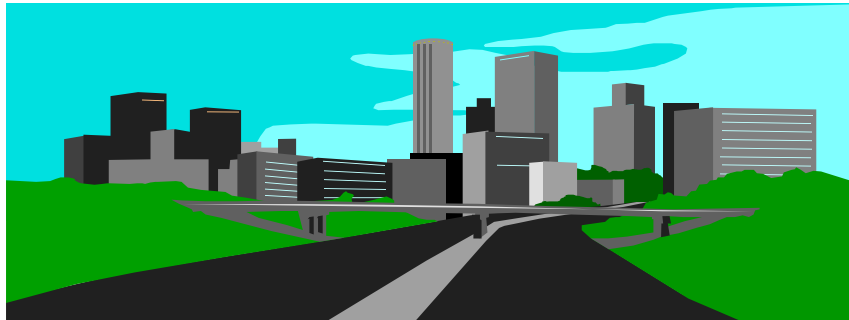


**GENERAL GUIDELINES FOR THE PREPARATION OF  
ACOUSTICAL REPORTS IN THE REGION OF PEEL**



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### 1.0 INTRODUCTION

1.1 The Ministry of the Environment discontinued its review and clearance functions relating to acoustical reports on Regional and Local roads within the Region of Peel in 1987 and this function has been delegated directly to the Region of Peel and to the pertinent Area Municipality.

In 1996 the Ministry of the Environment further discontinued its review and clearance functions concerning acoustical reports relating to provincial highways, railways, aircraft and major industrial noise sources, also delegated directly to the Region of Peel and to the pertinent Area Municipality.

The Region of Peel and its constituent Area Municipalities require the applicants of all residential plans of subdivision, rezonings and site plans adjacent to major noise sources in the Region to engage the services of a qualified acoustical specialist (hereafter referred to as the Acoustical Consultant) to prepare an acoustical report to be signed and submitted by a professional engineer which will recommend noise control features to meet the sound level objectives of the Region of Peel, the Area Municipality and the Ministry of the Environment.

1.2 Generally, an acoustical report for a plan of subdivision is required only prior to final approval of the plan to clear the conditions of draft approval. However, when it is anticipated that projected noise levels between 7 a.m. and 11 p.m. will exceed 65 dBA, an acoustical feasibility report will be required prior to draft approval to determine whether the design proposed and layout of the lots will allow the required sound level objectives to be achieved

1.3 Notwithstanding policy 1.2 above, an acoustical feasibility report will be required prior to draft approval for any residential subdivision plan abutting a Provincial or Regional road except in cases where a master acoustical feasibility study has been approved for the area.

1.4. The acoustical report must describe the plan of subdivision or the site and its relationship to the major roads and all other major noise sources including industrial, aircraft and rail noise, which may affect future occupants of the subdivision. The report must also identify all future noise sources in consultation with the area municipality and the Region of Peel.

1.5 Aircraft and freeway noise shall be considered in accordance with Regional and Municipal Official Plan policies and the Ministry of Housing's aircraft and freeway noise guidelines. (Now the Ministry of Municipal Affairs and Housing).

1.6 All other noise sources including industrial activity shall be considered in accordance with the Ministry of the Environment criteria and procedures.

1.7 The report shall give details of prediction techniques used to determine noise levels (road, rail, aircraft) including all adjustments.

## 2.0 NOISE PREDICTION AND DESIGN CRITERIA

### 2.1 Sound Level Limits

2.1.1 The road traffic noise study will be based on the following criteria for sound level limits adopted by the Region of Peel, its constituent Area Municipalities and the Ministry of the Environment:

#### 2.1.2 Outdoor living area

(7 am - 11 pm) Leq (16 hr) = 55 dBA

#### Outside bedroom window

(11 pm - 7 am) Leq (8 hr) = 50 dBA

#### 2.1.3 Indoor (bedrooms, hospitals)

(11 pm - 7 am) Leq (8 hr) = 40 dBA

#### 2.1.4 Indoor (living rooms, hotels, private offices, reading rooms)

(7 am - 11 pm) Leq (16 hr) = 45 dBA

#### 2.1.5 Indoor (general offices, shops)

(7 am - 11 pm) Leq (16 h) = 50 dBA

### 2.2 Traffic Noise Predictions

2.2.1 With respect to road traffic predictions, only analytical techniques of current methods as approved by the Ministry of the Environment and Energy are accepted.

2.2.2 Traffic volumes on arterial roads in the Urban Area (used in predicting noise level calculations) must be based on ultimate lane configuration and posted speed limit with level of service 'C', unless otherwise directed, as set out in the table below:

Number of Lanes	AADT	% Medium Trucks	% Heavy Trucks
2 lanes	13 500*	Truck percentages are to be determined from actual counts, or obtained from municipal records where available. Where not available, assume 10% of AADT for truck traffic with 55% of total trucks for Medium Trucks and 45% for Heavy Trucks.**	
4 lanes	27 000*		
6 lanes	40 000		

- 2.2.3 For traffic volumes in the rural area or on other types of roads, the appropriate road authority should be consulted by request in writing.
- 2.2.4 All traffic data sources must be identified in the report.
- 2.2.5 Predicted noise level calculations must be included with the report for both daytime (7 a.m. - 11 p.m.) and night time (11 p.m. - 7 a.m.) periods.
- 2.2.6 If manual calculations are used, the report must contain the fully completed MOE Traffic Noise Prediction Work Sheet for all sections calculated. If an accepted computer model is utilized, sample copies of all sections calculated must be included.
- 2.2.7 The report must detail information on all adjustments where applicable.
- 2.2.8 Where there is more than one noise source impacting the site, the calculations for each source and the combined noise level calculations must be included.
- 2.2.9 For industrial, aircraft, and rail sound level predictions, the Ministry of the Environment standard procedures should be employed with the report detailing the method of calculation or measurement.

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\* These volumes have been estimated for Level of Service 'C'. For collector type roads the Area Municipality should be consulted for appropriate volumes and truck percentages.

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\*\*In general, Regional Arterial Roads have a higher percentage of heavy trucks than Local Arterial Roads (i.e. (45% for medium and 55% for heavy trucks of total trucks).

## 2.3 Noise Barrier Calculations

2.3.1 In addition to noise level calculations, acoustical barrier calculations must also be included in the report and be accompanied by a table of comparative barrier heights and barrier cross section drawings, which must comply with the following criteria:

- (a) the comparative barrier heights table must demonstrate attenuation under alternative heights including the sound level objective and the reports recommended level.
- (b) typical and/or worst case cross sections (and additional cross sections as may be necessary) at a vertical and horizontal scale of 1 to 100 must be provided to clearly illustrate the proposed berm and wall configuration in relation to the future grade at the house based on the proposed Lot Grading Plan. (Existing and proposed future grades at the site must be indicated.) Cross sections must include elevation of the noise source (HS), elevation of the receiver (HR), top elevation of the noise barrier (HB), ground elevation of the berm, berm slopes, sidewalks, boulevards, ditches, roadway elevations and property limits of the lands in question. Unless specified otherwise the barrier to be shown immediately inside private property adjacent to the ultimate street line, taking into account any required road widenings.
- (c) height of receiver to be used is 1.5 m above the ground at a point located 3.0 m from the rear wall of the dwelling unit.
- (d) barrier wall (i.e. fence) shall generally not exceed 2.0 m in height unless approved by the area municipality in consultation with appropriate road authority. Consideration may be given to fence heights up to a maximum of 2.4m.
- (e) a minimum of 6.0 m depth of rear yard as measured from rear face of the building which contains no slope in excess of 2% will be required in all three municipalities of the Region of Peel unless otherwise specified as follows:
  - In Brampton, any sloped portion in excess of 2% shall not occupy more than 1/3 of the overall depth of the rear yard.
- (f) a maximum berm slope of 4:1 on the right-of-way side will be required on all local and Regional Roads within the Region of Peel unless otherwise specified below. Slopes steeper than 3:1 may be tolerated on the lot side of the earthwork (berm) by the use of retaining walls, etc. provided the

Area Municipality is satisfied from a drainage and landscaping standpoint. Back to front drainage should be provided for wherever possible.

- In Mississauga, 3:1 berm slopes on the street side will be permitted.
- In Brampton, 3:1 berm slopes on the street side will be permitted as an option if developer agrees to full planting with low maintenance ground cover.

- (g) in cases where the attenuation facility is interrupted, barrier returns or parallel screens are required and the detailed design of the treatment in such cases will have to be incorporated into the acoustical report.
- (h) barrier walls should generally be located no further than 0.3m in from the rear lot line or as specified by the Area Municipality. Barrier walls will be located on the private homeowners side of the lot line.
- (i) boulevard slopes (between berms and the edge of payment) will preferably be 2% - 4%.
- (j) the combined height of berm and barrier over 4m will be considered only in very exceptional situations. 4m barrier height will generally be calculated (in standard situations) from the centre line of pavement. In non-standard or extreme situations the barrier heights will be considered on individual basis. Consult the area municipality for local height restrictions. (The maximum barrier height is generally to be measured from a line joining the centre line of pavement to the ground level at the rear of the dwelling unit, except in non-standard situations.)

2.3.2 Information on acoustical barriers, berms, berm/wall combinations must include location and height of the barriers relative to a fixed point, usually centre line of the road. Unless otherwise agreed to no portion of a berm may extend onto a municipal road right-of-way.

2.3.3 Type and surface density (minimum of 4 lbs/sqft) of barrier fence should be specified.

2.3.4 The report shall be required to prove to the satisfaction of the Region of Peel, the Area Municipality and the Ministry of the Environment that the noise level in outdoor living areas after applying attenuation measures is the lowest level aesthetically, technically, administratively and economically practical. To this end, the reports shall continue to provide a table of comparative barrier heights and show the height required to attenuate sounds to the Ministry of the Environment standards. The sound level objective is 55 dBA.

The report must show that the analysis has been done to meet the planning objectives of the Municipality and that every effort has been made to achieve the 55 dBA sound level and as a minimum, line of sight from receiver to source must be broken in all cases.

The report will provide an explanation in circumstances where the recommended barrier heights and other attenuation measures will result in the Ministry of Environment guidelines not being met.

(Note: It is preferable, that where possible residential developments be designed such that the need for barrier type attenuation features, to control outdoor noise levels, is minimized.)

## 2.4 **Other Noise Control Measures for Outdoor Living Areas**

2.4.1 Alternative measures (site planning, service road, special type or location of acoustical barriers, etc.) should be discussed with the Region and the Area Municipality in advance to receive their acceptance in principle.

2.4.2 Front yard attenuation, (i.e. outdoor living areas in the front yard) are not an acceptable form of noise attenuation for reversed frontage lots.

## 2.5 **Noise Attenuation for Indoor Living Areas**

2.5.1 Central air conditioning is required when the night time noise level is 60 dBA or greater at a bedroom window or when the day time noise level exceeds 65 dBA at the exterior face of a living room. A warning clause note to this effect is to be included in the report and in the Subdivision Agreement for registration on title. (See wording in 2.6)

2.5.2 For central air conditioning requirements, traffic volumes may be based on a 10 year projection from the estimated date of occupancy of the affected dwellings.

2.5.3 If central air conditioning is required, a noise insensitive location or other appropriate means of noise attenuation of the air cooled condenser unit should be stipulated in the report and specified in the Subdivision Agreement. If a heat pump is installed, the location of the outdoor unit should be specified as well. In all cases the condenser unit should have a maximum ARI rating of 7.6 Bels for 3.5 tons or less.

2.5.4 If the night time outdoor noise level is above 50 dBA and below 60 dBA forced air heating is to be installed with provision for central air conditioning. A warning clause note to this effect is to be included in the report and in the Subdivision Agreement for registration on title. (See wording in 2.6.)

2.5.5 When the night time outdoor noise level at the bedroom window is 60 dBA or greater, door specifications, outer wall specifications and required window glazing shall be provided. All recommendations shall be based on ultimate traffic volumes and the report should distinguish between those dwellings where the standard requirements of the Ontario Building Code will provide adequate indoor attenuation and those locations where additional measures are required.

2.5.6 Noise reports will not be required for industrial/commercial/office developments. In lieu of requiring a noise report the following building component requirements will be imposed as a condition to development:

“Prior to the issuance of building permits for Blocks (\_\_\_\_\_) an acoustical consultant shall certify on the building plans submitted for application approval to the Building Department that the building design for the office and retail areas include double glaze non opening windows, brick veneer or its acoustical equivalent, and air conditioning system and a suspended acoustical type ceiling.”

## 2.6 **Warning Clauses**

2.6.1 The following minimum wording is to be used in the Subdivision Agreement and in all Offers of Purchase and Sale for the specific lots when noise levels are not being attenuated and the levels exceed the Municipality's and the Ministry of the Environment's noise criteria, but not by more than 5 dBA:

"Purchasers are advised that noise levels due to increasing road (rail) (air) traffic may continue to be of concern, occasionally interfering with some activities of the dwelling occupants."

2.6.2 When noise attenuation measures have been instituted on the site, and the resultant noise levels still exceed the Municipality's and the Ministry of the Environment's noise criteria by 5 dBA or less, the following wording is to be used in the Subdivision Agreement and in all Offers of Purchase and Sale for the specific lots:

"Purchasers are advised that despite the inclusion of noise control features in this development area and within the building units, noise levels from increasing road (rail) (air) traffic may continue to be of concern, occasionally interfering with some activities of the dwelling occupants as the noise level exceeds the Municipality's and the Ministry of the Environment's noise criteria."

2.6.3 If the Municipality accepts a noise attenuation solution where the resultant noise level exceeds the Municipality's and the Ministry of the Environment's criteria by more than 5 dBA, the warning clause in paragraphs 2.6.1 and 2.6.2 must be

reworded by replacing the word "may" with "will" or as directed by the Area Municipality.

- 2.6.4 When forced air heating with provision for central air conditioning is to be installed the following additional paragraph is to be added to the warning clause in 2.6.2:

"This dwelling unit was fitted with a forced air heating system and the ducting, etc. sized to accommodate central air conditioning unit. Air conditioning can be installed at the owners' option and cost. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that unit has a maximum ARI rating of 7.6 Bels for 3.5 tons or less)".

- 2.6.5 Where mandatory air conditioning is to be installed, the following additional paragraph is to be added to the warning clause in 2.6.2.

"This dwelling unit was fitted with a central air conditioning system in order to permit closing of windows for noise control. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that unit has a maximum ARI rating of 7.6 Bels for 3.5 tons or less.)"

- 2.6.6 Where berms and or barriers are being installed on the site the following additional paragraph is to be added to the warning clause in 2.6.2.

"That the acoustical berm and/or barrier as installed shall be maintained, repaired or replaced by the owner. Any maintenance repair or replacement shall be with the same material, to the same standards, and having the same colour and appearance of the original."

### **3.0 REPORT FORMAT AND SUBMISSION REQUIREMENT**

- 3.1 While the technique or techniques used, the data, calculations and resulting recommendations are the sole responsibility of the consultant, it is appropriate that a reasonable standard report format be utilized to minimize processing delay and facilitate the formulation of requirements to be incorporated within the development agreement.

- 3.1.1 In order to expedite processing approval, the following format information should be used for submissions within the Region of Peel:

1. cover page to clearly identify the regional and local municipality's file number, the applicant's name and the name of the development if known.

2. introduction to identify noise sources and sources of data utilized. This should include a brief description of on site conditions together with analytical techniques used. Listing of criteria for sound level limits would be appropriate as well as alternative methods considered for noise mitigation.
3. Analysis procedures for on site conditions before barrier to include sample calculations and work sheets for typical and worst case situations. Summary table to include all predicted noise levels with locations identified.
4. Analysis procedures for on site conditions after barrier to utilize the same typical and worst case situations together with sample calculations and work sheets. Summary table to include all predicated resultant noise levels together with a table of alternative barrier heights. Cross sections of berm barrier configuration to be included for typical and worst case samples.
5. A table illustrating all recommended attenuation measures including building component specifications to be provided with a sketch illustrating affected lots.
6. A plan of the affected lots which clearly depicts all information including existing and/or proposed:
  - property boundaries
  - building and/or building envelopes
  - noise, walls, berms and sidewalks
  - sample receiver locations with cross sections keyed in.
  - other relevant site features