



THE REGIONAL MUNICIPALITY OF HALTON

Report To:	Chairman and Members of the Administration and Finance Committee
From:	J. E. MacCaskill, Commissioner of Corporate Services & Regional Treasurer
Date:	June 22, 2006
Re:	Noise Attenuation Policy Update
Report No.:	CS-69-06

RECOMMENDATION

1. THAT the Noise Attenuation Procedural and Collection Policy outlined in Report CS-69-06 and the revised Noise Attenuation Technical Policy set out in Appendix 'A' to Report CS-69-06 replace the current Noise Attenuation Policy set out in PPW122-00 and PPW25-01 as the basis for permitting and processing requests for the design and installation of noise attenuation barriers on the reverse frontage/side flankage of existing premises abutting Regional roads.
2. THAT the Regional Clerk forward Report CS-69-06 to the City of Burlington and the Towns of Oakville, Milton and Halton Hills for their information

REPORT

Background

This Report has been prepared in response to the need to establish a revised policy for processing petitions for the construction of local noise attenuation barriers resulting from the new *Municipal Act, 2001*, S.O. 2001, c.25 ("new Act").

Prior to the passage of the new Act, staff approved and processed petitions for noise attenuation barriers along Regional roads, with the legislative authority of the Local Improvement Act as approved by Report PPW122-00, and amended by Report PPW25-01. Since the repeal of the Local Improvement Act, staff have processed one petition for a noise attenuation barrier in Milton (PR-2073E addressed in Report PPW90-05) based on the Region's existing Noise Attenuation Policy under the general legislative authority of the new Act.

On a forward basis, however, the existing Noise Attenuation Policy needs to be reviewed under the requirements of the new Act, Ontario Regulation 119/03 and in connection with the Region's need for capital cost recovery.

Accordingly, this report reviews the current approach to process a petition by existing property owners for noise attenuation barriers, and recommends that the current policy be updated under the legislative authority of the new Act, Ontario Regulation 119/03 as set out in this report and Appendix 'A'.

Legislative Authority

Further to Council's approval of Report PPW122-00 (Halton's Proposed Noise Attenuation Policy for Regional Roads), as amended by Report PPW25-01 (a report limiting project recoveries from benefiting property owners to the lesser of engineering cost estimates or final actual costs), the Region formally adopted local improvement policies related to noise attenuation barriers for retrofit. These noise abatement measures are aimed at addressing noise sensitive area issues impacting only "outdoor living areas" and the construction and cost recovery exclusively for retrofit applications for pre-existing premises.

A review of the current legislation and alternative sections of the new Act determined that the construction, recovery and cost apportionment of noise attenuation barriers, petitioned by the property owners of benefiting properties, is more appropriately permitted under O. Reg. 119/03, a regulation made pursuant to section 400 (j) of the new Act. Under section 1(2) of O. Reg. 119/03, the Region is authorized to undertake as local improvements "constructing noise abatement works" on Regional Roads. The process for dealing with these local improvement initiatives under the new Act is highly prescriptive, as was the Local Improvement Act. This is different from the extension of water and wastewater services addressed in CS-62-06, under Section 391 of the new Act where there was more flexibility in developing the policy. Section 391 of the new Act is more specifically designed to collect fees and charges for water and wastewater services, and therefore not applicable to noise attenuation barriers.

Petition Process

The following sections are intended to highlight the key components and processes outlined in the new Act and O. Reg. 119/03 that will characterize the Region's approach to process petitions for the installation of retrofit noise attenuation barriers. Given that O. Reg 119/03 is similar to the Local Improvement Act, most of the processes and policies adopted by Council in PPW122-00 and PPW25-01 will be retained.

Petition Eligibility

Eligibility to submit a petition requesting noise attenuation barriers to be located on the reverse frontage/side flankage of pre-existing/established properties abutting Regional roads, is extended to all property owners abutting Regional roads throughout Halton Region. The purpose of the petition process is to trigger a preliminary investigation into the engineering and design features, and associated costs of noise attenuation barrier project that may be undertaken to improve the quality of life for property owners requesting noise mitigating measures in their community.

Project Petition Initiation

Responsibility for originating and completing local improvement petitions for noise attenuation barriers, rests solely with the community originating the petition. Regional staff are not responsible for petition circulation or ensuring that any given project petitioned for, is ultimately successfully submitted. Staff are responsible for providing clarification about the process guidelines, project design and cost.

In conformity with the existing Noise Attenuation Policy and the provisions of the new Act and O. Reg. 119/03, staff, when first informally approached by a community regarding a noise abatement enquiry, will attempt to provide preliminary project costing details and comment on overall project feasibility. This will assist a community in assessing the merits of proceeding with circulating and submitting a sufficient petition according to the parameters outlined in O. Reg. 119/03.

A petition's sufficiency parameter requires the signatures of a minimum of two thirds of the property owners representing at least one half of the assessed property values of those properties abutting and benefiting from the proposed installation (O. Reg. 119/03, s. 6(1)). The minimum number of residences to be considered for the petition process is 5 dwelling units and 50 linear meters of noise barrier. If this level of petition sufficiency is achieved, staff will then proceed with a more detailed review of the project construction parameters. It should be noted that receipt of a sufficient petition does not confirm automatic acceptance of a project into the overall Capital Budget regime.

Petitioned Project Evaluation and Approval

Upon receipt of a formal sufficient petition for the installation of a noise attenuation barrier, staff would then undertake a detailed project feasibility review. This review would take into account a number of considerations such as:

- Ministry of Environment ("MOE") noise level criteria
- The physical attributes of the petitioned project site
- Aesthetic neighbourhood impacts
- Fulfilment of project participation requirements – a minimum of 5 contiguous lots or minimum 50 metre length for the proposed project
- Ability to provide appropriate clearances and rights of way before and after construction
- Competing budget priorities

Staff are committed to working with communities petitioning for noise attenuation barriers and will provide advice on the optimum extent of the project boundaries. Once more advanced investigative work has been completed, impacted property owners would be contacted in writing by Regional staff to confirm the findings of the preliminary review, outlining:

- Optional project design and construction criteria including alternative construction materials (concrete, wood)
- Estimated total project cost and property cost recovery apportionment per benefiting property
- Announcement of a public information meeting to facilitate a community-based discussion on whether or not to proceed with the requested initiative and/or to consider alternative construction materials, approaches to project design and community aesthetics. It should be noted that this type of project is normally characterized by considerable input from residents because of the high visual impact these projects can have on the local community/neighbourhood.

Further to a progressive series of public consultation meetings, the precise number of which is dependent upon the scope of the project and need for input from the project property owners, and formal certification of a sufficient petition for the submitted local improvement in accordance with s. 6 and 7 of O. Reg. 119/03, Regional staff will then prepare an Engineer’s Report for Council’s approval. If the Engineer’s Report recommends proceeding with the local improvement initiative and Council approves it, the initiative will then need to be incorporated into the Capital Budget and Forecast during the budget process. Council’s approval of a given local improvement initiative does not confirm specific timing for project commencement. The timing evaluation process takes into account:

- Regional resources availability to undertake the work
- Relative priority for noise mitigation in noise sensitive areas
- Budget funding issues relative to other competing projects
- Consideration of Regional/Local Municipal construction initiatives in the vicinity of the proposed work

Further to these considerations, staff will then select the most appropriate timing for the petitioned local improvement. Over time, the relative priority may change depending upon competing priorities for the allocation of limited resources.

Project Costing and Recovery Apportionment

Under the current policy, 25% of the project costs would be financed by the benefiting property owners and the remaining 75% by the Region through property taxes. The level of project cost recovery was determined among Local Municipalities and the Region in 2000, with a rationale in which the community at large is responsible for generating the noise levels that require mitigation. Council approved a 25% contribution by property owners as a reasonable cost as the property owners would be deriving a benefit through the value added to their property by the noise attenuation barrier without any future maintenance concerns.

However, since 2000 the Regional Transportation program has expanded significantly and imposed challenges to program funding. Therefore staff, as part of this policy review, considered increasing the cost recovery level to be more consistent with the other Region’s capital financing policies (i.e. Connection Charge by-law, Service Extension Policy as proposed in CS-62-06, Development Charges by-laws).

Since the policy was implemented in 2000 the costs for wood and concrete barriers have increased significantly. The following table summarizes the breakdown of barrier costs (per linear metre) for actual Regional projects based on the engineering estimates which include preparation work, installation, materials and engineering:

Year	PR #	Avg. Rear Frontage	Wood per metre	Concrete per metre
2001	2073B	20 metres	\$ 520	\$ 460
2002	2073C	19 metres	\$ 580	\$ 540
2004	2073D	20 metres	\$ 625	\$ 725
2006	2073E	18 metres	\$ 720	\$ 1,140

As shown in the table above, costs for wood barriers have increased by 38% and concrete barriers by 148% since 2001.

Based on an average rear frontage of 18 meters in 2006 and using the current 25% recovery, the total cost to the typical household is \$5,130 for concrete and \$3,240 for wood barriers, with the Regional funding requirement ranging between \$9,720 (wood) and \$15,390 (concrete). If the recovery level is increased to 100%, the typical household in 2006 would pay total \$20,520 for concrete and \$12,960 for wood barriers, with no funding required by the Region. At 100% recovery from the benefiting households, the cost of such noise barrier would be unaffordable as it would add on the tax roll approximately \$900 to \$1,500 a year for a household over a 10 year period depending on the types of material chosen. Therefore, staff recommend that the current cost recovery level of 25% be continued.

Cost Apportionment Regime - Court of Revision Appeal Process

Subsequent to finalization of the project details, staff will advise all impacted property owners in writing, about the estimated project cost based on detailed engineering and provide property-specific apportionment based on actual reverse frontage/side flankage, in accordance with the provisions of O. Reg. 119/03. Based on the current policy, the estimated costs based on detailed engineering become the upset limit for the final allocation of project costs. Should actual project costs be less than the estimate, the allocated costs will be reduced. This policy will continue to apply.

Further to completion of the project construction, all project costs are tabulated, including any expenditures arising during the one year maintenance period. A final notice is sent to all impacted property owners advising them of the final project cost allocation (special assessment). However, in accordance with the provisions of sections 26 of O. Reg. 119/03, a Court of Revision may be held, further to completion of the local improvement project, *prior* to the adding of the Special Assessment Rolls to property taxes. The Court of Revision which is made up of three Regional Councillors is responsible for adjudicating exclusively on disputes arising over the apportionment of project charges, as specially assessed, on a property-specific basis based upon actual reverse frontage/side flankage in the case of local improvement noise attenuation barrier initiatives. To the extent that any adjustment needs to be made to the Special Assessment Roll, further to a review of all appeals by the Court of Revision, the final amended roll is then certified by the Regional Clerk.

The amount specially assessed as indicated in the final notice can be paid off in full, prior to the preparation of the certified Special Assessment Roll. The Special Assessment Roll is prepared and then forwarded to the Local Municipality for incorporation in the local municipal tax rolls. If payment is not made before the addition of the special assessments to the tax rolls (the timeframe for advanced payment would be indicated in the final notice), these charges will appear as a separate line item on the municipal tax bills. These charges are payable over a 10 year period, as has previously been the case. It is recommended that the repayment of these charges continue to be recovered over this 10 year repayment schedule (the Region's normal debt retirement period) and that they *include* a provision for the Region's cost of borrowing capital when these charges are added to the tax rolls (O. Reg. 119/03, s. 29(1)). Outstanding balances can be paid off (commuted) without penalty, at any time, with interest calculated only on the anniversary date of the addition of the special assessment charges to the local municipal tax rolls (O. Reg. 119/03, s. 30).

It should be noted that Transportation Services staff are currently undertaking a comprehensive inventory of potential project requests further to the Region's assumption of a number of local roads, where area property owners may wish to consider petitioning for noise attenuation barriers under O. Reg. 119/03. Upon completion of this review, staff will report back to Council if any amendments to the Policy are required.

FINANCIAL/PROGRAM IMPLICATIONS

There are no financial implications arising from this report at this time. Any potential implications resulting from the review of the potential project requests, as described above, will be reported upon completion of this review.

RELATIONSHIP TO THE STRATEGIC PLAN

With respect to the Regional Strategic Plan, the policies outlined in this Report have been prepared in support of the theme of Managed Growth (Theme A). By providing a mechanism for existing premises in the Region's urban areas to mitigate outside noise emissions that exceed MOE guidelines, through the installation of noise attenuation barriers, the Region is fulfilling its commitment to the goals of planning a transportation system that is sensitive and responsive to the needs of its residents through the optimization of infrastructure to meet current and future needs.

Respectfully submitted,



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J. E. MacCaskill
Commissioner of Corporate Services &
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Approved by



A. Brent Marshall
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If you have any questions on the content of this report, please contact: Mark Scinocca

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**REGION OF HALTON
NOISE ATTENUATION TECHNICAL POLICY
FOR
REGIONAL ROADS
(RETROFIT LOCATIONS)
AND
NEW DEVELOPMENTS**

A. EXISTING RESIDENTIAL DEVELOPMENT (Retrofit Situations) POLICY

This policy is developed based on the principle that existing Noise Sensitive Areas (NSA's) that are exposed to high noise levels due to their proximity to a Regional noise source, such as a Regional Road, should receive consideration for retrofitting of noise attenuation measures. However, it is not the intent of this policy to provide retrofit attenuation measures for all existing candidate sites. Many existing sites may not be suitable for retrofitting. The inability to achieve perceptible noise attenuation, excessive costs to provide mitigation and physical limitations are factors that need to be considered prior to a candidate site being recommended to Regional Council for retrofitting. Where noise concerns are expressed relative to railway or provincial/private highway sources, these concerns will be referred to the appropriate agency or authority.

Preference will be given to implementing attenuation features, which avoid the use of noise walls, and consideration will be given to aesthetic impacts when designing noise control measures as well as the safety and security of pedestrians using the street. **Barriers will only be considered in extreme cases where no other alternative is considered technically or financially feasible.**

In situations where a Corridor Strategy or detailed Secondary Plan is in place and deals specifically with noise issues, then the study or plan will take precedence over this policy. Notwithstanding, anything in this policy, the requirements of the Municipal Class Environmental Assessment process for municipal road projects shall apply.

Policy Statement	<p>The Regional Municipality of Halton will participate in retrofitting noise mitigation measures along Regional Roads by constructing noise barriers in accordance with the technical and financial details of this Policy.</p> <p>Implementation of this policy is dependent upon budget allocations and subject to prioritization of candidate sites.</p>
Background	<p>The Region over the past several years has received several requests from some area residents to investigate and consider the possibility of installing noise attenuation barriers on a retrofit basis in existing residential areas with primarily reverse frontage lots or backyards adjacent to Regional Roads. Most of these areas were developed prior to the development and implementation of the Ministry of the Environment sound level criteria for new noise-sensitive developments adjacent to Regional Roads. So far, the requests from the area residents who petitioned the Region have been deferred until an appropriate Policy is developed and approved.</p>
Purpose	<p>Retrofitting noise mitigation barriers may be installed in existing residential areas, which meet the warrants, established in this Policy. Their purpose is to reduce traffic noise in outdoor living areas as much as is technically, economically, and administratively practical toward the Region's established sound level objectives for retrofit cases.</p>

	<p>This Policy establishes the technical criteria and priority scheme on a Region-wide basis, responsibilities for costs involved, how to petition the Region, construction and maintenance cost of retrofitting noise barriers.</p>
Requests for Retrofitting	<p>A petition requesting the installation of a noise attenuation barrier and signed by the landowner as required under the Local Improvement Act must be submitted to the Region's Finance department.</p> <p>At least two-thirds of the affected property owner(s), representing at least one half of the assessed property values of those properties, must sign the petition to qualify for the retrofit project.</p>
Candidate Sites	<p>All existing residential development on sections of Regional Road allowances which have existing reverse frontage/flanking homes and meet the criteria for retrofit locations will be considered on a case by case basis by Regional Council for inclusion into the 10 year Roads Capital Budget Forecast. The prioritization of these sites will be on the basis of need, cost, benefit derived, and number of receivers, which are being protected.</p>
Exclusions & Limitations of the Policy	<p>It is not the intent of this Policy to construct retrofitting noise barriers along all Regional Roads and identified candidate or prioritised sites. This is firstly due to budgetary limitations on the Regional financial resources to deal with one issue only and secondly some candidate sites may not be suitable for retrofitting due to technical, economical and administrative factors that may include, but not limited to, not meeting the specified sound level criteria, site topography, physical limitations, excessive costs, etc.</p> <p>It is also not the intent of this Policy to apply to other sources of noise such as roadways under the jurisdiction of the Local Municipality, Provincial Highways, railways and other transportation facilities that are not part of the Regional Roads system.</p> <p>There may be situations where a new Regional Road will be constructed past existing homes. If this situation occurs, then noise abatement features, if warranted, must be incorporated into the new roadway design.</p> <p>No retrofit barriers are considered in this policy for dwelling units that are of the direct frontage type. This is primarily due to aesthetics, practical limitations and safety aspects arising from the possible installation of sound barriers along the front yards of these dwellings.</p>
Noise Sensitive Points Of Reception	<p>Noise sensitive points of reception that qualify for application to this program shall meet the following criteria:</p> <ol style="list-style-type: none">1. A residential area adjacent to a Regional Road.2. Reversed frontage lots or blocks including flanking units where their outdoor living areas are directly exposed to traffic noise.3. The residential area must have Outdoor Living Areas (OLA's) associated with the residential unit such as a backyard. An OLA is defined as an area at ground level accommodating outdoor living activities. For the purpose of noise assessment the usual distance from the residential dwelling unit is 3.0 metres within the middle of the dwelling unit with the vertical height being 1.5

metres above the existing ground surface. The OLA must be clearly defined, as it will be subject to further technical analysis.

4. The following land uses with OLA's associated with them would qualify as points of reception:
 - a. Single family residences
 - b. Townhouses
 - c. Multiple units residential buildings, such as apartment buildings with Common Outdoor Living Areas. Paved areas and common OLA's for multiple dwelling units will not be qualified.

Sound Level Criteria

The method for calculating noise levels will be in accordance with the MOE Guidelines, i.e. Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376, 1989.

Areas that qualify as noise-sensitive points of reception shall meet the following criteria:

1. The area/site specific sound levels will be established by the Region in accordance with the technical procedures specified by the Region, as amended from time-to-time.
2. The sound levels will be established based on the future (10 year) road and traffic parameters such as the traffic volume, percentage of trucks, posted speed limit, road gradient, etc. Special consideration may be given by the Region if the road is not and will not be subject to future Capital Works improvements such as widening, but that the future volume or traffic composition would result in increased sound levels.
3. The objective sound level for the retrofitting Policy is Leq day time (7:00 a.m. to 11:00 p.m.) 60 dBA after attenuation. Therefore, points of reception subject to sound levels lower than Leq (day) 60 dBA within the majority of the OLA's will not qualify.
4. The Region will give consideration to all feasible traffic noise control measures when considering an area for noise barrier retrofitting purposes. Prior to the recommendation and approval of a noise barrier for retrofitting, the feasibility of alternative measures, if any is available, will be investigated by the Region.

Emphasis should be directed toward implementing more aesthetically pleasing treatments to mitigate road noise without creating barriers between the residential lots and the streets. Streetscaping and landscaping including the use of berms, service roads, or buffers should be encouraged when residential land uses must be located adjacent to major roadways. In addition, wherever possible, noise sensitive land uses should be prohibited from locating adjacent to Regional or major arterial roads.

5. If a noise barrier is to be constructed as part of the retrofitting Policy, subject to the criteria and warrants in this Policy, it must provide a minimum sound Insertion Loss (IL) of 5 dBA when averaged over the first rows of the points of reception.

**Noise Barrier
Technical Criteria**

The use of noise barriers as retrofitting noise mitigation measures will be subject to the following technical criteria:

1. The sound barrier must be installed on a complete block to ensure its effectiveness. Therefore, it is important that the homeowners get together as a group from block to block, or from one side of the development to the other (a discontinuous noise barrier is just about as effective as no noise wall).
2. Barriers will be constructed on the Region's R.O.W., where feasible.
3. Where deemed necessary, each section of the noise barrier will be individually designed (location, height, extent, material) and cost estimates will be prepared accordingly.
4. It is the Policy of the Region to use noise barrier walls for retrofitting purposes and not berms or berm/wall combinations. The use of berms as a base for a noise retrofitting barrier may be considered on a case-by-case basis only; where technically warranted.
5. The choice of the type of barrier material and colour will be jointly shared with the homeowners. However, the barrier material specifications will be subject to the Region's specifications for noise barriers, as updated from time-to-time.
6. The materials for constructing the wall shall be in accordance with the materials approved by the Ministry of Environment and have a mass surface density of 20 kg/m² or 4lb/ft². The barrier shall be constructed without cracks or gaps.
7. The cost of noise attenuation within an individual dwelling or an outdoor area that is not part of the approved points of reception will be the sole responsibility of the homeowners. Furthermore, the homeowner will be responsible for all noise abatement features required to the indoors of the dwelling building such as air conditioning, double-glazed windows, brick, veneer, etc.
8. The maximum height of a noise barrier wall for retrofit purposes is 3 metres as measured from the barrier base elevation. Higher noise barrier walls may be allowed by the Region subject to investigation of the aesthetics of the installation and depending on the availability of a wide right-of-way and deep residential lots. In preparing the design for the noise wall, consideration shall be given to the inclusion of openings through the wall for fire protection to adjacent homes (if the hydrants are located within the Regional Road allowance) and openings through the wall for fire protection for vehicles using the roadway from hydrants located on adjacent local streets.
9. If required, property owners at the termination points of the noise abatement wall will be asked to register an easement to the Region of Halton for the construction and maintenance of a noise wall along a side lot line. The side lot line noise wall will provide protection for the rear yard area of the adjacent property. If the landowner refuses to transfer the easement, the Region will not attempt to purchase or expropriate the easement but will delete

this section of wall from the noise abatement construction project.

Construction and Maintenance

Issues related to construction and maintenance of the retrofitting noise barriers will be subject to the following requirements:

1. The acoustic and engineering design as well as construction of the retrofitting noise barrier will be undertaken by the Region (The Region may use sub-contractors to undertake parts or all of the necessary work). The costs of any necessary engineering studies and design will be included in the overall cost of the barriers.
2. The design and material specifications for the wall shall also be circulated to the area municipalities for review and comment. However, the Region will reserve the final decision on the selection of material, height of the wall and location of the wall within the regional road allowance, and other such design parameters.
3. Each noise wall constructed shall be in accordance with the MOE acoustical specifications and other engineering specifications acceptable to the Region. The wall shall be consistent with good engineering design relating to foundation requirements, drainage, traffic sight lines and daylighting at intersecting streets.
4. Ongoing maintenance is the responsibility of the Region in order to maintain an efficient and uniform standard with respect to the level of quality, design, barrier condition and function.
5. The homeowners will be required to enter into an agreement with the Region.
6. Consideration will be given by the Region to aesthetic impacts when designing noise control measures as well as the safety and security of pedestrians using the street.

Costs and Priority

All costs associated with the retrofitting will be subject to the following requirements:

1. Requests for retrofitting will be received by the Region and will undergo initial screening and prioritization (if all Warrants for construction are met) in relation to other retrofitting requests and the budget allocated by the Region for barrier retrofitting.
2. The overall cost associated with the retrofitting noise barrier, including the flanking ends, will be estimated by the Region and will be assessed (prorated) for the landowners on the basis of their rear lot frontage where the sound barrier will be installed. There will be no adjustments for irregular lot sizes.
3. Retrofit requests will be dealt with on a case by case by the Council and staff, prioritised based on this Policy, and subsequently included in the capital budget in accordance with the availability of funding. Project financing will include a 25% recovery of the detailed engineering estimate of the project, including the engineering study costs, from benefiting landowners through Halton's Noise Attenuation Policy for

Regional Roads under the provisions of the *Municipal Act, 2001*, S.O. 2001, c.25. and Ontario Regulation 119/03. In situations where the actual construction costs are less than the detailed engineering estimate, the homeowner's share will be adjusted to reflect the lower construction costs of the project.

4. The minimum number of residences to be considered for this policy is 5 dwelling units and 50 linear meters of noise barrier.

Region Staff Responsibilities

The following are the technical responsibilities that have been assigned to staff of the Region in regards to retrofitting:

1. The staff will be responsible, from time-to-time, in updating the Priority List or Ranking for retrofitting purposes based on the most current road and traffic data.
2. Upon receipt of a petition or request for retrofitting from the public, the staff shall visit the area of concern and investigate the area for any abnormal conditions that may have been responsible for generating the noise complaints. This may include the presence of pot holes, excessive speeds over the speed limit, temporary construction detours, deteriorating pavement conditions or any other transient that is not normally associated with the Regional roadway.
3. The subject area or road sections shall be checked against the Priority List/Ranking scheme and verified to be worthy of further consideration. This includes the possibility of further noise mitigation as part of the future capital works programs of the Region.
4. Staff shall, if the subject area meets the retrofit Policy warrants, prepare the necessary technical and financial details based on the necessary considerations including, but not limited to, the following:
 - a. Up-to-date road and traffic data
 - b. Review of alternative outdoor noise abatement features (if any exist) to meet the specified criteria.
 - c. Recommend the most effective outdoor noise abatement feature at the study site.
 - d. Ground elevations at the road, the points of reception and the base of a potential noise barrier.
 - e. Proposed noise barrier extent and location alternatives.
 - f. Possible interference, obstructions such as utilities, daylight triangles, drainage, etc.
 - g. Produce drawings to a reasonable scale showing the residential points of reception of concern, the road section, the possible location(s) of the noise barrier, etc.
 - h. Prepare detailed sound level calculations for the subject area to comply with the technical criteria of this Policy based on a minimum of one calculation for each group of three adjacent receptors, or as required. The calculated levels shall show the sound levels for the existing and future cases without and with the proposed sound barrier. The Leq analysis shall also show the resulting sound levels with various barrier height alternatives.
 - i. Preparation of cost estimates for the work.

5. For specific situations, the Region may conduct actual field monitoring of the sound levels where deemed necessary (e.g. difficult topographic situations, the presence of numerous sources of transportation sources of noise, etc). In general, measurements equipment and procedures shall be in accordance with good engineering practices and based on procedures similar to those specified by the Ministry of the Environment. The measured sound levels should then be compared with the predicted sound level for further decision making.
6. A complete package together with a Summary Section shall be made available to all the affected homeowners or they're duly appointed representatives. The Summary Section shall provide clear and concise information on the following:
 - Barrier details (extent, height, location, material, colour, etc.)
 - The acoustic benefit to be derived including summary of the established sound levels before and after the barrier.
 - Estimated cost of construction (total costs)
 - Approximate timing of construction
 - Other complications, implications, site difficulties, etc.
 - The decision including the Region's financial share.

B. REGIONAL ROAD PROJECTS

For road reconstruction or expansion projects which have existing reverse frontage/flanking, noise abatement features will be considered as part of the public process under the Environmental Assessment Act or the Planning Act. The noise abatement features will be designed to abate noise generated from the future traffic projections for the design life of the road.

C. NEW DEVELOPMENT POLICY

1.0 Noise Sources:

The developer will be required to abate noise originating from traffic, industrial, and Commercial plazas and/or other noise sources which exceed the Ministry of the Environment guidelines (MOE).

2.0 Areas to be Protected:

For all noise sensitive land use areas, the developer will be responsible to provide noise abatement features for outdoor areas only.

The homeowner or developer will be responsible for all noise abatement features required to the building, such as air conditioning, double-glazed windows, brick veneer, etc.

3.0 Noise Calculation Method:

The method for calculating noise levels will be in accordance with MOE Guidelines, i.e. Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376, 1989. The criteria for noise prediction will be based on a 20-year traffic forecast for the adjacent Regional Road. The noise consultant will be required to add all other noise sources (ambient noise) external to the forecasted traffic noise to arrive at a net noise level which will impact on the development lands. The net noise level determination will be compared with the required criteria as set down by the MOE and used for the design of attenuation measures.

4.0 Criteria:

(a) Noise Level Criteria

The criteria established by the Ministry of the Environment for daytime, night-time, indoor, and outdoor levels will be used as criteria for the design of sound walls required for a new development.

<u>Day Time</u>	<u>Location</u>	<u>Sound Level Leq</u>
0700 – 2300	Indoor Living Area	45 dBa
	Outdoor Patio Area	55 dBa
Night Time: 2300 – 0700	Indoor Bedroom Area	40 dBa
	Outdoor	50 dBa

(b) Impact Criteria:

There may be situations where a new development road will be constructed past existing homes. If this situation occurs, a significant “change in noise levels” would occur at existing properties as a result of the traffic volumes. In this situation, impact criteria must be used.

If the net change in traffic volumes, based on the design life of the road, results in a change of 5 dBa over that which exists today, then noise abatement features must be incorporated into the new roadway design. The impact criteria apply to existing residents only.

5.0 Noise Sensitive Land Use:

For a new development proposals as well as redevelopment, re-zonings, the developer will be required to provide noise attenuation features for the following noise sensitive land use areas:

- 5.1 All types of residential buildings, including apartments and condominiums.
- 5.2 Institutional buildings, such as hospitals, old age home, places of worship.
- 5.3 Certain park locations and recreational areas which have been designated for a quiet environment.
- 5.4 Other noise sensitive areas to be defined at the time of the development application.

6.0 Candidate Sites:

All development applications, which are received, should be considered at the planning approvals stage for noise abatement features. Staff will determine if a noise study is required to identify noise abatement requirements as part of any conditions of approval.

7.0 Enforcement of Requirements

7.1 The noise abatement requirements identified in the noise report will be enforced in the following ways.

All noise abatement features external to the building, such as noise abatement walls and berms, etc. will be enforced under the requirements of the appropriate development agreement.

All noise abatement features to be incorporated into the building construction will be enforced by the area municipality under the building permit requirements.

8.0 Noise Abatement Wall Criteria

If the noise wall is selected as the appropriate noise abatement feature then the noise barrier criteria identified under Section A of this policy apply.

D. DEFINITIONS

The following are the pertinent definitions adopted for the purposes of these Regional Noise Guidelines (text in *italics* is defined elsewhere in the definitions):

ACOUSTIC DEFINITIONS

A Weighted Sound Level

The “A-weighted sound level” is a *sound pressure level* indicated by a measurement system that includes an *A-weighting* network. The resulting value is in *decibels* and commonly is labelled dBA.

A-Weighting

“A-weighting” is a *frequency* weighting intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches of sound). The specific variation of sensitivity with frequency shall conform to IEC Publication 651.

Ambient Sound Level

“Ambient sound level” is the all-encompassing *noise* associated with a given environment and comprises a composite of *sounds* from many sources, other than the source of interest, near and far. For the purposes of this Guideline document:

- i. existing ambient is the *sound level* today,
- ii. Future-Do-Nothing ambient is the *sound level* 10 years after construction of a *roadway* or *transitway* if no action had been taken to improve the facility.

Where a *roadway* or *transitway* facility exists, ambient will include the noise emitting from it.

dB

See “*decibel*”

dBA

See “*A Weighted sound level*”

Decibel

The “decibel”^{*6} is the common measure of *sound level* or *sound pressure level*. It is the term to identify 10 times the common logarithm of the ratio of two like quantities proportional to power or energy.

Environmental Noise

The “environmental noise” is *noise* transmitted through the outdoor environment as opposed to *noise* generated and contained within buildings.

Equivalent Sound Pressure Level

“Equivalent sound pressure level” (Leq) is the level of a steady *sound* having the same time integral of the squared *sound pressure*, in the measurement interval, as the observed *sound*^{*7}

^{*6} Since the decibel expresses a ratio of two like quantities, it is dimensionless. It is, however, common practice to treat decibels as units, as in the following sentence. “The average sound pressure level in the room is 45 dB”.

^{*7} The Equivalent sound pressure level provides an energy or a logarithmic average of a series of noise events over a specific period of time and it has a tendency to be closer to the highest noise events.

Frequency

The “frequency” is the number of complete oscillations (or cycles) per second of a periodically varying quantity (e.g. pressure, displacement, and voltage). The unit is the Hertz (Hz).

Leg

See “*Equivalent Sound Pressure Level*”.

Noise

“Noise” is defined as any unwanted *sound*.

Noise Abatement Walls

Are concrete, wood, or metal walls installed within a Regional Road allowance or on a regionally owned reserve for the purpose of reducing the noise levels on adjacent properties.

Noise Attenuation Features: any feature or combination of features, such as noise abatement walls, earth berms, building configuration, building materials, etc. (not intended to be a complete list) which provide a reduction in noise level for noise sensitive outdoor living areas.

Noise Sensitive Areas (NSA) - Land Use: are any outdoor living areas associated with residential/institutional buildings. The following land uses, with OLA's associated with them would qualify as NSA's: private homes such as single family residences; townhouses; multiple unit buildings such as apartments with OLA's for use by all occupants; hospitals or nursing homes where there are OLA's for the patients.

Sound

“Sound” is:

- i) a fluctuation in pressure, particle displacement or particle velocity propagated in any medium;
- or,
- ii) the auditory sensation that may be produced by (i).

Sound Level

“Sound Level” is a *sound pressure level* indicated by a measurement system (e.g. sound level meter) with dynamic response and weighting characteristics conforming to the requirements of ANSI Standard SI.4 or IEC Standard 651.

Sound Pressure

The “sound pressure” is the difference between instantaneous pressure at a point in a medium during the passage of an acoustic disturbance and the prevailing pressure at the same point in the absence of that disturbance (The medium of interest is generally the atmosphere).

Sound Pressure Level (Lp)

“Sound Pressure” is 10 times the common logarithm of the ratio of the mean square pressure of a *sound* to the square of the reference pressure of 20 micropascals. Thus, the sound pressure level is expressed in *decibels*.

ROAD AND TRAFFIC DEFINITIONS

AADT

“Annual Average Daily Traffic” defined as the average twenty-four hour, two-way traffic for the period January 1st to December 31st.

Roadway

“Roadway” includes a common and public roadway, street, avenue, parkway, driveway or part of a roadway on a bridge or trestle under the jurisdiction of the Region which is intended for or used by the general public for the passage of vehicles and includes the area between the lateral property lines thereof.

OTHER DEFINITIONS

Aesthetics

“Aesthetics”, in the context of this guideline document, refer to the methods of providing visual relief and appealing characteristics to planned *noise barriers* through the application of landscaping designs and aesthetic treatment.

First Row Receiver

This term is defined as all those receivers (or receptors) adjacent to a Regional Roadway or Transitway where *sound level* differences are imperceptible (within 3 dBA) from the noisiest receiver.

Noise Barrier

“Noise Barrier” is a physical structure planned or otherwise, which is located between a noise source and a noise sensitive receptor and effects a reduction in *sound level* transmission from the source to the receptor. Noise barriers, in general, include walls, berms or combinations thereof.

Points of Reception

Points of Reception are defined as residential noise sensitive areas, along a Regional surface transportation corridor where it may cause an “unacceptable” *sound level*.

The following land uses, with OLA's [*outdoor living area*] associated with them would qualify as points of reception under the above criteria:

- *Private homes such as single family residences;*
- *Townhouses;*
- *Multiple unit buildings, such as apartments with OLA's for use by all occupants.*

Land uses listed below, by themselves do not qualify as points of reception:

- *Apartment balconies above ground floor;*
- *Educational facilities (except dormitories with OLA's)*
- *Churches;*
- *Cemeteries;*
- *Public/Private Parks and picnic areas;*
- *Day care centres;*
- *All commercial; and,*
- *All industrial.*

Outdoor Living Area (OLA)

“Outdoor living area” is the part of an outdoor amenity area provided for the quiet enjoyment of the outdoor environment.

The OLA is typically an area at ground level accommodating outdoor living activities. This area may be situated on any side. The usual distance from the dwelling unit wall is 3 m. The vertical height is 1.5 metres above the existing ground surface. Where unknown, the side closest to the *roadway or transitway* should be assumed. Paved areas for multiple dwelling residential units may not be defined as an OLA.

Impact Criteria

There may be situations where a new development road (Regional Road) will be constructed past existing homes. If this situation occurs, a significant “change in noise levels” would occur at existing properties as a result of Regional traffic volumes. In this situation, impact criteria must be used. If the net change in traffic volumes, based on a 10 year projection, results in a change of 5 dBA over that which exists today, then noise abatement features must be incorporated into the new roadway design. The impact criteria apply to existing residents only.

Resident Criteria

A 66% majority of property owners, representing at least one half of the assessed property values of the benefiting properties, must be in favour of the installation of a noise wall before any wall construction proceeds. Project financing will include a **25%** recovery from benefiting landowners to be acquired through Halton's Local Improvement Policy. Frontage measurements will be based on actual length of wall abutting side and rear yards or by proportional area in the case of irregular shaped lots.

Noise Reports:

Staff (or a qualified consultant) will prepare a noise report for review by adjacent residents prior to construction of the project. The report will set out the following information:

- (1) Existing noise level determination;
- (2) Future noise level determination;
- (3) Ten-year projected AADT value;
- (4) Review of alternative outdoor noise abatement features (if any exist) to meet the specified criteria;
- (5) A cost estimate for the noise abatement features;
- (6) A recommendation for the most effective outdoor noise abatement feature at the study site;
- (7) A recommendation on wall material considering factors, such as resident comments, roadway aesthetics, and sound absorbing quality;
- (8) Recommendation for the appropriate timing to construct the project at the study site.