-of-way. The following applies in these cases:

1) The Department's cost is limited to the fixed unit cost for abatement on Department right-of-way.

2) Adjacent property owners must allow access and easements as necessary to construct and maintain noise abatement measure(s).
3) Maintenance of noise abatement measures and associated landscaping on the side facing the highway will normally be the Department's

responsibility. The opposite face will be maintained by the Department as well, unless maintenance responsibilities are assigned to other parties.

c. The Department will own and maintain all noise abatement measures for projects on Department facilities. The local government will own and maintain all noise abatement measures for local government facilities.

d. Noise abatement measures analyzed and deemed feasible and reasonable in the environmental study phase are still subject to final design and balloting. This is included in the environmental document as the Statement of Likelihood.

e. Relocation of Existing Noise Walls
There may be circumstances when existing noise walls must be relocated or replaced due to conflicts with new construction projects, and where the walls do not meet the Noise Abatement Criteria in this Policy after performing a Noise Abatement Analysis according to paragraph C of the Background of this Policy. Existing walls will be relocated or replaced in these cases with an “in-kind” wall so long as the replacement wall does not:

- reduce roadway safety
- preclude or conflict with planned roadway projects included on either the State Transportation Improvement Plan, or Phase I of the Long Range Plan, or both
- require acquisition of additional right-of-way
- conflict with utilities, or
- result in unreasonable costs to the Department according to this Policy.

f. Removal or Alteration of Constructed Noise Walls
The Department may consider requests for the removal or alteration of constructed noise walls in certain circumstances. See Appendix B for conditions and requirements associated with this process.

g. Local Municipality Cost Participation
A third party, such as a local municipality, may contribute funds to make functional or aesthetic enhancements to a noise abatement feature in instances where noise abatement has already been deemed feasible and reasonable.

h. Information for Local Officials
The Department will inform local officials of noise compatible planning concepts and an estimate of future noise levels on undeveloped lands or properties within the project limits for Type I Projects.

See also B.5.

i. Projects Funded from Other Sources

The Department may construct and maintain noise abatement measures along state highway right-of-way in cases where citizens, adjacent property owners, developers, or local municipalities provide the cost for the noise abatement; and the abatement meets the other feasible and reasonable criteria. The Department will design, build, and maintain the abatement measure, and the local municipality acting for and on behalf of other groups will pay the Department for all preliminary engineering, construction and maintenance costs.

j. Traffic Noise Prediction

Only the current FHWA-approved Traffic Noise Model (TNM) is to be used for any traffic noise analysis unless otherwise agreed upon in advance by the Department and FHWA.

# Procedures
**Noise Abatement**

**Responsibility:** Environmental Services

## Actions

1. Determine if this is a Type I Project.

2. Disclose in the environmental document, ending the process with this step if it is not a Type I Project.

3. Determine types and numbers of sensitive land use activities (receptors) that might be impacted.

4. Disclose in the environmental document, ending the process with this step if none.

5. Measure or calculate existing noise levels.

6. Calculate future worst case noise levels using the posted or planned speed limit and LOS C traffic volumes, unless the Director of Environmental Services approves the use of another level of service, to determine average worst hourly traffic noise.
   a. 23 CFR 772 does not require an analysis of the no build scenario, but it may be valuable if the existing noise levels are greater than the future worst case levels.

7. Compare design noise abatement criterion levels and existing noise levels.

8. Identify impacted receptors.

9. Summarize findings for the environmental document, ending the process with this step if no impacts.

10. Apply a value of $30,000 per residence (dwelling unit) to determine if noise abatement is cost effective for Activity Category B land uses (residential areas).

11. Use a fixed unit cost of $20.00 per square foot to calculate the cost of noise abatement walls.

12. Apply a value of $360.00 per linear foot to determine if noise abatement is cost effective for Activity Category A, C, D, and E land uses.

13. Consider general abatement strategies, consistent with Department Policy, for all impacted receptors, for each alternative.
14. Prepare preliminary noise study as outlined in the Department's Environmental Process Manual of Instruction (MOI) and direct its review.

15. Submit noise study to the Department's Noise Policy administrator for approval.

16. Include summary of the noise study in the environmental document in accordance with the requirements of 23 CFR 772.13(g).

**Responsibility:** Project Manager

17. Direct the local municipality involvement process, providing information where noise abatement is likely and where it is not likely.

18. Inform local officials about noise compatible planning concepts and provide an estimate of future noise levels on undeveloped lands or properties within the project limits by sending a copy of the Noise Study to the planning division of the appropriate local government(s).

**Responsibility:** Project Manager and Region Communications Manager

20. Conduct the balloting process – This task should take place during the final design phase of the project. The procedure to determine those in favor of noise abatement will be as follows:
    a. Use a standard form posted on the Department's web site that includes, at a minimum, the Department official logo, the project name, project location, the project sponsor, the Consultant's name, a brief explanation of the purpose of the balloting, and boxes to indicate a preference for, or against the abatement. Refer to the Noise Wall Ballot at the end of this Policy.
    b. Include a place for written comments on the ballot.
    c. Include the deadline for votes to be received by the Department or Consultant in order to be counted.
    d. Include a self-addressed stamped envelope for returning the ballot.
    e. Make a reasonable effort to send ballots to the correct address of benefited receptors as defined in this Policy.
    f. Make a reasonable effort prior to balloting by telephone, mailer, or in person to explain the process and to determine any special needs of those voting.
    g. Allow only benefited receptors and receptors that border and/or are directly adjacent to the end of a proposed noise wall to cast a ballot.
    h. Coordinate with the Noise Policy Administrator to develop a project-specific voting strategy for balloting situations not described in this Policy.
    i. Place all ballot results in the project files when the ballots for noise abatement are returned.

**Responsibility:** UDOT Director of Environmental Services and/or Noise Policy Administrator

21. Review and approve noise study.

**Responsibility:** Project Manager

22. Incorporate the noise study findings into the Project Design Criteria (PDC).

23. Submit the PDC to the Region Preconstruction Engineer for approval.

24. Incorporate approved abatement measures into design plans and specifications

# Appendix A

**UTAH DEPARTMENT OF TRANSPORTATION**
**NOISE ABATEMENT RECOMMENDATION CHECKLIST**

Project Location:
Project Concept:
Project Number:
PIN:
Prepared By:
Receptor Name/Description:

**Determination of Acoustic Feasibility**

Does the noise abatement achieve at least a 5 dBA reduction in highway traffic noise for at least 50 percent of front-row receptors?

Yes_____ No_____

If yes, proceed to Question #1. If no, abatement measures are not feasible and are not recommended at this site; proceed to decision segment of form.

**Determination of Feasible and Reasonable Mitigation**

1. Does the design noise level equal or exceed the UDOT Noise Abatement Criteria as defined in Table 1 of this Policy?
   Yes_____ No_____

If yes, proceed to Question #3. If no, proceed to Question #2.

2. Does the receptor, as a result of the design noise level, substantially exceed (10 or more dBA) the existing noise levels prior to construction?
   Yes_____ No_____

If yes, proceed to Question #3. If no, then noise abatement is not recommended; proceed to decision segment of form.

3. Can effective noise abatement be constructed which would provide a minimum reduction of 7 dBA for at least 35 percent of front-row receptors?
   Yes_____ No_____

If yes, proceed to Question #4. If no, abatement measures are not reasonable and are not recommended at this site; proceed to decision segment of form.

4. Are there undeveloped lands along the project corridor?
   Yes_____ No_____
   If yes, proceed to Question #5. If no, proceed to Question #6.

5. Were the undeveloped lands permitted (formal building permit issued) for development under Land Use Categories A, B, C, D or E prior to the date the final environmental decision document was approved?
   Yes_____ No_____

If yes, proceed to Question #6. If no, implementation of abatement is not reasonable. Noise abatement is the responsibility of the property owner/developer. Proceed to decision segment of form.

6. Can noise abatement measures be constructed without creating a safety hazard to users and residents, and not interfere with operations and maintenance of the highway facility?
   Yes_____ No_____

If yes, proceed to Question #7. If no, abatement measures are not recommended at this site; proceed to decision segment of form.

7. Does the cost per impacted and benefited residence exceed $30,000 for residential areas in Land Use Category B or exceed $360 per linear foot for nonresidential areas in Land Use Category A and/or C or commercial and/or
   industrial zoned areas in Land Use Category E?
   Yes_____ No_____

If yes, noise abatement measures are not considered reasonable; proceed to decision segment of form. If no, proceed to Question #8.

8. For urban roadways that are not access-controlled, is the noise wall height less than or equal to the distance from the wall face to the back of curb?
   Yes_____ No_____

If yes, proceed to Question #9. If no, noise abatement measures are not considered feasible based on safety; proceed to decision section of the form.

9. Does public involvement voting result in at least 75 percent of ballots returned?
   Yes_____ No_____

If yes, proceed to Question #10. If no, noise abatement measures are not considered reasonable; proceed to decision segment of form.

10. Does the Public Involvement balloting result in at least 75 percent of benefited and end of wall receptors voting in “favor” of the proposed noise abatement measure?
Yes_____ No_____

If yes, proceed to Question #11. If no, noise abatement measures are not considered reasonable; proceed to decision segment of form.

11. Are there any environmental impacts that need special attention as a result of the
implementation of the noise abatement?
Yes_____ No_____

If yes, outline these impacts and discuss with the Environmental Manager or Region Project Manager.

**Decision**

Are Abatement Measures feasible? Yes_____
No_____
Are Abatement Measures reasonable? Yes_____
No_____

# Utah Department of Transportation
# Noise Wall Ballot

**Project Name:** _____

**Project Location:** _____

**Project Sponsor(s):** _____

**Project Contact:** _____ **Telephone:** _____

**Ballot Purpose**

Your residence/property has been identified as potentially having highway noise impacts due to the proposed project. As part of the noise study for this project, we would like to get your opinion on whether you would be in favor of noise walls being constructed to reduce expected noise levels.

Your input, along with other information including; the amount of noise reduction achieved, engineering considerations, cost and views will be considered together, to come to a decision on whether or not to construct noise abatement measures. Please check the appropriate line, include any comments you may have and return this ballot in the self-addressed stamped envelope.

Please note that at least 75% of ballots sent, must be completed and returned for UDOT to assess if the public desires noise walls. Your ballot needs to be received by _____ _____in order to be counted. Thank you for your participation!

___ I **support** a noise wall.
___ I **do not support** a noise wall.
___ I **choose to abstain from voting, and wish not to be counted in the analysis.**

**Comments:**

_____
_____
_____

**Name:** _____

**Address:** _____

**Signature:** _____ **Date:** _____

# Appendix B
# Removal or Alteration of Constructed Noise Walls

## Purpose

The following guidance provides clarification on the Utah Department of Transportation's (UDOT) policy regarding changes to constructed noise walls where a request is made by an applicant to UDOT to alter or remove an existing noise wall after project construction begins or after construction is complete.

## Policy

UDOT will consider requests for removal of all or part of a noise wall located in locations where the land use activity category is B, C, D or E. This applies to walls that are constructed or are part of projects that are currently in construction. Under either scenario it is assumed that the noise wall was constructed based on it meeting the requirements of UDOT's noise policy at the time of construction. The removal request will follow this procedure:

1. A new noise analysis must be performed at the applicant's expense by a UDOT pre-qualified noise consultant. The applicant will submit two copies of the noise analysis to the Department's Director of Environmental Services and the Department's Noise Policy Administrator for review and approval. The approval of the noise analysis will be contingent on if the noise analysis was done correctly based on applicable FHWA and UDOT noise policies.
2. After approval of the noise analysis by the Department's Director of Environmental Services and the Department's Noise Policy Administrator, the applicant will provide to all affected receptors: (a) a copy of the noise analysis, (b) a description and map showing the noise wall removal that is being proposed, and (c) a UDOT approved noise ballot that asks the affected receptor whether they are in favor or not in favor of the proposed noise wall removal. The applicant must provide a minimum of 30 days for the affected receptors to respond.
3. The applicant must have approval from all of the affected receptors (as identified in the noise analysis and as defined in this policy) and provide the completed noise ballots to UDOT. If the applicant is unable to obtain approval for the proposed noise wall removal from all affected receptors, UDOT will not allow the noise wall to be removed. If the applicant does obtain approval from all affected receptors, UDOT will allow the applicant to proceed with the proposed noise wall removal.
4. All noise wall removal costs (whether partial or complete) will be at the applicant's expense. Abandoned concrete posts and foundations must be excavated to 1 foot below the ground elevation, backfilled with clean soil, and seeded.
5. An encroachment permit must be obtained from the appropriate UDOT Region Office to perform the above work in the UDOT right-of-way. The permit will establish any additional provisions required to accommodate removal of other structures, installation of guard rail and maintenance of traffic among other project specific issues.

6. When construction is completed the applicant will provide as-built drawings to UDOT. The wall will undergo inspection by the UDOT Region District Engineer or designee and deficiencies will be corrected at the applicant’s expense. Ownership of any remaining wall remains with UDOT when the project is approved by the UDOT Region District Engineer.