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PRELIMINARY ENVIRONMENTAL NOISE REPORT

PROPOSED RESIDENTIAL DEVELOPMENT
1583 CORMACK CRESCENT
CITY OF MISSISSAUGA
REGION OF PEEL

JADE ACOUSTICS

Prepared for
ELM Cormack (2017) Inc.

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SUMMARY

The proposed residential development is located on the east side of Dixie Road, south of the Queen Elizabeth Way (QEW) in the City of Mississauga. It is subject to road traffic noise from Dixie Road, South Service Road and the QEW. The proposed site is outside the noise contour lines of Toronto Pearson International Airport.

The environmental noise guidelines of the City of Mississauga, the Region of Peel and the Ministry of the Environment, Conservation and Parks (MOE) set out sound level limits for both indoor and outdoor space.

The sound levels for various locations in the residential development were determined using the road traffic data obtained from the City of Mississauga, Region of Peel and the Ontario Ministry of Transportation (MTO). Sound levels due to the adjacent roads were determined using ORNAMENT, the noise prediction model of the MOE.

It was found that with appropriate mitigative measures all lots in the development will meet the noise guidelines. Lots 9 to 22 require mandatory central air conditioning. Lots 1 to 8 require provision for adding central air conditioning by the occupants if noise becomes a concern.

Lots 7 to 9 require a 2.4 m high acoustic fence. A 3.5 m high acoustic fence is required for Lots 10 to 22. Table 3 and Figure 2 show the acoustic barrier requirements.

Based on the preliminary analysis, windows, exterior door and exterior wall construction better than standard construction practices is needed for Lot 10. Window, exterior doors and exterior wall construction that complies with standard construction practices are satisfactory for all other lots. Prior to issuance of building permits, the acoustical requirements should be reviewed by an acoustical consultant to ensure compliance with the applicable acoustical guidelines. Prior to occupancy, the lots should be inspected by an acoustical consultant to ensure the required mitigation measures have been incorporated.

Where minor excesses exist and noise mitigation measures are required, future occupants will be advised through the use of warning clauses.

Based on the review, the proposed development is not exposed to acoustically significant stationary noise sources. Purchasers/tenants of all lots will be advised through a warning clause that the dwelling unit is in proximity to commercial buildings whose activities may at times be audible.

1.0 INTRODUCTION

Jade Acoustics Inc. was retained to prepare a Preliminary Environmental Noise Report to investigate the potential impact of noise on the proposed development to the satisfaction of the City of Mississauga, Region of Peel and MTO.

The proposed site is identified as:

Part of Lot 5
Concession 2
City of Mississauga
Regional Municipality of Peel

The proposed residential development is located on the east side of Dixie Road, south of the QEW. It is bounded by Dixie Road to the west, an animal clinic property to the north and existing residential lands to the east and south.

The analysis was based on the following:

- Site plan (Option – 1) prepared by RN Design Ltd. dated January 8, 2019, received on April 25, 2019;
- Preliminary grading plan prepared by Schaeffers Consulting Engineers, received January 30, 2019,
- Road traffic information provided by the City of Mississauga, Region of Peel and MTO; and
- Site visit conducted by Jade Acoustics Inc. staff on January 15, 2019.

A Key Plan is attached as Figure 1.

The proposed development is comprised of twenty-two (22) detached dwellings and a new internal private road.

2.0 NOISE SOURCES

2.1 Transportation Sources

The noise source to be investigated for potential impact on the proposed development is road traffic on Dixie Road, South Service Road and the QEW. The site is not impacted by railway traffic or aircraft traffic.

North Service Road located approximately 220 m north of the proposed development on the north side of the QEW is acoustically insignificant and, as such, is not considered further in this report.

The ultimate road traffic data used in the analysis was provided by the City of Mississauga, Region of Peel and the MTO. Road traffic is summarized in Table 1. Correspondence regarding the road traffic information is included as Appendix A.

As the medium truck to heavy truck ratio was not available from the MTO, a typical ratio of 25% medium/75% heavy trucks was accounted for in the analysis.

2.2 Stationary Sources

An animal clinic building is located approximately 55 m north of the proposed site. Based on information collected during our site visit, the clinic closed at the end of February, 2019. No information regarding the future use of this site is currently available.

The Dixie Mall, a commercial development, is located on the west side of Dixie Road with the closest building situated approximately 100 m from the proposed development. There is one small loading area facing toward the subject site.

3.0 ENVIRONMENTAL NOISE AND VIBRATION CRITERIA

The MOE document "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", dated August, 2013, released October 21, 2013 (updated final version # 22) was used in the analysis. A brief summary of the NPC-300 guidelines is given in Appendix B.

The City of Mississauga Official Plan (Section 6, Value the Environment) dated August 1, 2018 was also used in the analysis.

The environmental noise criteria used for residential developments in the City of Mississauga, Region of Peel and the MOE environmental noise criteria are summarized below.

3.1 Transportation Sources

3.1.1 Indoors

If the nighttime (11:00 p.m. to 7:00 a.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window is 60 dBA or greater and/or if the daytime (7:00 a.m. to 11:00 p.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For nighttime sound levels (LeqNight) greater than 50 dBA to less than 60 dBA on the exterior face of a bedroom or living/dining room window or daytime sound levels (LeqDay) greater than 55 dBA to less than or equal to 65 dBA on the exterior face of a bedroom or living/dining room window, there need only be the provision for adding central air conditioning by the occupant at a later date. This typically involves a ducted heating system sized to accommodate the addition of central air conditioning by the occupant at a later date. A warning clause advising the occupant of the potential interference with some activities is also required.

In all cases, air cooled condenser units must not exceed an AHRI sound rating of 7.6 bels. The air cooled condenser units must be sited in accordance with the zoning by-laws with respect to setbacks as well as location.

As required by the MOE, indoor noise criteria for road traffic noise is 40 dBA (Leq8hour) for the bedrooms during nighttime hours, 45 dBA (Leq8hour) for living/dining rooms during nighttime hours and 45 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria are used to determine the architectural requirements.

3.1.2 Outdoors

For the outdoor amenity areas, a design goal of 55 dBA for the daytime period between 7:00 a.m. to 11:00 p.m. is used for road and rail traffic. In some cases an excess not exceeding 5 dBA is considered acceptable. Where the unmitigated sound levels during the day exceed 55 dBA (Leq16hour, daytime) but are equal to or less than 60 dBA (Leq16hour, daytime), a warning clause is required and mitigation should be considered. Where the unmitigated sound levels exceed 60 dBA, mitigation measures and a warning clause are required.

The City of Mississauga requires that the acoustic fence portion of the sound barrier not exceed 2.4 m in height.

For both indoor and outdoor conditions, where the acoustic criteria are exceeded, warning clauses must be placed in offers of purchase and sale or lease agreements and included in the development agreement.

3.2 Stationary Sources

MOE Noise Guidelines

The guidelines of the Ontario Ministry of the Environment and Climate Change (MOE) for stationary sources are to be used for commercial/industrial facilities.

The MOE has recently published the document NPC-300 titled “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”.

The MOE also has vibration guidelines with respect to stationary sources, NPC-207. These guidelines require that the peak vibration velocities not exceed 0.3 mm/s at the point of reception during the day or night.

The MOE recognizes the need for back-up beepers/alarms as safety devices and as such does not have any guidelines or criteria to address these sources.

It should be noted that the MOE guidelines do not require that the source be inaudible, but rather that specific sound level limits be achieved.

With respect to stationary sources of noise in urban areas, the MOE guidelines require that the sound level due to the stationary source at the building façade and outdoor amenity spaces not exceed the sound level due to road traffic and in certain situations due to rail traffic in any hour

of source operation, subject to specific exclusions. Tables C-5, C-6, C-7 and C-8 of NPC-300 included in Appendix B provided the exclusion limit values of one-hour equivalent sound level (Leq,dBA) and impulsive sound level (L_{LM},dBAI).

In general, if the criteria for a stationary source of noise are exceeded, the MOE recommends that control be implemented at the source rather than at the receiver. Alternatively, if the receiver is set back from the source or if a physical barrier is constructed so that the criteria can be met at the receiver, no additional mitigative measures are required. Treatment of the receptor building by the use of suitable wall and window construction and central air conditioning to keep windows closed is not an acceptable solution to the MOE in Class 1 and 2 areas (urban). In addition, a warning clause in offers of purchase and sale and/or lease agreement noting the proximity of dwellings to such a source should be considered.

3.3 City of Mississauga Noise Control By-law

The City of Mississauga has a by-law to prohibit or regulate unusual noises likely to disturb the inhabitants of the City; Noise Control By-law Number 360-79. The by-law does not provide specific sound level limits, but rather provides qualitative information with respect to sources and provides prohibitions by time and place.

4.0 NOISE IMPACT ASSESSMENT

4.1 Road Traffic

For road traffic noise, the sound level in terms of Leq, the energy equivalent continuous sound level for both day (Leq16) and night (Leq8) was determined using the MOE Traffic Noise Prediction Model (ORNAMENT).

The analysis was based on the site plan prepared by RN Design Ltd. received on April 25, 2019 and the preliminary grading plan prepared by Schaeffer Consulting Engineers received on January 30, 2019. The topography between the source and the receiver and screening effect due to the proposed houses, where applicable, have been taken into account. The rear yard receiver was assumed to be 3 m from the centre of the rear wall of the dwelling.

The existing sound barrier along the QEW has been included in the analysis.

AECOM and the MTO have been contacted in attempt to obtain plan and profile information for the future Dixie Road/QEW interchange. As the interchange design has not been finalized yet and is therefore, subject to change, no information is currently available from AECOM or MTO. Information from the Transportation Environmental Study Report dated January, 2016, prepared by MMM Group obtained from the interchange project website has been used for the preliminary analyses. Updated information including plan and profile drawings should be used for the detail analyses and report.

For Lot 10 which is proposed to flank Dixie Road, the unmitigated daytime sound level at the rear yard is predicted to be 67 dBA. The daytime sound level at the side wall is predicted to be 69 dBA at the second storey. The nighttime sound level at the side wall is predicted to be 65 dBA at the second storey.

For Lot 9, the sound level at the side wall (second storey) is predicted to be 63 dBA (daytime) and 59 dBA (nighttime). The unmitigated rear yard sound level is predicted to be 60 dBA.

For Lot 22, the unmitigated daytime sound level at the rear yard is predicted to be 59 dBA. The daytime sound levels at the second storey rear wall are predicted to be 62 dBA (daytime) and 61 dBA (nighttime).

Table 2 provides a summary of the predicted sound levels outdoors due to road traffic at specific locations (the lots listed above and others) without mitigative measures. Appendix C gives sample calculations.

Where the sound level limits are expected to exceed the noise guidelines, mitigative measures and warning clauses are required.

4.2 Stationary Sources

As mentioned in Section 2.2, the existing animal clinic was closed at the end of February, 2019. Therefore, this use will not impact the proposed site. The future use of the clinic site is not known at this time. A noise study will need to be prepared by the proponent of future development to ensure that the applicable noise guidelines are met at the proposed development.

The commercial buildings within the Dixie Mall site are located at the southwest corner of the QEW and Dixie Road. Due to the type of building and operations and ambient sound levels set by the road traffic on the QEW and intervening Dixie Road, the existing commercial development is not expected to be acoustically significant at the proposed site. Therefore, noise mitigation measures are not required.

5.0 NOISE MITIGATION REQUIREMENTS

The noise mitigation requirements for both the indoor and outdoor locations are detailed below. Table 3 and Figure 2 provide a summary of the acoustical abatement requirements for the residential lots in this development.

5.1 Transportation Sources

5.1.1 Indoors

As required, indoor sound level criteria for road traffic can be achieved in all cases by using appropriate architectural elements for external walls, windows, exterior doors, and roof construction. The indoor limit for road traffic noise is 40 dBA for the bedrooms during nighttime hours, 45 dBA for the living/dining rooms during nighttime hours and 45 dBA for the living/dining rooms and bedrooms during daytime hours. These criteria have been used in this analysis. The characteristic spectra for road traffic has been accounted for in the determination of the architectural components. Appendix D contains a sample calculation of the architectural component selection.

In determining the architectural requirements, for the lots adjacent to roadways, it is assumed that during the nighttime the bedroom located on the second floor will be the worst case room receptor because the day/night traffic split results in less than 5 dBA difference between the predicted daytime and nighttime sound levels. This difference is less than the difference between the MOE indoor criteria for road traffic for daytime and nighttime hours; therefore, the bedroom with calculated nighttime sound level was used for the analysis. For the dwellings that are flanking the roadways, the exterior walls and windows would be 55% and 25% respectively of the associated floor area for the wall parallel and the wall perpendicular to the noise source.

The worst case locations are lots with close proximity to Dixie Road having a corner bedroom at the front or rear of the dwelling. Based on the analysis, windows and exterior doors for Lot 10 need to be up to STC 31 and exterior walls for the same lot need to be up to STC 39. An STC rating of 31 for windows and exterior walls and an STC 39 rating for exterior walls exceed window and exterior wall construction which complies with the minimum structural and safety requirements of standard construction. Standard window, exterior door and exterior wall construction is acoustically satisfactory for all other lots.

Since final house plans are not yet available, the architectural choices cannot be made. Once house plans are available, the noise control requirements should be re-evaluated to determine the final requirements.

Where the sound level from road traffic is 60 dBA or greater (at night) on the outside face of a bedroom or living/dining room window or greater than 65 dBA (during the day) on the outside face of a bedroom or living/dining room window, the indoor noise criteria would not be met with open windows and provisions must be made to permit the windows to remain closed. The Regional Municipality of Peel guidelines require central air conditioning and warning clauses. Based on the predicted sound levels and lot locations, Lots 9 to 22 require mandatory central air conditioning and a warning clause.

Where the sound level during nighttime hours is greater than 50 dBA to less than or equal to 59 dBA and during daytime hours is greater than 55 dBA to less than or equal to 65 dBA, provision for adding central air conditioning by the occupants must be made. Based on the analysis, the provision for adding central air conditioning by the occupants is required for Lots 1 to 8. Lots 1 to 8 also require warning clauses.

See Table 3 and Figure 2 for a summary of minimum noise mitigation measures.

The outdoor air conditioning condenser units must also meet the applicable sound level limits (AHRI sound rating of 7.6 bels) and should be sited in accordance with the City's zoning by-laws.

Warning clauses will also be required to be placed in offers of purchase and sale, lease agreements and included in the development agreement for all relevant lots to make future occupants aware of the potential noise situation. See Table 3 for details.

5.1.2 Outdoors

The outdoor amenity area is required to be exposed to sound levels of less than or equal to 55 dBA during the day. A 5 dB increase is considered acceptable in certain situations. Typically, if the sound level is above 55 dBA, some form of mitigation and a warning clause is required.

A 3.5 m high acoustic fence is proposed for Lots 10 to 22. The mitigated sound levels in the rear yards are predicted to be between 56 dBA and 59 dBA. A 5.5 m high acoustic fence would be required to achieve 55 dBA in the rear yard. Technically and visually, this height is not considered feasible.

The 3.5 m high acoustic fence is proposed to be installed along the rear property lines of Lots 10 to 22 and extended along the side property line of Lot 10 and Lot 22 as a minimum to a point in line with the rear wall of the dwellings. The 3.5 m high acoustic fence will need to be returned to the side wall of the dwellings on Lot 10 and 22.

It should be noted that the proposed acoustic fence height exceeds the maximum acoustic fence height of 2.4 m acceptable to the City of Mississauga. The 3.5 m high acoustic fence is proposed as no space (buffer blocks) is available for earthen berms; therefore, the reduction of acoustic fence height by the use of berm construction is not feasible. Upon their review, the City of Mississauga is to advise if the proposed acoustic fence is acceptable.

Accounting for a 2.4 m high acoustic fence, the mitigated sound levels in the rear yard of Lots 10 to 15 are predicted to be between 60 dBA and 63 dBA and in the rear yard of Lots 16 to 22 to be 60 dBA or less. If the City of Mississauga approves a predicted sound level of greater than 60 dBA, a stronger warning clause can be used to advise future occupants of the exceedance over the guidelines.

For Lots 7 to 9, a 2.4 m high acoustic fence is predicted to achieve 56 dBA or less in the rear yards. The 2.4 m high acoustic fence should be installed along the rear property line of Lots 7 to 9 and returned along the side property line of Lot 9 as a minimum to point in line with the rear wall of the dwelling. The 2.4 m high acoustic fence should also be returned to the side wall of the dwelling on Lot 9.

See Appendix E for a typical sound barrier calculation, Table 3 for a summary of minimum noise mitigation measures and Figure 2 for the acoustic fence locations.

Based on information provided by the City of Mississauga, any acoustic fence approved through Servicing Agreements should be constructed in accordance with that agreement. The City of Mississauga is to confirm the type of acoustic fence which is to be constructed within this development.

For any new subdivisions which are not yet registered, the City of Mississauga requires that the acoustic fence abutting major roadways (including arterials, major collectors, etc.) be constructed on public property (boundary between the 0.3 m reserve block and the edge of the right-of-way) and the acoustic fence abutting other municipal roads be constructed on private property. As Dixie Road is a major roadway, the flankage (side property line) portions of the proposed acoustic fences on Lot 10 should be installed on public property and should be maintained, repaired or replaced by the City of Mississauga. The portion of the acoustic fences on private property shall be maintained, repaired or replaced by the owner. See Warning Clause D included in the Notes to Table 3 of this noise report.

In addition, the City of Mississauga requires that the acoustic fence be made of durable material. Generally, this would involve the acoustic fence being constructed of red cedar with an actual thickness of 54 mm which exceeds the typically required surface density of 20 kg/m^2. A copy of the detail used by the City of Mississauga for acoustic fences is included in Appendix F.

Appropriate treatment of the sound barrier at all discontinuities and points of termination would be required to ensure that the sound barrier is effective. Generally, this would involve extending the sound barrier to the front property line; returning to the side wall of the house or extending the sound barrier for a minimum of three times the distance between the side wall and the sound barrier, past the rear wall of the house. Alternatively, a sound barrier return to the side wall of the house with an acoustic gate would provide sufficient mitigation when closed.

An acoustic gate of 20 kg/m^2 is very heavy. Therefore, if a gate is required, provided that it is of continuous construction with no gaps between the boards, it may have a surface density of between 10 kg/m^2 and 20 kg/m^2. The reduced surface density of the acoustic gate will not increase the predicted sound level in the rear yard. In addition, any gaps at the bottom of the gate should be kept to a minimal height.

Where an excess will remain, a warning clause should be placed in offers of purchase and sale or lease agreements and in a registerable portion of the development agreement.

Warning clause requirements are listed in Table 3 and specific wording is included in the Notes to Table 3.

5.2 Stationary Sources

Based on Section 4.2, noise mitigation measures are not required to address the existing stationary sources.

Purchases/tenants of all proposed lots will be advised through a warning clause that the dwelling unit is in proximity to the commercial buildings whose activities may at times be audible.

6.0 CONCLUSIONS

With the incorporation of the items discussed in this report (see Table 3, Notes to Table 3 and Figure 2), the sound levels will be within the appropriate environmental noise criteria. In accordance with City, Region and Ministry implementation guidelines where mitigation is required, future occupants will be advised through the use of warning clauses.

A detailed environmental noise report should be prepared once final site and grading plans become available and be based on detailed plan and profile information of the future Dixie Road/QEW interchange.

Prior to issuance of building permits, the acoustical requirements along with the architectural drawings should be reviewed by an acoustical consultant to ensure compliance with the applicable guidelines.

Prior to issuance of occupancy permits, an acoustical consultant shall confirm that the acoustical requirements are in compliance with the acoustical report.

Respectfully submitted,

JADE ACOUSTICS INC.

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7.0 REFERENCES

1. "Model Municipal Noise Control By-Law", Final Report, by the Ontario Ministry of the Environment, August, 1978.

2. “ORNAMENT – Ontario Road Noise Analysis Method for Environment and Transportation", Ontario Ministry of the Environment, October, 1989.

3. "Building Practice Note No. 56: Controlling Sound Transmission into Buildings”, by J.D. Quirt, Division of Building Research, National Research Council of Canada, September, 1985.

4. "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel", November, 2012.

5. “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, Ontario Ministry of the Environment, Publication NPC-300, August, 2013, released October 21, 2013, (updated final version # 22).

6. “Impulse Vibration in Residential Buildings”, Ontario Ministry of the Environment, Publication NPC-207 (Draft), November, 1983.

7. City of Mississauga Noise Control By-law Number 360-79, dated January 28, 1980.

8. City of Mississauga Official Plan, August 1, 2018.

9. “Transportation Environmental Study Report”, MMM Group, January, 2016.

TABLE 1

PROPOSED RESIDENTIAL DEVELOPMENT

1583 CORMACK CRESCENT

CITY OF MISSISSAUGA

SUMMARY OF ROAD TRAFFIC DATA

Road	QEW	Dixie Road	North Service Road
AADT*	218,000**	48,100***	15,000**
No. of Lanes	8	6	2
Speed (km/hr)	100	60	60
Trucks (%)	12	3.7 (day)/3.2 (night)	3
Medium/Heavy Split (%)	25/75	32/68 (day)/53/47 (night)	55/45
Gradient (%)	Up to 2	Up to 3	Up to 2
Day/Night Split (%)	67/33	91/9	90/10
Ultimate R.O.W. (m)	--	--	15

* AADT: Annual Average Daily Traffic.

** Ultimate

*** Planned

TABLE 2

PROPOSED RESIDENTIAL DEVELOPMENT

1583 CORMACK CRESCENT

CITY OF MISSISSAUGA

SUMMARY OF PREDICTED SOUND LEVELS
OUTDOORS DUE TO ROAD TRAFFIC

Lots	Location*	Source	Distance (m)	Leq (dBA)			
				Day		Night	
				Separate	Combined	Separate	Combined
Lot 9	Rear Yard	Dixie Road (NB)	59.5	58	60	--	--
		Dixie Road (SB)	75.5	56		--	
	Side Wall	Dixie Road (NB)	55.0	59	63	51	59
		Dixie Road (SB)	71.0	57		49	
		QEW (EB)	227.0	55		55	
		QEW (WB)	247.5	55		55	
Lot 10	Rear Yard	Dixie Road (NB)	27.0	64	67	--	--
		Dixie Road (SB)	43.0	61		--	
		South Service Road	32.5	59		--	
		QEW (EB)**	194.0	52		--	
		QEW (WB)**	214.5	54		--	
	Side Wall	Dixie Road (NB)	24.0	65	69	57	65
		Dixie Road (SB)	40.0	62		54	
		South Service Road	35.5	54		48	
		QEW (EB)	197.0	61		61	
		QEW (WB)	217.5	60		60	
Lot 22	Rear Yard	Dixie Road (NB)	156.0	50	59	--	--
		Dixie Road (SB)	172.0	50		--	
		South Service Road	103.0	50		--	
		QEW (EB)**	199.0	53		--	
		QEW (WB)**	219.5	55		--	
	Rear Wall	Dixie Road (NB)	153.0	50	62	42	61
		Dixie Road (SB)	169.0	49		41	
		South Service Road	106.0	50		43	
		QEW (EB)**	202.0	56		56	
		QEW (WB)**	222.5	59		59	

* Rear yard location taken 3 m from centre of the rear wall and 1.5 m above grade. Wall location taken at 4.5 m above grade for two storey dwellings.

** Noise wall along the QEW east of Dixie Road has been included in the calculation.

TABLE 3

PROPOSED RESIDENTIAL DEVELOPMENT

1583 CORMACK CRESCENT

CITY OF MISSISSAUGA

SUMMARY OF MINIMUM NOISE MITIGATION MEASURES

Lots	Air Conditioning (1)	Exterior Wall (2)	Windows (3)	Acoustic Barrier (4)	Warning Clause (5)
Lots 10	Mandatory	STC 39	STC 31	3.5 m*	A, B, D, F
Lots 11 to 22	Mandatory	Standard	Standard	3.5 m*	A, B, E, F
Lot 9	Mandatory	Standard	Standard	2.4 m**	A, B, E, F
Lots 7 and 8	Provision for adding	Standard	Standard	2.4 m**	A, C, E, F
Lots 1 to 6	Provision for adding	Standard	Standard	No	A ,C, F

* 3.5 m high acoustic fence. See text and Figure 2 for details.

** 2.4 m high acoustic fence. See text and Figure 2 for details.

See Notes to Table 3 on following pages.

NOTES TO TABLE 3

1. Means must be provided to allow windows to remain closed for noise control purposes. The air cooled condenser unit should be placed in a noise insensitive location which complies with municipal by-laws. It is recommended that the air cooled condenser unit AHRI sound rating does not exceed 7.6 bels.

   Provision for adding central air conditioning would involve a ducted heating system sized to accommodate the addition of central air conditioning by the occupant at a later date. The air cooled condenser unit AHRI sound rating must not exceed 7.6 bels. The air cooled condenser units should be placed in a noise insensitive location which complies with municipal by-laws.

2. STC - Sound Transmission Class Rating (Reference ASTM-E413). Values shown are based on preliminary calculations using standard assumptions. See text for details.

3. STC - Sound Transmission Class Rating (Reference ASTM-E413). Values shown are based on preliminary calculations using standard assumptions. See text for details. A sliding glass walkout door should be considered as a window and be included in the percentage of glazing.

4. Sound barriers must be of a solid construction with no gaps. Generally, the City of Mississauga requires acoustic fences be constructed of red cedar with an actual thickness of 54 mm. Earthen berms, solid walls/fences of adequate density or combinations thereof may be used. The City of Mississauga is to confirm the type of acoustic fence which is to be constructed within this development.

5. Suggested warning clauses to be included in the development agreement and to be included in offers of purchase and sale or lease agreements on designated lots:

   A. "Purchasers/tenants are advised that despite the inclusion of noise control features in this development area and within the dwelling units, noise due to increasing road traffic may continue to be of concern, occasionally interfering with the activities of the occupants as the sound level may exceed the noise criteria of the Municipality and the Ontario Ministry of the Environment, Conservation and Parks. I, the purchaser hereby agree to place this clause in all subsequent offers of purchase and sale when I sell the property."

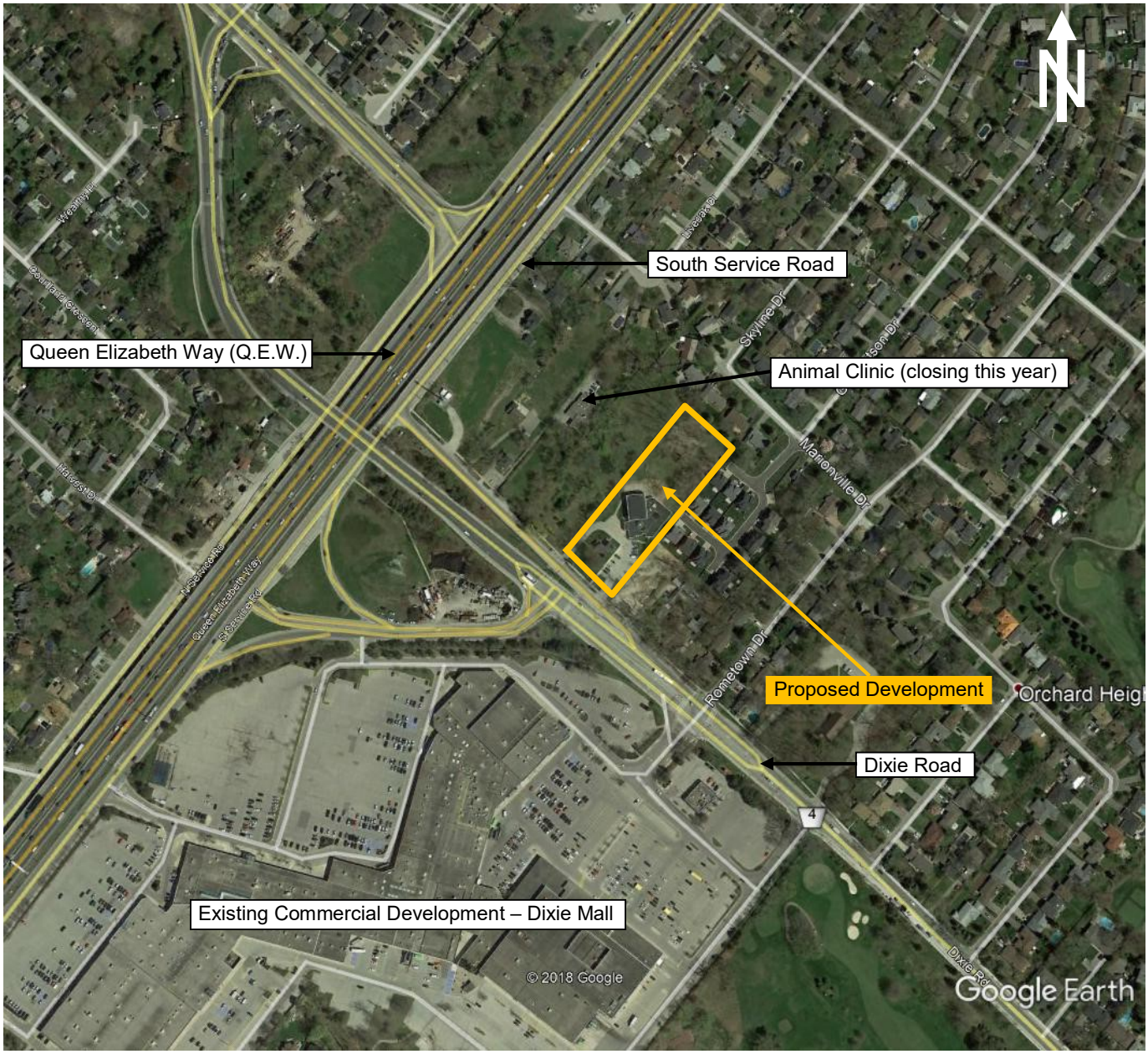
   B. “Purchasers/tenants are advised that the dwelling unit is fitted with a central air conditioning system in order to permit closing of windows for noise control. (Note: locate air cooled condenser unit in a noise insensitive area and ensure that the unit has an AHRI sound rating not exceeding 7.6 bels).”

C. "Purchasers/tenants are advised that the dwelling unit can be fitted with a central air conditioning system at the owner's option and expense which will enable occupants to keep windows closed if road traffic noise interferes with the indoor activities. If central air conditioning is installed, the air cooled condenser unit shall have an AHRI sound rating not exceeding 7.6 bels and shall be located so as to have the least possible noise impact on outdoor activities of the occupants and their neighbours."

D. "Purchasers/tenants are advised that the portion of acoustic fence installed on public property shall be maintained, repaired or replaced by the City of Mississauga. The portion of acoustic fence installed on private property 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."

E. "Purchasers/tenants are advised that the acoustic fence 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."

F. "Purchasers/tenants are advised that this development is in proximity to existing commercial buildings whose activities may at times be audible."



N.T.S

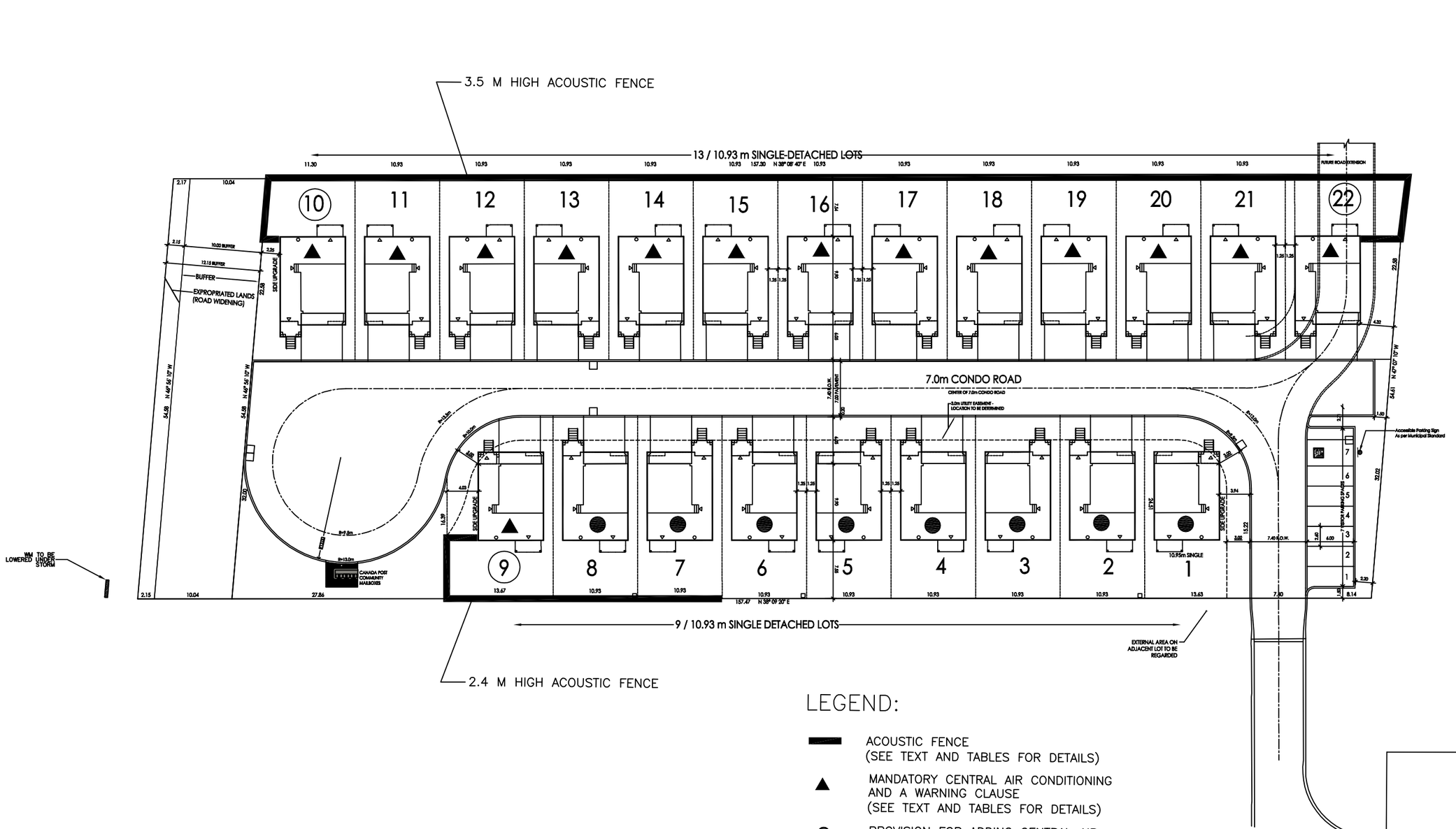
Proposed Residential Development
1583 Cormack Crescent
City of Mississauga
Region of Peel

Date: May 2019 **File: 18-049**

KEY PLAN

FIGURE 1

JADE ACOUSTICS



0m 5m 10m 20m

LEGEND:

- ACOUSTIC FENCE (SEE TEXT AND TABLES FOR DETAILS)
- ▲ MANDATORY CENTRAL AIR CONDITIONING AND A WARNING CLAUSE (SEE TEXT AND TABLES FOR DETAILS)
- ● PROVISION FOR ADDING CENTRAL AIR CONDITIONING AND A WARNING CLAUSE (SEE TEXT AND TABLES FOR DETAILS)
- ○ LOT ANALYZED

N.T.S.

Proposed Residential Development
1583 Cormack Crescent
City of Mississauga
Region of Peel

Date: May 2019 **File: 18-049**

JADE ACOUSTICS

PLAN OF DEVELOPMENT SHOWING MINIMUM NOISE MITIGATION MEASURES

FIGURE 2

APPENDIX A

CORRESPONDENCE REGARDING ROAD TRAFFIC DATA

Davor Sikic

From: Alam, Ahsan (MTO) <Ahsan.Alam@ontario.ca>
Sent: October 10, 2018 10:02 AM
To: davor@jadeacoustics.com
Subject: RE: Q.E.W. at Dixie Road, City of Mississauga (Jade File: 18-049)

Good Morning Davor,

In response to your request please find below the information available from this office for Q.E.W, east of

2016 AADT = 166,000
Ultimate AADT = 218,000
Existing Number of Through Lanes = 6
Planned Number of Through Lanes = 8
Posted Speed = 100 km/hr
% Trucks (Estimated) = 12%

Please note that the above information is estimated based upon our current knowledge of the area, whicl split will be available from Central Region Traffic Office. We do not have traffic data for the north and sou

If you require further information, please don't hesitate to contact me.

Thanks,
Ahsan

Ahsan Alam, PhD, Planner
Systems Analysis and Forecasting Office
Transportation Planning Branch, MTO
Suite 700, 7th Floor, 777 Bay Street
Toronto, ON M7A 2J8, Tel: 416-585-6237

MTO ONE
A Strong
Together

From: Semple, Paul (MTO)
Sent: October-09-18 2:47 PM
To: Davor Sikic; Alam, Ahsan (MTO)
Subject: FW: Q.E.W. at Dixie Road, City of Mississauga (Jade File: 18-049)

Hi Davor,

Forwarding this to Ahsan Alam, who is now responsible for addressing these requests.

Cheers,

The Region of Peel is the proud recipient of the National Quality Institute Order of Excellence, Quality; the National Quality Institute Canada Award of Excellence Gold Award, Healthy Workplace; and a 2008 IPAC/Deloitte Public Sector Leadership Gold Award.

October 10, 2018

Davor Sikic,
Jade Acoustics
Traffic Data Request
Dixie Road 0.2 km south of Q.E.W., Mississauga, ON

Davor:

As per your request, we are providing the following traffic data.

	Existing	Planned
24 Hour Traffic Volume	12,762	48,100
# of Lanes	4	6
Day/Night Split	91/9	91/9
Day Trucks (% of Total Volume)	1.2% Medium 2.5% Heavy	1.2% Medium 2.5% Heavy
Night Trucks (% of Total Volume)	1.7% Medium 1.5% Heavy	1.7% Medium 1.5% Heavy
Right-of-Way Width	20 meters	
Posted Speed Limit	60 km/h	

If you require further assistance, please contact me at (905) 791-7800 ext. 4810

Regards,

Viktoriya Zaytseva
Transportation Analyst, Infrastructure Planning & Design
Transportation Division, Public Works, Region of Peel

10 Peel Centre Drive, Suite B, 4th Floor, Brampton, ON, L6T 4B9
E: parshan.bahrami@peelregion.ca • W: 905-791-7800 x8594

NOISE REPORT FOR PROPOSED DEVELOPMENT

Date:	10-Oct-18

REQUESTED BY:

Name:	Davor Sikic
Company	Jade Accoustics

PREPARED BY:

Name:	Loudel Uy
Tel#:	(905) 615-3200

MISSISSAUGA

Location:	North Service Road and South Service Road (just east and west of Dixie Road)
Look Up ID#:	389

ON SITE TRAFFIC DATA

Specific	Street Names				
	North Service Road	South Service Road			
AADT:	17,000	15,000			
# of Lanes:	4 lanes	2 lanes			
% Trucks:	3%	3%			
Medium/Heavy Trucks Ratio:	55/45	55/45			
Day/Night Traffic Split:	90/10	90/10			
Posted Speed Limit:	60km/h	60km/h			
Gradient of Road:	2%	2%			
Ultimate R O W:	14m	15m			

Comments:	Ultimate Traffic Data Only.

APPENDIX B

ENVIRONMENTAL NOISE CRITERIA

ONTARIO MINISTRY OF THE ENVIRONMENT (MOE)

Reference: "Environmental Noise Guidelines Stationary and Transportation Sources – Approval and Planning", Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).

SOUND LEVEL CRITERIA FOR ROAD AND RAIL NOISE

TABLE C-1

Sound Level Limit for Outdoor Living Areas

Road and Rail

Time Period	L_{eq} (16) (dBA)
16 hr, 07:00 - 23:00	55

TABLE C-2

Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	L_{eq} (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

SOUND LEVEL CRITERIA FOR AIRCRAFT NOISE

TABLE C-3

Outdoor Aircraft Noise Limit

Time Period	NEF/NEP
24-hour	30

TABLE C-4

Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, nursing/retirement homes, schools, daycare centres, etc.	5
Sleeping Quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

SOUND LEVEL CRITERIA FOR STATIONARY SOURCES

TABLE C-5

Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

TABLE C-6

Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

TABLE C-7

Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

TABLE C-8

Exclusion Limit Values of Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window - Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00-23:00) / (23:00-07:00)	Class 2 Area (07:00-23:00) / (23:00-07:00)	Class 3 Area (07:00-19:00) / (19:00-07:00)	Class 4 Area (07:00-23:00) / (23:00-07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

SUPPLEMENTARY SOUND LEVEL LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

TABLE C-9

Supplementary Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	L_{eq} (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

TABLE C-10

Supplementary Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

ENVIRONMENTAL NOISE CRITERIA

REGION OF PEEL

Reference: "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel", November, 2012.

ROAD TRAFFIC NOISE

TYPE OF SPACE	TIME PERIOD	SOUND LEVEL LIMIT Leq*
Outdoor living area	7 am – 11 pm	Leq (16 hr) = 55 dBA
Outside bedroom window	11 pm – 7 am	Leq (8 hr) = 50 dBA
Indoor (bedrooms, hospitals)	11 pm – 7 am	Leq (8 hr) = 40 dBA
Indoor (living rooms, hotels, private offices, reading rooms)	7 am – 11 pm	Leq (16 hr) = 45 dBA
Indoor (general offices, shops)	7 am – 11 pm	Leq (16 hr) = 50 dBA

* Leq, measured in A-weighted decibels (dBA), is the value of the constant sound level which would result in exposure to the same total sound level as would the specified time varying sound, if the constant sound level persisted over an equal time interval.

APPENDIX C

SAMPLE CALCULATION OF PREDICTED SOUND LEVELS DUE TO ROAD TRAFFIC

APPENDIX C-1
SAMPLE CALCULATION OF SOUND LEVEL

FILE: 18-049
NAME: 1583 Cormack Crescent
REFERENCE DRAWINGS: Site Plan
LOCATION: Lot 9, 4.5 m above grade, side wall

Noise Source:	Dixie Road (NB)	Dixie Road (SB)	QEW (EB)	QEW (WB)
Time Period:	16 hr. (day)	16 hr. (day)	16 hr. (day)	16 hr (day)
Segment Angle:	-90 to 45	-90 to 45	-90 to 45	-90 to -45
Distance (m):	55.0	71.0	227.0	247.5
CALCULATION SOUND LEVEL*				
Reference Leq (dBA)*:	69.93	69.93	82.47	82.47
Distance Correction (dBA):	-8.90	-10.65	-18.44	-19.03
Finite Element Correction (dBA):	-2.19	-2.19	-8.66	-8.66
Allowance for Future Growth (dBA):	incl.	incl.	incl.	incl.
LeqNight (dBA):	58.84	57.09	55.37	54.78
Combined LeqDay (dBA):		62.84		

* Leq determined using the computerized model of the Ontario Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

APPENDIX C-2
SAMPLE CALCULATION OF SOUND LEVEL

FILE: 18-049
NAME: 1583 Cormack Crescent
REFERENCE DRAWINGS: Site Plan
LOCATION: Lot 9, 4.5 m above grade, side wall

Noise Source:	Dixie Road (NB)	Dixie Road (SB)	QEW (EB)	QEW (WB)
Time Period:	8 hr. (night)	8 hr. (night)	8 hr. (night)	8 hr (night)
Segment Angle:	-90 to 45	-90 to 45	-90 to -45	-90 to -45
Distance (m):	55.0	71.0	227.0	247.5
CALCULATION SOUND LEVEL*				
Reference Leq (dBA)*:	61.88	61.88	82.47	82.47
Distance Correction (dBA):	-8.93	-10.68	-18.44	-19.03
Finite Element Correction (dBA):	-2.19	-2.19	-8.66	-8.66
Allowance for Future Growth (dBA):	incl.	incl.	incl.	incl.
LeqNight (dBA):	50.76	49.01	55.37	54.78
Combined LeqNight (dBA):		59.26		

* Leq determined using the computerized model of the Ontario Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

```
STAMSON 5.0        NORMAL REPORT        Date: 16-01-2019 09:55:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 9sw.te               Time Period: Day/Night 16/8 hours
Description: Lot 9, side wall, daytime

Road data, segment # 1: Dixie NB (day/night)
-------------------------------------------
Car traffic volume  : 21076/2084  veh/TimePeriod  *
Medium truck volume :   263/26    veh/TimePeriod  *
Heavy truck volume  :   547/54    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  24050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.20
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  91.00

Data for Segment # 1: Dixie NB (day)
------------------------------------
Angle1   Angle2           : -90.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  55.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Dixie SB (day/night)
-------------------------------------------
Car traffic volume  : 21076/2084  veh/TimePeriod  *
Medium truck volume :   263/26    veh/TimePeriod  *
Heavy truck volume  :   547/54    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  24050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.20
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  91.00

Data for Segment # 2: Dixie SB (day)
------------------------------------
Angle1   Angle2           : -90.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  71.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: QEW EB (day/night)
------------------------------------------
Car traffic volume  : 63950/31970 veh/TimePeriod  *
Medium truck volume :  2180/1090  veh/TimePeriod  *
Heavy truck volume  :  6540/3270  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 109000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW EB (day)
----------------------------------
Angle1   Angle2           : -90.00 deg   -45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 227.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: QEW WB (day/night)
------------------------------------------
Car traffic volume  : 63950/31970 veh/TimePeriod  *
Medium truck volume :  2180/1090  veh/TimePeriod  *
Heavy truck volume  :  6540/3270  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 109000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 4: QEW WB (day)
----------------------------------
Angle1   Angle2           : -90.00 deg   -45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 247.50 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dixie NB (day)
-----------------------------------

Source height = 1.26 m

ROAD (0.00 + 58.84 + 0.00) = 58.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     45   0.58  69.93   0.00  -8.90  -2.19   0.00   0.00   0.00  58.84
-------------------------------------------------------------------------------

Segment Leq : 58.84 dBA
```

Results segment # 2: Dixie SB (day)

Source height = 1.26 m

ROAD (0.00 + 57.09 + 0.00) = 57.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.58	69.93	0.00	-10.65	-2.19	0.00	0.00	0.00	57.09

Segment Leq : 57.09 dBA

Results segment # 3: QEW EB (day)

Source height = 1.73 m

ROAD (0.00 + 55.37 + 0.00) = 55.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-45	0.56	82.47	0.00	-18.44	-8.66	0.00	0.00	0.00	55.37

Segment Leq : 55.37 dBA

Results segment # 4: QEW WB (day)

Source height = 1.73 m

ROAD (0.00 + 54.78 + 0.00) = 54.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-45	0.56	82.47	0.00	-19.03	-8.66	0.00	0.00	0.00	54.78

Segment Leq : 54.78 dBA

Total Leq All Segments: 62.84 dBA

```
STAMSON 5.0        NORMAL REPORT        Date: 30-01-2019 14:48:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 9sw_n.te              Time Period: Day/Night 16/8 hours
Description: Lot 9, side wall, nighttime

Road data, segment # 1: Dixie NB (day/night)
-------------------------------------------
Car traffic volume  : 21185/2095  veh/TimePeriod  *
Medium truck volume :   372/37    veh/TimePeriod  *
Heavy truck volume  :   328/32    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  24050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.70
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  91.00

Data for Segment # 1: Dixie NB (night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  55.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Dixie SB (day/night)
-------------------------------------------
Car traffic volume  : 21185/2095  veh/TimePeriod  *
Medium truck volume :   372/37    veh/TimePeriod  *
Heavy truck volume  :   328/32    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  24050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.70
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  91.00

Data for Segment # 2: Dixie SB (night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  71.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: QEW EB (day/night)
------------------------------------------
Car traffic volume  : 63950/31970 veh/TimePeriod  *
Medium truck volume :  2180/1090  veh/TimePeriod  *
Heavy truck volume  :  6540/3270  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 109000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 3: QEW EB (night)
------------------------------------
Angle1   Angle2           : -90.00 deg   -45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 227.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: QEW WB (night)
--------------------------------------
Car traffic volume  : 63950/31970 veh/TimePeriod  *
Medium truck volume :  2180/1090  veh/TimePeriod  *
Heavy truck volume  :  6540/3270  veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT): 109000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  66.67

Data for Segment # 4: QEW WB (night)
------------------------------------
Angle1   Angle2           : -90.00 deg   -45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :247.50 m
Receiver height           :  4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Dixie NB (night)
-------------------------------------

Source height = 1.10 m

ROAD (0.00 + 50.76 + 0.00) = 50.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     45   0.58  61.88   0.00  -8.93  -2.19   0.00   0.00   0.00  50.76
-------------------------------------------------------------------------------

Segment Leq : 50.76 dBA

Results segment # 2: Dixie SB (night)
-------------------------------------

Source height = 1.10 m

ROAD (0.00 + 49.01 + 0.00) = 49.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     45   0.58  61.88   0.00 -10.68  -2.19   0.00   0.00   0.00  49.01
-------------------------------------------------------------------------------

Segment Leq : 49.01 dBA

Results segment # 3: QEW EB (night)
-----------------------------------

Source height = 1.73 m

ROAD (0.00 + 55.37 + 0.00) = 55.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -45   0.56  82.47   0.00 -18.44  -8.66   0.00   0.00   0.00  55.37
-------------------------------------------------------------------------------

Segment Leq : 55.37 dBA

Results segment # 4: QEW WB (night)
-----------------------------------

Source height = 1.73 m

ROAD (0.00 + 54.78 + 0.00) = 54.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -45   0.56  82.47   0.00 -19.03  -8.66   0.00   0.00   0.00  54.78
-------------------------------------------------------------------------------

Segment Leq : 54.78 dBA

Total Leq All Segments: 59.26 dBA

TOTAL Leq FROM ALL SOURCES(NIGHT): 59.26
```

APPENDIX C-3
SAMPLE CALCULATION OF SOUND LEVEL

FILE: 18-049
NAME: 1583 Cormack Crescent
REFERENCE DRAWINGS: Site plan and grading plan
LOCATION: Lot 9, 1.5 m above grade, **rear yard**

Noise Source:	Dixie Road NB	Dixie Road SB
Time Period:	16 hr. (day)	16 hr. (day)
Segment Angle:	-90 to 27	-90 to 27
Distance (m):	59.5	75.5

CALCULATION OF SOUND LEVEL*

Reference Leq (dBA)*:	69.93	69.93
Height and/or Distance Correction (dBA):	-9.51	-11.16
Distance Correction (dBA):	-2.89	-2.69
Finite Element Correction (dBA):	0.00	0.00
Allowance for Future Growth (dBA):	incl.	incl.
LeqDay (dBA):	57.32	55.88
Combined LeqDay (dBA):	59.79	

* Leq determined using the computerized model of the Ontario Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

```
STAMSON 5.0        NORMAL REPORT        Date: 14-01-2019 12:07:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 9ola.te              Time Period: Day/Night 16/8 hours
Description: Lot 9, rear yard

Road data, segment # 1: Dixie NB (day/night)
----------------------------------------------
Car traffic volume  : 21076/2084  veh/TimePeriod  *
Medium truck volume :   263/26    veh/TimePeriod  *
Heavy truck volume  :   547/54    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  24050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.20
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  91.00

Data for Segment # 1: Dixie NB (day)
-----------------------------------
Angle1   Angle2           : -90.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  59.50 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 27.00 deg
Barrier height            :   0.00 m
Elevation                 :   2.58 m
Barrier receiver distance :   8.00 m
Source elevation          : 107.83 m
Receiver elevation        : 105.25 m
Barrier elevation         : 105.00 m
Reference angle           :   0.00

Road data, segment # 2: Dixie SB (day/night)
----------------------------------------------
Car traffic volume  : 21076/2084  veh/TimePeriod  *
Medium truck volume :   263/26    veh/TimePeriod  *
Heavy truck volume  :   547/54    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  24050
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.20
    Heavy Truck  % of Total Volume     :   2.50
    Day (16 hrs) % of Total Volume     :  91.00
```

```
Data for Segment # 2: Dixie SB (day)
------------------------------------
Angle1   Angle2           : -90.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  75.50 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 27.00 deg
Barrier height            :   0.00 m
Elevation                 :   2.58 m
Barrier receiver distance :   8.00 m
Source elevation          : 107.83 m
Receiver elevation        : 105.25 m
Barrier elevation         : 105.00 m
Reference angle           :   0.00

Results segment # 1: Dixie NB (day)
-----------------------------------

Source height = 1.26 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.26 !        1.50 !        2.06 !       107.06

ROAD (0.00 + 57.52 + 0.00) = 57.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     27   0.59  69.93   0.00  -9.51  -2.89   0.00   0.00  -0.21  57.31*
   -90     27   0.59  69.93   0.00  -9.51  -2.89   0.00   0.00   0.00  57.52
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.52 dBA

Results segment # 2: Dixie SB (day)
-----------------------------------

Source height = 1.26 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.26 !        1.50 !        2.00 !       107.00

ROAD (0.00 + 55.88 + 0.00) = 55.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     27   0.59  69.93   0.00 -11.16  -2.89   0.00   0.00  -0.23  55.65*
   -90     27   0.59  69.93   0.00 -11.16  -2.89   0.00   0.00   0.00  55.88
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.88 dBA

Total Leq All Segments: 59.79 dBA
```

APPENDIX D

SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION

APPENDIX D-1
SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION*

FILE: 18-049
NAME: 1583 Cormack Crescent
REFERENCE DRAWINGS: Site plan
LOCATION: Lot 10, second storey

ROAD

Room: Corner Bedroom

Wall area as a percentage of Floor Area:	Side:	55%
	Front:	55%
Window area as a percentage of Floor Area:	Side:	25%
	Front:	25%

Number of components: 3

Outdoor Nighttime Leq:
Side: 65 (+3 for reflection) = 68 dBA
Front: 65 (+3 for reflection) = 68 dBA

Indoor Leq: 40

Angle Correction: 0

Noise Reduction (dBA):
Side: 28
Front: 28

Noise Spectrum: **Road**

Absorption: Intermediate

APPROPRIATE ELEMENTS

		STC Rating
Wall	Side	STC 39
	Front	STC 39
Window	Side	STC 31
	Front	STC 31

* Based upon “Controlling Sound Transmission into Buildings”, Building Practice Note 56 by National Research Council of Canada, September, 1985.

APPENDIX E

SAMPLE CALCULATION OF SOUND BARRIER ANALYSES

STAMSON 5.0 NORMAL REPORT Date: 04-02-2019 14:15:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 9bar.te Time Period: Day/Night 16/8 hours
Description: Lot 9, rear yard, sound barrier requirements

Road data, segment # 1: Dixie NB (day/night)

Car traffic volume : 21076/2084 veh/TimePeriod *
Medium truck volume : 263/26 veh/TimePeriod *
Heavy truck volume : 547/54 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 24050
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.20
Heavy Truck % of Total Volume : 2.50
Day (16 hrs) % of Total Volume : 91.00

Data for Segment # 1: Dixie NB (day)

Angle1 Angle2 : -90.00 deg 27.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 59.50 m
Receiver height : 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 27.00 deg
Barrier height : 0.10 m
Elevation : 2.58 m
Barrier receiver distance : 8.00 m
Source elevation : 107.83 m
Receiver elevation : 105.25 m
Barrier elevation : 105.00 m
Reference angle : 0.00

Road data, segment # 2: Dixie SB (day/night)

Car traffic volume : 21076/2084 veh/TimePeriod *
Medium truck volume : 263/26 veh/TimePeriod *
Heavy truck volume : 547/54 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 3 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 24050
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.20
Heavy Truck % of Total Volume : 2.50
Day (16 hrs) % of Total Volume : 91.00

```
Data for Segment # 2: Dixie SB (day)
------------------------------------
Angle1   Angle2           : -90.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  75.50 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 27.00 deg
Barrier height            :   0.10 m
Elevation                 :   2.58 m
Barrier receiver distance :   8.00 m
Source elevation          : 107.83 m
Receiver elevation        : 105.25 m
Barrier elevation         : 105.00 m
Reference angle           :   0.00

Results segment # 1: Dixie NB (day)
-----------------------------------

Source height = 1.26 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.26 !        1.50 !        2.06 !       107.06

ROAD (0.00 + 57.52 + 0.00) = 57.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     27   0.58  69.93   0.00  -9.48  -2.88   0.00   0.00  -0.23  57.33*
   -90     27   0.59  69.93   0.00  -9.51  -2.89   0.00   0.00   0.00  57.52
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.52 dBA

Results segment # 2: Dixie SB (day)
-----------------------------------

Source height = 1.26 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.26 !        1.50 !        2.00 !       107.00

ROAD (0.00 + 55.88 + 0.00) = 55.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     27   0.58  69.93   0.00 -11.12  -2.88   0.00   0.00  -0.26  55.67*
   -90     27   0.59  69.93   0.00 -11.16  -2.89   0.00   0.00   0.00  55.88
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.88 dBA

Total Leq All Segments: 59.79 dBA
```

Barrier table for segment # 1: Dixie NB (day)

Barrier Height	Elev of Barr Top	Road dBA	Tot Leq dBA
1.50	106.50	57.52	57.52
1.60	106.60	57.52	57.52
1.70	106.70	57.52	57.52
1.80	106.80	57.52	57.52
1.90	106.90	57.52	57.52
2.00	107.00	57.52	57.52
2.10	107.10	53.45	53.45
2.20	107.20	53.44	53.44
2.30	107.30	53.39	53.39
2.40	107.40	53.29	53.29
2.50	107.50	53.14	53.14
2.60	107.60	52.96	52.96
2.70	107.70	52.74	52.74
2.80	107.80	52.50	52.50
2.90	107.90	52.25	52.25
3.00	108.00	51.98	51.98
3.10	108.10	51.70	51.70
3.20	108.20	51.41	51.41
3.30	108.30	51.13	51.13
3.40	108.40	50.85	50.85
3.50	108.50	50.57	50.57

Barrier table for segment # 2: Dixie SB (day)

Barrier Height	Elev of Barr Top	Road dBA	Tot Leq dBA
1.50	106.50	55.88	55.88
1.60	106.60	55.88	55.88
1.70	106.70	55.88	55.88
1.80	106.80	55.88	55.88
1.90	106.90	55.88	55.88
2.00	107.00	51.89	51.89
2.10	107.10	51.91	51.91
2.20	107.20	51.88	51.88
2.30	107.30	51.80	51.80
2.40	107.40	51.68	51.68
2.50	107.50	51.52	51.52
2.60	107.60	51.33	51.33
2.70	107.70	51.11	51.11
2.80	107.80	50.87	50.87
2.90	107.90	50.62	50.62
3.00	108.00	50.35	50.35
3.10	108.10	50.08	50.08
3.20	108.20	49.81	49.81
3.30	108.30	49.54	49.54
3.40	108.40	49.27	49.27
3.50	108.50	49.01	49.01

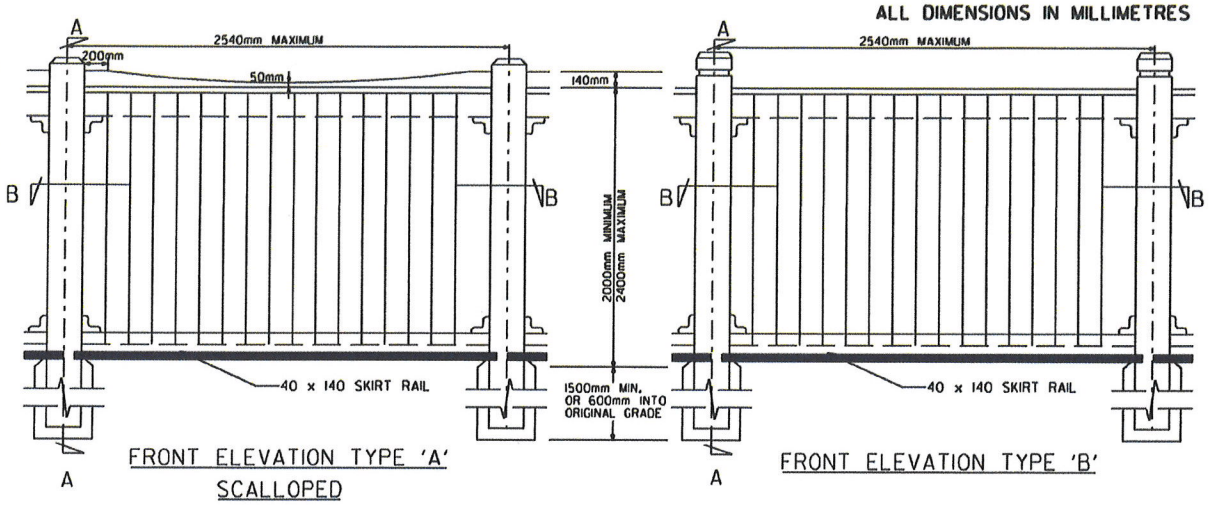
Combined LeqDay = 55.57 dBA

APPENDIX F

ACOUSTIC FENCE DETAIL

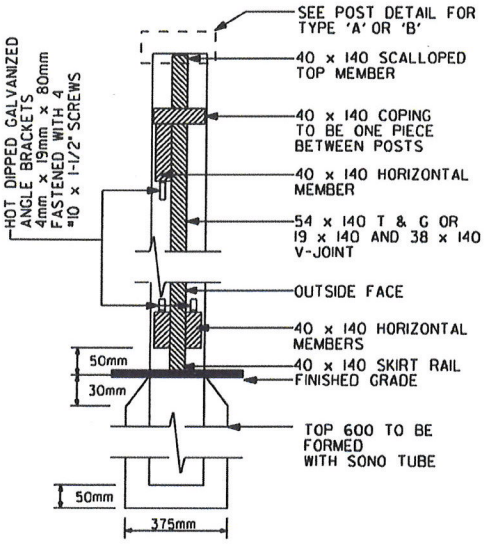
METRIC

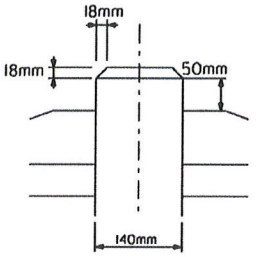
ALL DIMENSIONS IN MILLIMETRES



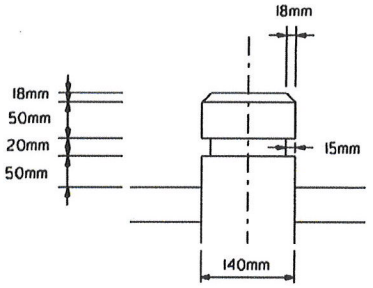
FRONT ELEVATION TYPE 'A'
SCALLOPED

FRONT ELEVATION TYPE 'B'



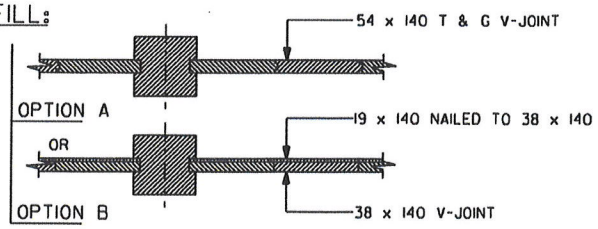


POST DETAIL TYPE 'A'



POST DETAIL TYPE 'B'

INFILL:



TYPICAL
SECTION

NOTES - SEE STANDARD 2850.050

MISSISSAUGA
Leading today for tomorrow

STANDARD
WOODEN ACOUSTIC FENCE
TYPE 'A' & 'B'
ON PRIVATE PROPERTY

EFF. DATE		2002-01-01	SCALE		N.T.S.
REV.	1	2006-01-01	STANDARD No.		2850.040

NOTES

MATERIALS

WOOD (GENERAL SPECIFICAITIONS)

ALL WOOD SHALL BE RED CEDAR OR APPROVED EQUAL SELECTED FOR GOOD APPEARANCE AND FREE OF WAME AND BARK POCKETS. ALL TORN GRAIN AND SURFACE STAIN SHALL BE ELIMINATED BY SANDING OR PLANING. MEMBERS WITH HEAVY KNOTS AND/OR SAP STAIN SHALL BE WELL DISTRIBUTED THROUGHOUT THE INSTALLATION. THE SKIRT RAIL SHALL BE PRESSURE TREATED.

INFILL

(A) - 2-1/8" T & G SELECT (SOUND) TIGHT KNOT NLGA PATTERN 18-(200) MODIFIED 54mm (DRESSED BOTH SIDES) WITH BEVELLED EDGES ON BOTH SIDES; OR

(B) - 19 x 140 AND 38 x 140 V-JOINT OVERLAPPED

HORIZONTAL MEMBERS

SHALL BE 40mm x 140mm DRESSED TO PATTERN, THE GRADE TO BE NLGA 204B OR BETTER SELECT TIGHT KNOT GRADE.

POSTS

SHALL BE 150 x 14, STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS. CSA SPECIFICATIONS S16.1 AND CSA SPECIFICATION G40.21 TYPE 350W

STAIN FOR WOOD FENCE

STAIN SHALL CONSIST OF:

- A BASE OF BLENDED RESINS AND OILS IN A WATER SUSPENSION
- SUSPENDED SOLIDS WHICH ARE NOT LESS THAN 21% AND NOT GREATER THAN 31% BY VOLUME
- V.O.C.'S (VOLATILE ORGANIC COMPOUNDS) WHICH ARE NOT IN EXCESS OF 350g/L IN ACCORDANCE WITH A.S.T.M. D-2369
- LEVELS OF LIQUID MICROBICIDES AND ANY OTHER POTENTIAL TOXIC SUBSTANCES WHICH ARE ENVIRONMENTALLY SAFE (NOT REQUIRED PROVINCIAL OR FEDERAL REGISTRATION)
- NONE OF THE FOLLOWING HAZARDOUS SUBSTANCES:
  - FALPET [N-(TRICHLOROMETHYLIO) PHTHALIMIDE]
  - BIS (TIBUTYLTIN) OXIDE
  - COPPER NAPHTHENATE
  - COPPER B QUINOLINOLATE
  - ZINC NAPHTHENATE
- CLEAR STAIN ie. NO COLOUR

STAIN APPLICATION

APPLY TWO COATS ON CLEAN DRY WOOD USING SPRAY, BRUSH OR DIPPING METHODS TO ACHIEVE FULL COVERAGE OF ALL EXPOSED SURFACES. APPLY OUTDOORS ONLY IN SUITABLE WEATHER CONDITIONS DURING WHICH THE TEMPERATURE IS BETWEEN 5 C AND 21 C FOR A PERIOD OF 48 HOURS FOLLOWING APPLICATIONS.

FASTENERS

INCLUDING ARDOX NAILS, BOLTS, NUTS AND WASHERS, SHALL BE HOT-DIPPED GALVANIZED STEEL.

CONCRETE

SHALL BE 30 MPa AT 28 DAYS MINIMUM.

EXECUTION

SOIL

WITHIN IMMEDIATE AREA OF FOOTINGS SHALL BE 95% STANDARD PROCTOR DENSITY.

POSTS

SHALL BE PLUMB WITHIN 5mm/m

INFILL

MEMBERS SHALL BE TIGHT FITTED AND NAILED AT REGULAR INTERVALS TO ELIMINATE ALL GAPS AND RATTLING. INFILL PANEL MEMBERS SHALL BE NAILED ONLY ON THE INSIDE (LOW QUALITY) FENCE.

STEP FENCE

ON SLOPES (MINIMUM 3" STEPS).

DOUBLE POST

ALL DIRECTION CHANGES GREATER THAN 20°.

WARRANTY

THE FENCE SHALL BE GUARANTEDD FOR THREE YEARS AS FOLLOWS:
5mm/m ON PLUMB OF POSTS AND LEVEL OF INFILL MEMBERS.
GAPS BETWEEN INFILL MEMBERS SHALL NOT EXCEED 6mm (1/4").
INFILL MEMBERS SHALL BE TIGHT AND FREE OF RATTLING.

MISSISSAUGA
Leading today for tomorrow

STANDARD NOTES FOR THE WOODEN ACOUSTIC FENCE TYPE 'A' & 'B' ON PRIVATE PROPERTY

EFF. DATE		2002-01-01	SCALE	N.T.S.
REV.	2	2015-06-03	STANDARD No.	2850.050