

CITY OF SASKATOON COUNCIL POLICY

NUMBER
C07-028

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| POLICY TITLE <i>Traffic Noise Sound Attenuation</i> | ADOPTED BY: <i>City Council</i> | EFFECTIVE DATE <i>February 27, 2017</i> |
| ORIGIN/AUTHORITY <i>Item 8.3.2, SPC on Transportation Report – February 27, 2017</i> | CITY FILE NO. <i>CK. 375-0 & TS. 375-02</i> | PAGE NUMBER <i>1 of 4</i> |

1. PURPOSE

To define the traffic noise sound attenuation program, specifically details on: assessment criteria; noise impact assessments; noise monitoring; noise barriers; and the monitoring of potential traffic noise sound attenuation projects.

2. DEFINITIONS

- 2.1 A-Weighted Sound Level – A-weighted sound level is measured on a sound level meter, using a setting that emphasizes the middle frequency components similar to response of the human ear. The A-weighted sound level is found to correlate well with subjective assessments of the annoying or disturbing effect of sounds.
- 2.2 Arterial Road - A road primarily for through traffic.
- 2.3 Attenuation – A reduction in sound level in travelling from a source to a receiving point.
- 2.4 Barrier – A solid physical obstruction between the roadway and the observer, which interrupts the line of sight between them. Barriers can take the form of walls, berms, or buildings.
- 2.5 Berm (Earth Berm) – A mound of earth that interrupts the line of sight between the noise source and the receiving point, thus acting as a barrier.
- 2.6 Day-Night Average Sound Level (L_{dn}) – Day-night sound level in dBA is derived by performing a logarithmic average of the time varying sound energy equivalent over the daytime (L_{eqDay}) with the time varying sound energy equivalent over the night time ($L_{eqNight}$) and adding a 10 decibel “penalty” to the $L_{eqNight}$.

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- 2.7 dB_A – The decibel (dB) sound pressure level filtered through the A- weighting filtering network to approximate human hearing response at low intensities.
- 2.8 Decibel (dB) – One tenth of a Bel. Sound is measured in decibels. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Decibels are not linear units, rather they are expressed using a base-10 logarithmic scale. An increase of 10 decibels represents 10- times the acoustical energy. An increase of 20 decibels represents 100- times the acoustical energy.
- 2.9 Freeways / Expressways – Roads that accommodate heavy volumes of traffic moving at high speeds under free-flow conditions.
- 2.10 Noise Monitor – A self-contained sound level meter installed in a weather protective case that can measure environmental noise levels for extended periods of time. Typically, the sound level meter is installed in a case while the microphone is mounted to a tripod and outdoor windscreen and rain protection hood.

3. POLICY

Traffic Noise Sound Attenuation criteria:

3.1 Assessment

- a) Decibel Scale and Weighting – dBA (A-weighted decibel sound level)
- b) Threshold (Timeframe and Value) – L_{dn} 65 dBA (logarithmic average conducted over an entire 24-hour period with a 10 dBA penalty to the monitored or modeled noise during the night-time period.)
- c) Measurement Location – Receptor in defined outdoor rear amenity space, 5 m from the adjacent property line 1.5 m elevation, 3 m from any obstructions (i.e. a shed).

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- d) Applicability – Applicable to single family residential land use, and townhouse type (maximum of two storeys) multi-family land use.
- e) Mitigation Responsibility – Developers are responsible for traffic noise mitigation in new developments. The City is responsible for new and upgraded transportation areas, as well as, retrofit areas that are technically, economically, and administratively feasible.

3.2 Noise Impact Assessments

- a) Applicability – Required for new developments adjacent to existing transportation corridors; new/upgraded transportation corridors adjacent to existing developments and retrofit projects for existing transportation corridors.
- b) Methods and Software – A traffic noise impact assessment must be carried out by a qualified and experienced Acoustical Engineer.

3.3 Noise Monitoring

- a) Measurement Rationale – Pre-project noise monitoring is recommended for upgraded transportation corridors as well as new development. Post-project noise monitoring may be conducted on a case-by-case basis.

3.4 Noise Barriers

- a) Maintenance for barriers (walls and/or earth berms) on private property is the responsibility of the property owner while maintenance for barriers on public property is the City's responsibility.
- b) Target noise attenuation is 5 dBA where possible but the performance for noise barriers for new/upgraded/retrofit projects should be assessed on a case-by-case basis. The minimum attenuation for retrofit projects is 3 dBA.

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3.5 Monitoring of potential Traffic Noise Sound Attenuation projects

- a) A monitoring list of potential projects is maintained by the Administration.
- b) The monitoring list includes locations that meet the following criteria:
 - i) Adjacent to existing arterial roads or freeways /expressways.
 - ii) Average daily traffic levels greater than 20,000 vehicles per day on the adjacent arterials roads or freeways / expressways.
 - iii) Locations that have sound attenuation, or where sound attenuation is not economically or physically feasible, are excluded from the monitoring list.
- c) Traffic noise measurements will be completed every three years.

4. RESPONSIBILITIES

- 4.1 The General Manager, Transportation and Utilities Department shall be responsible for administering and recommending updates to this policy.
- 4.2 City Council shall be responsible for approving any updates to this policy, and may initiate changes as they see fit.