

Surface Transportation Noise Policy and Supporting Documents



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COUNCIL POLICY

Policy Title: Surface Transportation Noise Policy

Policy Number: TP003

Report Number: OD88-2

Approved by: City Council

Effective Date: 1988 April

Business Unit: Transportation Planning

BACKGROUND

Many people are exposed to sounds which become annoying. Transportation noise, especially from vehicles, is part of our daily lifestyle. Cars and especially trucks are major sources of noise.

The City of Calgary is committed to reducing the impact of such noise sources in existing and future residential areas. As part of the planning process in Calgary, residential areas are examined to determine whether there is an existing or potential problem in outdoor rear leisure areas around the home.

The City of Calgary's Surface Transportation Noise Policy prescribes the conditions under which noise barriers are constructed adjacent to residential properties using guidelines established by the Federal Government.

PURPOSE

The intent of the Surface Transportation Noise Policy is to provide the design noise levels and descriptors, design criteria, and the responsibility for providing noise attenuation.

POLICY

DESIGN NOISE LEVEL GUIDELINES

The Design Noise Level (DNL) in residential areas for outdoor leisure areas is 60 dB (A) Leq (24).

In order to achieve acceptable noise levels in residential areas in a consistent and objective manner, it is necessary to utilize a guideline or target noise level. The descriptor dB(A) Leq (24) is defined as the daily unit of noise which condenses a full 24 hours worth of sound energy into a single number "A-



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Weighted" to correlate closely with human hearing. Generally, it has been found that a single number representing a 24 hour time period is a good measure of annoyance. The descriptor Leq (24) has been used for a number of years and based on empirical research, has proven to be acceptable. The decibel level of 60 dB(A) for 24 hours has also proven to be acceptable from a benefit/cost point of view.

In residential areas it is specifically the outdoor leisure area in which target levels are to be achieved. This would include ground level areas such as yards and patios or common areas allocated outside multi-dwelling complexes. For buildings two stories or higher, where balconies are considered as the outdoor leisure area, protection should be provided on an individual basis through the use of architectural treatments.

With the achievement of the exterior DNL of 60 dB(A) Leq(24), it is expected that the interior DNL of 45 dB(A) Leq(24) should result with the use of standard construction materials. This level is acceptable, on an average, for most rooms inside dwellings.

In all cases, in order to maximize benefit/cost, noise attenuation should be constructed to achieve a minimum 5 decibel reduction, with a desirable target of 10 decibels. There may be instances where these criteria are not achievable and, therefore, the design noise level cannot be applied in all cases. The achievement of design noise levels must be technically, economically and administratively feasible. Therefore, feasibility is determined when the Administration reviews the details of the noise attenuation design and all alternative measures have been evaluated.

PROCEDURE

IMPLEMENTATION OF DESIGN NOISE LEVELS

In the process of implementing design noise level objectives, the roles of all participants involved in the planning, design and construction of residential subdivisions and adjacent roadways and associated noise attenuation, must be clearly defined. The general practice is that the provision of noise attenuation is dependent on the timing of the residential development and/or the transportation facility. The earlier in the planning process that noise is considered, the greater the flexibility that will be available in providing acceptable acoustical environments in residential areas.



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POTENTIAL NOISE IMPACT

A Potential Noise Impact area consists of residential development proposed adjacent to major roads, expressways, freeways, light rail transit corridors, and other rail lines.

Residential development adjacent to a transportation corridor/facility may or may not experience traffic noise problems resulting from proximity to the corridor/facility. Based on field measurements and/or computer calculations, facilities are identified as having a potential noise problem and a noise impact analysis is required. In cases where residential development is proposed adjacent to existing or future transportation corridors/facilities, the developer is responsible for providing a noise impact analysis. This requirement and the analysis methodology is reviewed and approved by the Transportation Department.

RESPONSIBILITY FOR IMPLEMENTATION

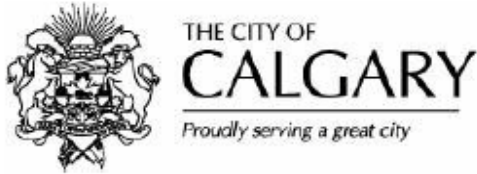
The City's responsibility for achieving desirable noise levels is an ongoing process. As a general principle, the timing for providing noise attenuation is the most critical factor in determining responsibility for funding its implementation. When a developer constructs a residential development adjacent to a roadway which has a potential noise impact, if the expected noise levels exceed the City's Design Noise Level, the developer is responsible for providing noise attenuation at his expense. The choice of attenuation measure is left to the developer, subject to City approval. When the method chosen is the installation of a noise barrier, the City reimburses the cost of a 1.8 metre high chain link fence (which would have been required as a minimum) for the length of the noise barrier required.

There are four typical cases in which this responsibility can be categorized.

Case I: Residential development or redevelopment adjacent to an existing or imminent (within 10 years) transportation noise source.

The developer, at his cost, is responsible for providing noise attenuation necessary to achieve sound levels less than or equal to 60 dB(A) Leq(24) where technically and economically feasible.

The method of attenuation should be initiated by the developer, and determined in consultation with the City in order to meet City specifications. Given the developer has maximized opportunities to provide an acceptable



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acoustical environment, the City will continue to accept the responsibility to further the achievement of the desired noise levels as part of the roadway design

Example: Where there are existing transportation corridors/facilities, the future noise level is calculated based on the design year traffic volumes (10 years hence), and noise attenuation must be constructed by the developer at the time of development.

Case II: Residential development or redevelopment adjacent to a future (beyond 10 years) transportation noise source.

The developer is responsible for designing and constructing the residential area in such a way as to facilitate the necessary attenuation at the time of construction of the roadway. The City of Calgary would then be responsible for completing the required noise attenuation.

Example: Where there is a future transportation corridor, the future noise level is calculated, based on the design year (beyond 10 years). The developer shall design and construct the residential area in such a way as to accommodate the construction of noise attenuation by the City.

Case III: Upgrading of a roadway adjacent to existing residential developments:

The City is responsible for providing noise attenuation necessary to achieve the Design Noise Level where technically and economically feasible.

Example: When any upgrading takes place, such as reconstruction or new construction of roadways adjacent to an existing residential development, the City installs noise attenuation, as feasible.

Case IV: Present residential development, adjacent to an existing transportation noise source.

Problem locations are identified, and placed as a candidate on the Noise Barrier Retrofit Program for review by City Council.

Example: In situations where a noise problem has been identified, but where a roadway is not scheduled for upgrading within the foreseeable future, the City installs noise attenuation, as feasible. The process involves a feasibility review of



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candidate locations, and ranking based on a benefit/cost analysis. Project priority and funding level is determined by City Council.

AMENDMENTS

N/A

Council Approval of Amendments

A. 2000 March 14: Council Approval of Recommendations

**TRANSPORTATION, TRANSIT AND PARKING COMMITTEE
REPORT - 2000 MARCH 14**

16-2000-22 *2640*
TTP2000-12
Review Current
Sound Attenuation
Policies

MOVED BY ALDERMAN HODGES, SECONDED BY ALDERMAN JONES, that the Recommendation contained in Planning Policy Report TTP2000-12, Review Current Sound Attenuation Policies, from the S.P.C. on Transportation, Transit and Parking, dated 2000 March 14, be adopted.

MOTION CARRIED

**PLANNING POLICY REPORT TO THE S.P.C. ON
TRANSPORTATION, TRANSIT AND PARKING**

2000 MARCH 14

TTP2000-12 REVIEW CURRENT SOUND ATTENUATION POLICIES

ISSUE:

To review current sound attenuation policies with respect to road construction and retrofit as to their appropriateness.

RECOMMENDATIONS:

The S.P.C. on Transportation, Transit and Parking recommends that Council direct the Administration to apply the Surface Transportation Noise Policy and the amendments as follows:

1. For both road construction projects and retrofit locations where there IS EXISTING ATTENUATION:
 - a) Determine the warrant for attenuation based on the policy in place at the time of development; and
 - b) If attenuation is warranted design the barrier in accordance with the amended policy where economically and technically feasible. Use the DNL of 65 dB(A) L₁₀ and ground-based receiver as a minimum.
2. For both road construction projects and retrofit locations where there IS NO EXISTING ATTENUATION:
 - a) Determine the warrant for attenuation based on the amendment to the policy and:
 - b) If attenuation is warranted design the barrier in accordance with the amended policy where economically and technically feasible. Use the DNL of 65 dB(A) L₁₀ and ground-based receiver as a minimum.

B. 1996 December 9: Council Approval of Recommendations

TABLED REPORTS

40-96-7
OE96-55
Noise Issues
Relating to
Designated Truck
Routes

9937

MOVED BY ALDERMAN JONES, SECONDED BY ALDERMAN KERR, that the Recommendation contained in Commissioners' Report OE96-55, Noise Issues Relating to Designated Truck Routes - Supplementary Report, from the S.P.C. on Operations and Environment, dated 1996 November 12, be adopted.

MOTION CARRIED

TABLED REPORT

- 1) COMMISSIONERS' REPORT OE96-55, NOISE ISSUES RELATING TO DESIGNATED TRUCK ROUTES - SUPPLEMENTARY REPORT, FROM THE S.P.C. ON OPERATIONS AND ENVIRONMENT, DATED 1996 NOVEMBER 12

Excerpt from the Minutes of the Regular Meeting of Council,
dated 1996 November 25:

"MOVED BY ALDERMAN FOX-MELLWAY, SECONDED BY ALDERMAN KERR, that the Agenda for today's meeting as amended, be further amended by the bringing forward and tabling of Commissioners' Report OE96-55, Noise Issues Relating to Designated Truck Routes - Supplementary Report, from the S.P.C. on Operations and Environment, dated 1996 November 12, to the 1996 December 16 Regular Meeting of Council, to allow Alderman Fox-Mellway to consult with the Administration with respect to the 65 dB(A)_{L₁₀} noise level on truck routes during peak hours.

MOTION CARRIED

THE FOLLOWING ITEMS WERE FORWARDED TO THE 1996 NOVEMBER 25
REGULAR MEETING OF COUNCIL:

OE96-55 NOISE ISSUES RELATING TO DESIGNATED TRUCK ROUTES
- SUPPLEMENTARY REPORT

T A B L E D

COMMISSIONERS' REPORT TO THE
S.P.C. ON OPERATIONS AND ENVIRONMENT

1998 OCTOBER 07

3905

OE98-55 NOISE ISSUES RELATING TO DESIGNATED TRUCK ROUTES -
SUPPLEMENTARY REPORT

ISSUE:

To review noise issues relating to designated truck routes.

RECOMMENDATIONS:

The S.P.C. on Operations and Environment recommends that Council approve the following:

1. Direct the Transportation Department to amend the Surface Transportation Noise Policy to:
 - a) require residential areas adjacent to designated truck routes to receive adequate noise attenuation if the Design Noise Level (DNL) of 65 dB(A) L_{10} peak hour is exceeded;
 - b) require the noise attenuation height for residential areas adjacent to designated truck routes to be based on a 20 year traffic volume forecast; and
 - c) amend the definition of the outdoor leisure area to include the rear deck (same elevation as main floor) of houses located on walk-out style lots adjacent to designated truck routes. A receiver height of 1.0 metre is to be used, and the receiver is to be located in the centre of the rear deck.
2. Direct the Planning and Building Department to amend the Land Use Bylaw 2P80 relating to conventional residential designations by requiring a minimum side yard width of 7.5 metres for residences directly flanking a designated truck route.
3. The Administration shall continue to review, where feasible, alternative methods to mitigate the cost of providing noise attenuation features along designated truck routes, such as allowing the back sloping of earth berms within the road right-of-way.