

01 INTRODUCTION

Noise is recognized as an environmental impact and a type of pollution that can negatively affect public health and a community's quality of life. It can impact property values, disrupt peaceful neighborhoods and reduce the attractiveness of cultural institutions, parks, recreation centres and natural areas. Noise generated by road traffic, railway, air traffic and other stationary sources cannot be eliminated but it can be managed by putting in place effective noise mitigation measures. The City of Markham (the City) recognizes that excessive noise generated by various sources is an environmental concern that must be addressed through the planning and development application processes. This document provides general guidelines of the City with respect to noise criteria for planning of sensitive land uses. These guidelines, however, are only general and do not relieve the Acoustic Consulting Engineer and the Owner of the responsibility for submitting a final design that satisfies and is consistent with the Ministry of the Environment, Conservation and Parks (MECP's) Environmental Noise Guidelines, PEO's Professional Engineers Providing Acoustical Engineering Services in Land-Use Planning, and meets the City's requirements contained in this document.

For noise mitigation on any development adjacent to York Region's ROW, York Region's Standard Operating Procedures (SOP's) for Traffic Noise Mitigation on Regional Roads, as amended, shall be used.

The City relies on the expert opinion of the Owner's Acoustic Consulting Engineer to ensure that the development meets all applicable legislation and guidelines. It is the Owner's responsibility to ensure that all applicable sound level criteria, as per the MECP guidelines, and all applicable legislation and guidelines are met. This includes determining the feasibility of the project, assessing outdoor and indoor acoustic environments and ensuring that the required control measures and necessary noise warning clauses, satisfying the noise requirements, are incorporated in the development.

NOTE: The noise study report shall be prepared as per the Outline of Detailed Noise Study (Attachment 'F'). Acoustic Consulting Engineer's Certificate (Attachment 'B') must be included in the noise study report, between the Cover Page and the Table of Contents.

02 THE PREFERRED APPROACH

The preferred approach, during the planning stage, is the use of passive noise mitigation measures, including but not limited to:

- Increased building setbacks
- Residential front lotting
- Street layout and design considerations that minimize noise mitigation measures
- Building siting to provide protected outdoor recreational space
- Building construction including materials for acoustical insulation, glazing, ventilation and other appropriate noise attenuation measures
- Buffering with noise insensitive land uses
- Mitigation at noise source for stationary noise sources

Noise barriers can be effective at reducing sound levels but can have negative aesthetic impacts on the surrounding neighborhood. As such, noise barriers shall only be used if other measures, identified above, are not feasible or the required sound level cannot be achieved using such measures; written justification

shall be provided for acceptance by the City. Noise barriers (including foundations), if constructed, shall be entirely on the private property.

The final selection of appropriate noise attenuation measures in each situation needs to be balanced with other development and design considerations.

For any noise mitigation measures proposed on private property that will not be owned and/or maintained by the City, financial security (i.e., LC) requirements for those mitigation measures will not be required in the agreement.

Noise mitigation measures shall not be proposed on the City-owned lands. If absolutely necessary, then it shall be discussed with Development Engineering staff / Manager, before the noise report is submitted.

03 ROLES AND RESPONSIBILITIES

1. Owner

- a) Assessing future noise impacts on proposed development from all nearby noise sources and/or impact of the proposed development on existing/other proposed development.
- b) Retaining an Acoustic Consulting Engineer for preparing and submitting the required Noise Study to the City.
- c) Ensuring that the required noise control measures, as per the accepted Noise Study, are incorporated into the plans.
- d) Confirming that required noise warning clauses are included in all Purchase and Sale Agreements, Lease Agreements and Subdivision/Site Plan Agreements.
- e) Ensuring that all noise mitigation measures and construction are done as per the accepted Noise Study.
- f) Ensuring that the Acoustic Consulting Engineer's certificates are submitted to the City, as required.

2. Acoustic Consulting Engineer

- a) Obtaining current information of all noise sources; road traffic, railway, air traffic and stationary noise sources.
- b) Applying professional expertise in preparing a Noise Study, duly stamped, signed and dated, as per the outlines given in this document (Attachment 'F') and satisfying the requirements of the MECP Environmental Noise Guidelines related to noise control.
- c) Providing the required certifications to the City as outlined in this document (Attachments 'A', 'B', 'C', 'D' and 'E').
- d) Coordinating and responding to the peer review comments, if peer review is required to be undertaken.

3. The City

- a) Reviewing the recommendations and accepting the Noise Study. The City will rely on the Acoustic Consulting Engineer for the data used, analysis carried out, results obtained and recommendations made in the noise study.
- b) Coordinating with York Region, if the development is abutting a Regional ROW.
- c) Preparing conditions, as per the accepted Noise Study, in the Subdivision/Site Plan Agreements and retaining/releasing financial securities that may be required.

04 NEED FOR A NOISE STUDY

- 1. The City requires a Noise Study to be submitted in support of development applications, as per the following general guidelines, and in accordance with the MECP Environmental Noise Guidelines:
 - a) Within 500 m of a Provincial Highway/Freeway.
 - b) Within 250 m of a Regional Road whose future traffic volume may be greater than 4,000 vehicles/day.
 - c) Within 100 m of a City road whose future traffic volume may be greater than 4,000 vehicles/day.
 - d) Within 500 m of a railway ROW.
 - e) Within the 25 NEF contours of an Airport.
 - f) Within the potential zone of influence of a Stationary Source of noise (industrial / commercial / institutional).
 - g) Within 500 m of extensive commercial operations (loading docks of supermarkets, large commercial buildings with prominent ventilation and air conditioning equipment, automatic car washes, etc.).
 - h) Within 500 m of aggregate operations (pits, quarries, etc.).
 - i) Any other noise sources not mentioned above.
- 2. If a Noise Study is not required for a development site, a certificate from the Acoustic Consulting Engineer (Attachment 'A') shall be submitted to the Director of Engineering identifying the reason(s) that a noise/vibration study is not required and a statement confirming that the development site meets all MECP Environmental Noise Guidelines.

05 TYPES OF NOISE STUDY

The Noise Study shall be prepared by an Acoustic Consulting Engineer and shall include the Outline given in Attachment 'F'.

Section O – Noise Criteria**1. Feasibility Noise Study**

A Feasibility Noise Study is generally required whenever the proposed lands are within the influence area of a stationary noise source. The extend of the influence area is case specific, depending on factors such as the type and scale of the stationary sources, intervening topography and intervening land uses.

A Feasibility Noise Study is required prior to approvals of the Official Plan Amendment and Draft Plan of Subdivision Applications.

2. Detailed Noise Study

A Detailed Noise Study is generally required whenever the proposed lands are within the influence area of a stationary noise source. The extend of the influence area is case specific, depending on factors such as the type and scale of the stationary sources, intervening topography and intervening land uses.

A Detailed Noise Study is required prior to approvals of Site Plans and Registration of M-Plans of Subdivisions for clearing conditions of draft approvals.

06 PEER REVIEW OF NOISE STUDY

1. The City generally **does not** require a noise study to be peer reviewed if the following conditions are met:
 - a) The study has been prepared by a qualified Acoustic Consulting Engineer having the following qualifications:
 - a PEO member in good standing;
 - have at least five years (5) of related experience satisfactory to the City;
 - be "primarily engaged" in the independent practice of professional engineering in Ontario for the last three years;
 - hold a Certificate of Authorization from PEO, or be a partner or an employee of a firm holding a Certificate of Authorization;
 - have no conflict of interest that might influence independent professional judgement; and
 - have profession liability insurance for errors and omissions.
 - b) The study has been prepared in accordance with this Noise Criteria and MECP Environmental Noise Guidelines.
 - c) The noise barrier shall not exceed maximum 4.5 m (berm + noise fence) above the road center-line.
 - d) The format of the noise study report is as per the Outline given in Attachment 'F'.
2. If in the opinion of the Director of Engineering, a peer review of a noise study is necessary:
 - a) The City shall hire a peer reviewer.
 - b) The Owner shall pay for the peer review costs, including administration fee.

- c) The Acoustic Consulting Engineer shall respond to all comments provided by the peer reviewer.
3. Some of the reasons for peer review include, but not limited to:
 - a) Disagreement with the study recommendations.
 - b) The author of the Noise Study report does not meet the requirements of Acoustic Consulting Engineer qualifications as outlined in 9.1 (a) above.
 - c) The study is not prepared in accordance with the format outlined in this document.

07 DESIGN GUIDELINES FOR NOISE BARRIERS

1. Introduction

Noise barriers are a noise mitigation measure used for attenuating noise levels either at the source (for noise generating developments) or at the receiver (for noise sensitive developments). The objective of a noise barrier is to reduce the amount of sound energy generated by the source or to divert the flow of sound energy away from the receptor or to shield the receptor from the sound energy. In all cases, the noise barrier shall interrupt the line(s)-of-sight between the receptor and the source(s).

Barrier designs along Regional road shall be consistent with York Region policies and along other roads shall be as designed by the structural/geotechnical engineer.

The noise fence portion of the noise barrier shall not exceed 2.0 m in height. In addition, the limit of the total noise barrier (berm + noise fence) height shall not exceed 4.5 m above the road centre-line for the ground oriented OLA, where feasible. The noise barrier shall be entirely within the private property and shall be installed within six (6) months of occupancy and/or as directed by the Director of Engineering in writing.

2. Noise Barrier Planning

Every effort shall be made to minimize the use of noise barriers, if possible, during the early stages of development. The use of noise barriers, as attenuation measures, shall only be considered where it has been demonstrated that alternative design solutions are not feasible.

3. Noise Barrier Design

The design and location of noise barriers shall be carefully planned early on in the development stages. Noise barriers can come in the following forms or a combination:

- Blocks of buildings or other structure meeting the MECP noise fence density requirements
- Dense vegetation in 30+ meter buffer area
- Noise fences
- Noise berms (or earth berms)
- Retaining walls

Section O – Noise Criteria

The general rules of thumb for the design of noise barriers are given below. However, if these rules cannot be met, other noise control options and loting/design possibilities shall be considered:

- Should the results of the analysis show the need for noise barriers in excess of 2.0 m high, the drawings shall show the additional buffer space needed to accommodate a berm. Every effort shall be made to maximize the height of berm and limit the height of noise fence to a maximum 2.0 m.
- The height of the noise barrier above the road centre-line for the ground-oriented OLA shall be no more than 4.5 m. For subdivisions adjacent to railway lines, it shall be 5.5 m, where feasible.
- The minimum usable OLA depth is 6.0 m measured from the building facade to the noise fence (or to the toe of the berm where a berm is used) unless otherwise allowed by the zoning. The land slope for usable OLA shall be between 2.0% to 4.0%
- An acceptable setback from a noise barrier to a residential building footprint shall be two to four times the height of the barrier. The desirable setback shall be four times or more than the height of the noise barrier.
- In cases where the attenuation facility is interrupted, noise barrier returns and parallel noise barriers may be required. The detailed design and calculations of this type of treatment shall be incorporated into the Noise Report. The Noise Report and the Grading Plans shall include a detailed plan and appropriate cross sections.
- The location of a proposed noise barrier shall be based on the following principles:
 - The noise barrier shall be located entirely on the private property.
 - The toe of the barrier footprint (including foundation if there is no berm) shall be a minimum of 0.30 m from the municipal ROW. The location of the noise barrier wall shall also take into consideration the requirements for future roadway widening.
 - If the construction of a noise berm on the City or York Region's ROW is deemed acceptable by staff, the crest of a berm shall still be located entirely on the property under construction and inside the property line. The portion of the berm on the municipal or regional ROW shall be subject to acceptance by the City and/or York Region prior to making any commitment to this effect. It is important to remember that the design of the berm can be affected by future roadway widening. The Consulting Engineer must prepare the necessary details related to the berm design and address all matters of concern such as compaction, grade elevations, drainage, safety, cover and landscaping, side slopes, maintenance, etc. to the satisfaction of the City and/or York Region. Concurrence of the design by the City and/or York Region must be provided in writing.
 - The noise fence shall generally be located at the crest of the berm. The portion of the berm adjacent to the transportation facility on private property shall be dedicated to the City/York Region at no cost, where requested by the City/York Region.
 - Where a noise barrier is required, the receptors shall be located within its acoustical "shadow zone".

4. Noise Fence Design

The maximum accepted height of a noise fence shall be determined in each case by the City staff. The desirable noise fence height is 2.0 m, not including any berms, retaining walls, etc. The City may approve noise fence heights up to 2.5 m subject to site specific review and approval by the City staff. Written documentation shall be provided to the Engineering Department regarding concurrence from the Urban Design group for any noise fence height over 2.0 m.

If the desired noise fence heights cannot be met, other noise control options and loting/design possibilities shall be considered.

The noise fence shall have the following characteristics:

- Be of wood, solid with no gaps along its length and having a minimum face density of 20 kg/m² (4 lb/ft²) or equivalent materials accepted by the Director of Engineering. Noise fence materials acceptable to the City include any, or combination of:
 - Wood (mainly residential application)
 - The following other materials may be considered but shall require prior acceptance from the Director of Engineering:
 - ❖ Precast concrete panels (non-residential application)
 - ❖ Precast concrete sections (non-residential application)
 - ❖ Brick (any application)
 - ❖ Steel panels and steel structural sections (non-residential application)
 - ❖ Vinyl and recycled materials (non-residential application)
 - ❖ Composite barrier systems employing a combination of above materials such as:
 - ✓ Wood panels and structural steel sections
 - ✓ Precast concrete walls and steel sections (non-residential application)
- A transmission loss of at least 10 dBA greater than the barrier effect.
- Any access gates of the same material as the noise fence with a minimum surface density of 20 kg/m² and shall seal reasonably, when closed.
- Interrupt the line-of-sight drawn from the source to the receiver, i.e. the receiver shall be in the acoustical “shadow zone” of the barrier.
- Provide the desired minimum sound level reduction and protect all receiver locations subject to the guidelines.
- Be continuous or is turned through right angles away from the source at both ends to protect the receivers from the sides.

5. Noise Berm Design

A maximum berm slope of 3:1 is required for any earthworks. Slopes steeper than 3:1 may be considered for site specific situations.

Section O – Noise Criteria

The berm design and construction details shall be documented in the Noise Study, engineering and landscape submissions.

Berm construction shall generally be entirely on the private property. However, as noted above, berm construction may be considered on the City or York Region's property subject to written concurrence from either the City or York Region prior to finalizing the design.

The City or York Region may consider dedication of the property outside of the crest of the berm to the City or York Region at no cost where the berm has been entirely built on private property.

Where required, a noise fence shall be located at the crest of the berm. Refer to sections O7.1 to O7.3 for berm height related information.

6. Drainage Gaps

MECP discourages gaps under, around or within noise barriers. Its guidelines on this issue are summarized below:

- All barriers designed for attenuation of sound shall be without gaps and cracks that will reduce the performance of sound attenuation.
- Overland drainage requirements below a barrier may be addressed by minimized and localized drainage gaps.

It is recommended that the use of drainage gaps under noise barriers is to be discouraged and that alternate design changes be implemented such as:

- Readjustment of the grades by the Site Engineering Consultant, where feasible.
- The use of swales and drainage ditches to channel the water to less noise-sensitive cases.
- The use of drainage catch basins in backyards.
- The use of design techniques to create interrupted line-of-sight under the barrier wall.

ATTACHMENT 'A'

ACOUSTIC CONSULTING ENGINEER'S CERTIFICATE 1

*Certificate when a Noise/Vibration Study is **NOT** required.*

[Insert Date]

Manager of Development Engineering, City of Markham
101 Town Centre Boulevard
Markham, Ontario, L3R 9W3

RE: NOISE STUDY REQUIREMENTS CERTIFICATION
_____**SUBDIVISION/SITE PLAN**
AMANDA FILE NO. _____

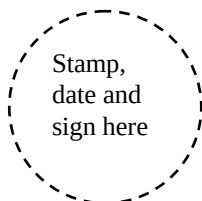
[insert your firm name] has reviewed the requirements of a noise study for the above mentioned project and hereby confirms that a noise/vibration study is not required for this project due to the following reasons:

-
-
- [insert all reasons]

I hereby confirm that the above development project meets all applicable legislation and guidelines as required by the Ministry of the Environment, Conservation and Parks related to noise mitigation and does not require any further mitigation measures.

The City of Markham is hereby authorized to rely on this certificate for the purposes of approving the development of [insert name of project] pursuant to conditions of development approval.

Yours very truly,



(insert your name), P.Eng.
(insert your title & contact information)

ATTACHMENT 'B'

ACOUSTIC CONSULTING ENGINEER'S CERTIFICATE 2

Certificate when a Feasibility/Detailed Noise/Vibration Study is required.

[Insert Date]

Manager of Development Engineering, City of Markham
101 Town Centre Boulevard
Markham, Ontario, L3R 9W3

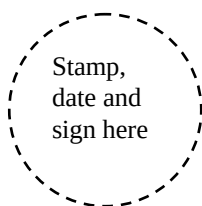
RE: NOISE STUDY REQUIREMENTS CERTIFICATION
_____**SUBDIVISION/SITE PLAN**
AMANDA FILE NO. _____

[insert your firm name] has prepared the [detailed/feasibility] noise study [insert name of the study] dated [insert date] for the above mentioned development project.

I hereby confirm that the noise study for the above mentioned development project meets all applicable legislation and guidelines as required by the Ministry of the Environment, Conservation and Parks related to noise mitigation and also meets City's requirements.

The City of Markham is hereby authorized to rely on this certificate for the purposes of approving the development of [insert name of project] pursuant to conditions of development approval.

Yours very truly,



(insert your name), P.Eng.
(insert your title & contact information)

ATTACHMENT 'C'

ACOUSTIC CONSULTING ENGINEER'S CERTIFICATE 3

Noise Certification for **Issuance of Building Permits.**

[Insert Date]

Supervisor of Municipal Inspections & Grading, City of Markham
101 Town Centre Boulevard
Markham, Ontario, L3R 9W3

RE: NOISE CERTIFICATION FOR ISSUANCE OF THE BUILDING PERMITS
_____ SUBDIVISION/SITE PLAN
AMANDA FILE NO. _____

[insert name of the firm that prepared the noise study] has prepared the detailed noise study [insert name of study] dated [insert date] for the above mentioned project.

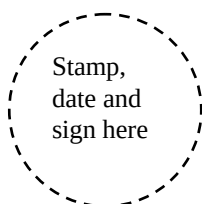
In accordance with Clauses ___ of the Subdivision Agreement, I hereby confirm that all dwelling units identified in the above noise study have been designed in accordance with the noise control measures identified in the above-mentioned report and meet all applicable legislations and guidelines as required by the Ministry of the Environment, Conservation and Parks related to noise mitigation.

The following noise mitigation measures shall be provided in the development as required by the noise study:

- Noise barriers shall be installed on Lots ___, ___ and ___.
- Air conditioning shall be installed on Lots ___, ___ and ___.
- Forced air heating system with duct sized to accommodate central air conditioning units shall be installed on Lots ___, ___ and ___.
- [Insert other required measures that will be provided as per the noise study].

The City of Markham is hereby authorized to rely on this certificate for the purposes of approving the development of [insert name of project] pursuant to conditions of development approval.

Yours very truly,



(insert your name), P.Eng.
(insert your title & contact information)

ATTACHMENT 'D'
ACOUSTIC CONSULTING ENGINEER'S CERTIFICATE 4

Noise Certification for **Acceptance for Maintenance**.

[Insert Date]

Supervisor of Municipal Inspections & Grading, City of Markham
101 Town Centre Boulevard
Markham, Ontario, L3R 9W3

RE: NOISE CERTIFICATION FOR ACCEPTANCE FOR MAINTENANCE
_____ SUBDIVISION/SITE PLAN
AMANDA FILE NO. _____

[insert name of the firm that prepared the noise study] has prepared the detailed noise study [insert name of study] dated [insert date] for the above mentioned project.

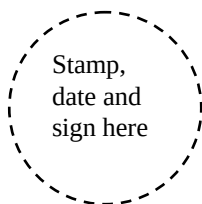
In accordance with Clauses ___ of the Subdivision Agreement, I hereby confirm that all dwelling units identified in the above noise study have been designed and constructed in accordance with the noise control measures identified in the above-mentioned report and meet all applicable legislation and guidelines as required by the Ministry of the Environment, Conservation and Parks related to noise mitigation.

The following noise mitigation measures have been provided in the development as required by the noise study:

- Noise barriers have been installed on Lots ___, ___ and _____. An inspection of the installed noise fence was carried out by [insert your firm name] on [insert date]. The length, height, materials and workmanship of the noise fence were inspected and found to be acceptable, for acoustic purposes.
- Air conditioning has been installed on Lots ___, ___ and _____.
- Forced air heating system with duct sized to accommodate central air conditioning units has been installed on Lots ___, ___ and _____.
- [Insert other required measures that have been provided as per the noise study].

The City of Markham is hereby authorized to rely on this certificate for the purposes of approving the development of [insert name of project] pursuant to conditions of development approval.

Yours very truly,



(insert your name), P.Eng.
(insert your title & contact information)

ATTACHMENT 'E'
ACOUSTIC CONSULTING ENGINEER'S CERTIFICATE 5

Noise Certification for **Issuance of Building Occupancy**.

[Insert Date]

Supervisor of Municipal Inspections & Grading, City of Markham
101 Town Centre Boulevard
Markham, Ontario, L3R 9W3

RE: NOISE CERTIFICATION FOR ISSUANCE OF THE BUILDING OCCUPANCY
SUBDIVISION/SITE PLAN
AMANDA FILE NO. _____

[insert name of the firm that prepared the noise study] has prepared the detailed noise study [insert name of study] dated [insert date] for the above-mentioned project.

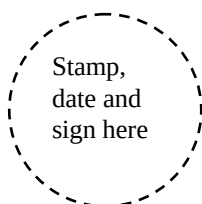
In accordance with Clauses ___ of the Site Plan Control Agreement, I hereby confirm that all building units identified in the above noise study have been designed and constructed in accordance with the noise control measures identified in the above mentioned report and meet all applicable legislation and guidelines as required by the Ministry of the Environment, Conservation and Parks related to noise mitigation.

The following noise mitigation measures have been provided in the development as required by the noise study:

- Noise barriers have been installed on Lots ___, ___ and _____. An inspection of the installed noise fence was carried out by [insert your firm name] on [insert date]. The length, height, materials and workmanship of the noise fence were inspected and found to be acceptable, for acoustic purposes.
- Air conditioning has been installed on Lots ___, ___ and _____.
- Forced air heating system with duct sized to accommodate central air conditioning units has been installed on Lots ___, ___ and _____.
- [Insert other required measures that have been provided as per the noise study].

The City of Markham is hereby authorized to rely on this certificate for the purposes of approving the development of [insert name of project] pursuant to conditions of development approval.

Yours very truly,



(insert your name), P.Eng.
(insert your title & contact information)

ATTACHMENT 'F'
OUTLINE OF DETAILED NOISE STUDY

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Note: Use Sections, as applicable, to the specific Noise Study

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ATTACHMENT 'G'

CONDITIONS TO BE INCORPORATED IN SUBDIVISION/SITE PLAN AGREEMENTS

8.1 Noise Conditions

The Owner shall comply with and implement the recommendations and requirements of the noise study entitled '_____', prepared by _____ dated _____ and any subsequent updates, hereinafter referred to as the "Noise Study".

8.2 Noise Warning Clauses and Attenuation Requirements

The Owner shall install noise attenuation measures, including but not limited to, acoustic barrier, air-conditioning and upgraded architectural components, and shall include the Warning Clauses in Agreements of Purchase and Sale of each dwelling units on the Lots/Blocks identified below as per the Noise Study or approved building/grading plans:

Lot/Blocks Nos.	Noise Attenuation Requirements					Types of Warning Clauses
	Acoustic Barrier Height			Air – Conditioning	Forced Air Ventilation (Provision for AC)	
	Berm (m)	Fence (m)	Total (m)			
				(Yes/No)	(Yes/No)	

Types of Standard Warning Clauses

A	General	"PURCHASERS/TENANTS ARE ADVISED THAT NOISE LEVELS DUE TO INCREASING ROAD (RAIL) (AIR) TRAFFIC MAY OCCASIONALLY INTERFERE WITH SOME ACTIVITIES OF THE DWELLING OCCUPANTS AS THE SOUND LEVELS EXCEED THE NOISE CRITERIA OF THE MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS AND/OR THE MUNICIPALITY".
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Section O – Noise Criteria

B	General	"PURCHASERS/TENANTS ARE ADVISED THAT DESPITE THE INCLUSION OF NOISE CONTROL FEATURES IN THE DEVELOPMENT AND WITHIN THE BUILDING UNITS, SOUND LEVELS DUE TO INCREASING ROAD (RAIL) (AIR) TRAFFIC MAY ON OCCASIONS INTERFERE WITH SOME ACTIVITIES OF THE DWELLING OCCUPANTS AS THE SOUND LEVELS EXCEED THE NOISE CRITERIA OF THE MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS AND/OR THE MUNICIPALITY".
C	Acoustic Barrier	"PURCHASERS/TENANTS ARE ADVISED THAT A NOISE BARRIER (NOISE FENCE OR BERM + NOISE FENCE) IS LOCATED INSIDE THE PROPERTY LINE ON THE SIDE AND/OR REAR YARD OF THIS PROPERTY AND THAT IT SHALL NOT BE ALTERED OR REMOVED. THE OWNER OF THIS PROPERTY IS RESPONSIBLE TO MAINTAIN THAT PART OF THE NOISE BARRIER SITUATED ON THIS PROPERTY TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING. ANY MAINTENANCE, REPAIR OR REPLACEMENT REQUIRED SHALL BE DONE WITH THE SAME MATERIAL, STANDARDS, COLOUR AND APPEARANCE AS THE ORIGINAL".
D	Air-conditioning	"THIS DWELLING UNIT HAS BEEN SUPPLIED WITH A CENTRAL AIR CONDITIONING SYSTEM WHICH WILL ALLOW WINDOWS AND EXTERIOR DOORS TO REMAIN CLOSED, THEREBY ENSURING THAT THE INDOOR SOUND LEVELS ARE WITHIN THE NOISE CRITERIA OF THE MUNICIPALITY AND THE MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS. THE AIR COOLED CONDENSER UNIT SHALL HAVE AN AHRI SOUND RATING NOT EXCEEDING 7.6 BELS AND SHALL COMPLY WITH THE CITY'S NOISE BY-LAW".
E	Forced Air (with provision of AC)	"THIS DWELLING UNIT HAS BEEN SUPPLIED WITH A FORCED AIR HEATING AND DUCTING ETC. WITH THE PROVISION FOR ADDING CENTRAL AIR CONDITIONING SYSTEM AT THE OCCUPANT'S DISCRETION. THE AIR COOLED CONDENSER UNIT, IF INSTALLED BY THE OCCUPANT, SHALL HAVE AN AHRI SOUND RATING NOT EXCEEDING 7.6 BELS AND SHALL COMPLY WITH THE CITY'S NOISE BY-LAW".

Section O – Noise Criteria

F	Railways	"CANADIAN PACIFIC LIMITED/CANADIAN NATIONAL RAILWAYS/GO TRANSIT OR ITS AFFILIATED RAILWAY COMPANIES HAS OR HAVE A RAILWAY RIGHT-OF-WAY WITHIN 300 METRES FROM THIS DWELLING UNIT. THERE MAY BE ALTERATIONS TO OR EXPANSIONS OF THE RAILWAY FACILITIES OF SUCH RIGHT-OF-WAY IN THE FUTURE, INCLUDING THE POSSIBILITY THAT CANADIAN PACIFIC LIMITED/CANADIAN NATIONAL RAILWAYS/GO TRANSIT OR ITS AFFILIATED RAILWAY COMPANIES AS AFORESAID, OR THEIR ASSIGNS OR SUCCESSORS MAY EXPAND THEIR OPERATIONS. SUCH EXPANSION MAY AFFECT THE LIVING AND BUSINESS ENVIRONMENT OF THE RESIDENTS, TENANTS AND THEIR VISITORS, EMPLOYEES, CUSTOMERS AND PATIENTS IN THE VICINITY, NOTWITHSTANDING THE INCLUSION OF ANY NOISE AND VIBRATION ATTENUATING FEATURES IN THE DESIGN OF THE DEVELOPMENT. CANADIAN PACIFIC LIMITED/CANADIAN NATIONAL RAILWAYS/GO TRANSIT, ITS AFFILIATED RAILWAY COMPANIES AND THEIR SUCCESSORS AND ASSIGNS WILL NOT BE RESPONSIBLE FOR ANY COMPLAINTS OR CLAIMS ARISING FROM USE OF SUCH FACILITIES AND/OR OPERATIONS ON, OVER OR UNDER THE AFORESAID RIGHT-OF-WAY".
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Additional Noise Warning Clauses, if required

G	Proximity to ICI (Stationary Source)	"PURCHASERS/TENANTS ARE ADVISED THAT DUE TO THE PROXIMITY OF THE EXISTING (AND FUTURE) ADJACENT INDUSTRY (FACILITY) (UTILITY), SOUND LEVELS FROM THE INDUSTRY (FACILITY (UTILITY) MAY AT TIMES BE AUDIBLE".
H	Building Acoustic Insulation	"ALL EXTERIOR BUILDING COMPONENTS (WALLS, WINDOWS AND DOORS) SHALL MEET THE MINIMUM ACOUSTIC INSULATION FACTORS (AIF) AND SOUND TRANSMISSION CLASS (STC) SHOWN IN TABLES __ AND __ OF THE DETAILED NOISE STUDY _____ PREPARED BY _____. DATED _____ OR THE APPROVED BUILDING PERMIT DRAWINGS. ALL WINDOWS SHALL BE WELL FITTED AND WEATHER STRIPPED".
I	Others	IF REQUIRED, AS PER THE NOISE REPORT OR BY THE CITY/REGION

Section O – Noise Criteria**8.3 Other Noise Requirements**

- (1) The Owner shall install the acoustic barrier on Lots/Blocks identified in Clause 8.2 totally parallel to the lot-line and entirely within private property or other locations as approved by the City/Region. The noise fence shall be of heavy wood, solid with no gaps along its length and having a minimum surface density of 20 kg/m^2 (4 lb/ft^2) or equivalent material accepted by the Director of Engineering. Any access gates shall be of the same material as the noise fence, with a minimum surface density of 10 kg/m^2 , and should seal reasonably, when closed.
- (2) The Owner shall install the acoustic barrier within six (6) months of occupancy and/or as directed by the Director of Engineering in writing.
- (3) The Owner covenants and agrees that all building components (including up-graded doors and windows, exterior building elements and specified design features) and any additional noise attenuation measures shall meet the recommendations of the Noise Study.
- (4) Prior to the issuance of the Building Permits, the Acoustic Consulting Engineer shall confirm that all dwelling units identified in Clause 8.2 have been designed in accordance with the Noise Study and comply with all the Ministry of the Environment, Conservation and Parks and Municipal noise guidelines.
- (5) Prior to Acceptance for Maintenance, the Acoustic Consulting Engineer who prepared the Noise Study shall confirm to the Director of Engineering that all dwelling units identified in Clause 8.2 have been constructed in accordance with the Noise Study and comply with all the Ministry of the Environment and Municipal noise guidelines.