

To: Paula Burnard, Senior Environmental Planner

From: Jeff Paul, P.Eng. Managing Principal

London ON Office

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File: 165010586

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Reference: Regional Road 25 Transportation Corridor Improvements from Steeles Avenue to 5 Side Road, Town of Milton/Town of Halton Hills – Noise Assessment

INTRODUCTION

Halton Region is undertaking a Municipal Class Environmental Assessment (MCEA) Study for road improvements along the Regional Road 25 corridor from Steeles Avenue to 5 Side Road, within the Town of Milton/Town of Halton Hills. The corridor is approximately 3km in length (Figure 1). The proposed road improvements include widening Regional Road 25 between Steeles Avenue and 5 Side Road from 4 lanes to 6 lanes. The existing CN Railway overpass, north of Steeles Avenue will be replaced with a 6-lane structure to accommodate future 2031 travel demand.



Figure 1 - Study Area

The posted speed limit on Regional Road 25, within the study limits, varies from 50 km/h to 70 km/h; the current speed limit along the corridor will largely be maintained for the future configuration.

As part of the MCEA Study, a noise assessment (to 2031) was conducted to assess the potential increase in noise level to noise sensitive areas as a result of the proposed improvements to Regional Road 25 from Steeles Avenue to 5 Side Road. Existing land uses within the study area vary from commercial/institutional in the south to most industrial in the north, towards 5 Side Road.

Noise sensitive areas within the study area include rural residential properties located adjacent to Regional Road 25, between James Snow Parkway and Escarpment Way/Peddie Road, on the west side. The noise assessment was undertaken based on the selection of these private residential homes within the Study Area, which represent the potential noise impact to noise sensitive areas in proximity to Regional Road 25.

This memorandum summarizes the findings of the noise assessment.

METHODOLOGY

Noise levels are predicted in decibels in the A-weighted dBA scale, which best approximates the human perception of sound over a specified time period. An increase of 2 – 3 decibels in noise levels

February 26, 2019

Paula Burnard, Senior Environmental Planner

Page 2 of 5

Reference: Regional Road 25 Transportation Corridor Improvements from Steeles Avenue to 5 Side Road, Town of Milton/Town of Halton Hills – Noise Assessment

is considered to be just perceivable to the average person. It should be noted that a 3 dBA increase in noise equates to a doubling of traffic volumes.

Ministry of Transportation Guidelines

Since roadway sound levels vary over time, the noise descriptor used in Ontario to assess noise is the “equivalent sound level” - Leq. Leq is identified as the continuous sound level, which has the same energy as a time varying sound level over a specified time period. For the purposes of assessing municipal roadway noise, Leq is calculated on the basis of the 16-hour daytime period, 7:00 a.m. to 11:00 p.m. For new residential development adjacent to existing roads, the provincial objective is 55 dBA in the Outdoor Living Area (OLA) for the daytime period.

Based on the *Ontario Ministry of Transportation (MTO) Environmental Guide for Noise*, where an existing roadway is proposed to be modified / widened adjacent to a Noise Sensitive Area (NSA), MTO requires that the future noise levels without the proposed improvements be compared to the future noise level with the proposed improvements. The assessment is completed at the outdoor living area (typically backyards) of each noise sensitive area (NSA). The provision of noise mitigation is to be investigated should the future noise level with the proposed improvements result in a greater than 5 dBA increase over the future noise level without the proposed improvements or the future noise level with the proposed improvements results in a noise level greater than 65 dBA. If noise mitigation is provided, the objective is a minimum 5 dBA reduction. Mitigation will attempt to achieve levels as close to, or lower than, the objective level as is technically, economically, and administratively feasible.

The STAMSON 5.03 computer modelling program, which is approved for use in Ontario by the Ministry of Environment, Conservation and Parks (MECP), was used to assess existing and future noise levels on Regional Road 25. This program is used to predict noise levels generated from the road at the outdoor living areas (typically backyards) of NSA's.

Halton Region Noise Abatement Policy

Halton Region has its own Noise Abatement Policy which was “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.”

The Region Noise Abatement Policy is divided into three sections – A) Existing Residential Development (Retrofit Situations) Policy, B) Regional Road Projects, and C) New Development Policy.

Under the Existing Residential Development Policy section, 60 dBA is the threshold where noise mitigation may be considered. Per the Policy, “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.”

In addition, “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.”

February 26, 2019

Paula Burnard, Senior Environmental Planner

Page 3 of 5

Reference: Regional Road 25 Transportation Corridor Improvements from Steeles Avenue to 5 Side Road, Town of Milton/Town of Halton Hills – Noise Assessment

ANALYSIS

Two scenarios were calculated:

1. Future noise levels without improvements to Regional Road 25 (year 2031)
2. Future noise levels with 6 lanes (+ turning lanes) on Regional Road 25 (year 2031)

Traffic volume data for this section of Regional Road 25 (James Snow Parkway to 5 Side Road) was provided by Halton Region and indicates that the following:

- Current traffic volume = 19,000 average annual daily traffic (AADT)
- Future traffic volume with proposed improvements (2031) = 31,000 AADT
- Future traffic volume without proposed improvements (2031) = 31,000 AADT
- Combined medium and heavy truck traffic for this segment of Regional Road 25 is estimated to be 18% of total traffic volume; the remainder is assumed to be car traffic (current and future)
- Daytime (7 am – 11 pm) traffic is assumed to be 90%, with the remaining 10% at night (11 pm – 7am)
- Speed limit for this section of Regional Road 25 is 70 km/hr

In addition, the following assumptions and factors were utilized:

- Noise Descriptor = L_{eq} (16hr)
- Receptor Height = 1.5m above the ground

PROJECTED NOISE LEVELS

Using the MECF noise model, ORNAMENT, unattenuated noise levels were calculated for the Outdoor Living Area (OLA) conditions at the point representing the anticipated receiver location.

To assess the daytime OLA noise levels, calculations were completed assuming the amenity area would be at a 3.0m offset from the rear of the existing residential units per MECF standards.

It is important to note that future traffic volume projections remain unchanged between the improved and unimproved states. Therefore, noise generation values between these two conditions also remain unchanged. We have completed calculations at the OLA for the future traffic conditions to determine if a noise wall will be required due to increased road traffic anticipated through the widening of Regional Road 25 (refer to Figure 2).

The resultant noise level calculations for all three residential units are summarized in Table 1 (below) and Exhibit 1 (attached):

February 26, 2019

Paula Burnard, Senior Environmental Planner

Page 4 of 5

Reference: Regional Road 25 Transportation Corridor Improvements from Steeles Avenue to 5 Side Road, Town of Milton/Town of Halton Hills – Noise Assessment

Table 1: Summary of Calculated Noise Levels

Receiver Location	Distance from Receiver Location to Noise Source (m)		Projected Noise Level dBA Leq (16 hr)		
	Existing or Future without Improvements (4 Lanes)	Future with Improvements (6 Lanes) (NB/SB)	Existing (2016) / Future without Improvements	Future with Improvements Lanes (2031)	Difference in Noise Level (with and without improvements)
Receiver 1 8584 Regional Road 25	53.5	53.5	52.3	54.5	2.2
Receiver 2 8598 Regional Road 25	58.0	58.0	55.0	57.2	2.2
Receiver 3 8604 Regional Road 25	58.0	58.0	46.3	48.4	2.1

CONCLUSIONS

The conclusions of the noise assessment for the Regional Road 25 improvements are as follows:

The difference between the projected noise levels with and without the proposed improvements to the Regional Road 25 corridor for the future (2031) conditions were determined to be less than 5 dBA at the receiver locations.

February 26, 2019

Paula Burnard, Senior Environmental Planner

Page 5 of 5

Reference: Regional Road 25 Transportation Corridor Improvements from Steeles Avenue to 5 Side Road, Town of Milton/Town of Halton Hills – Noise Assessment

Under Halton Region's Noise Abatement Policy, within the Existing Residential Development Policy section, 60 dBA is the threshold where noise mitigation may be considered. Per the Policy, "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."

Therefore, the consideration of noise mitigation is not warranted based on the MTO Noise Protocol and Halton Region Noise Abatement Policy within the Regional Road 25 corridor.

Stantec Consulting Ltd.



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Attachment: Exhibit 1 – Noise Assessment Outdoor Living Area
Stamson Report

c. Ann Larkin, Halton Region
Gord Murray, Stantec Consulting Ltd.

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
 Description: Mun No 8584 - Current Conditions

Road data, segment # 1: Reg Rd 25

 Car traffic volume : 14022 veh/TimePeriod
 Medium truck volume : 0 veh/TimePeriod
 Heavy truck volume : 3078 veh/TimePeriod
 Posted speed limit : 70 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

 Angle1 Angle2 : -4.00 deg 3.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 53.50 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Reg Rd 25

 Source height = 2.06 m

ROAD (0.00 + 52.33 + 0.00) = 52.33 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -4 3 0.64 75.51 0.00 -9.07 -14.10 0.00 0.00 0.00
 52.33

 Segment Leq : 52.33 dBA

Total Leq All Segments: 52.33 dBA

TOTAL Leq FROM ALL SOURCES: 52.33

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
Description: Mun No 8584 - Future Conditions

Road data, segment # 1: Reg Rd 25

Car traffic volume : 22878 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 5022 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

Angle1 Angle2 : -4.00 deg 3.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 53.50 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Reg Rd 25

Source height = 2.06 m

ROAD (0.00 + 54.46 + 0.00) = 54.46 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-4 3 0.64 77.64 0.00 -9.07 -14.10 0.00 0.00 0.00
54.46

Segment Leq : 54.46 dBA

Total Leq All Segments: 54.46 dBA

TOTAL Leq FROM ALL SOURCES: 54.46

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
 Description: Mun No 8598 - Current Conditions

Road data, segment # 1: Reg Rd 25

 Car traffic volume : 14022 veh/TimePeriod
 Medium truck volume : 0 veh/TimePeriod
 Heavy truck volume : 3078 veh/TimePeriod
 Posted speed limit : 70 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

 Angle1 Angle2 : -0.00 deg 15.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 58.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Reg Rd 25

 Source height = 2.06 m

ROAD (0.00 + 55.04 + 0.00) = 55.04 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -0 15 0.64 75.51 0.00 -9.65 -10.82 0.00 0.00 0.00
 55.04

Segment Leq : 55.04 dBA

Total Leq All Segments: 55.04 dBA

TOTAL Leq FROM ALL SOURCES: 55.04

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
Description: Mun No 8598 - Future Conditions

Road data, segment # 1: Reg Rd 25

Car traffic volume : 22878 veh/TimePeriod
Medium truck volume : 0 veh/TimePeriod
Heavy truck volume : 5022 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

Angle1 Angle2 : -0.00 deg 15.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 58.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Reg Rd 25

Source height = 2.06 m

ROAD (0.00 + 57.16 + 0.00) = 57.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-0	15	0.64	77.64	0.00	-9.65	-10.82	0.00	0.00	0.00
57.16									

Segment Leq : 57.16 dBA

Total Leq All Segments: 57.16 dBA

TOTAL Leq FROM ALL SOURCES: 57.16

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
 Description: Mun No 8598 - Future Conditions, Attenuated

Road data, segment # 1: Reg Rd 25

Car traffic volume : 22878 veh/TimePeriod
 Medium truck volume : 0 veh/TimePeriod
 Heavy truck volume : 5022 veh/TimePeriod
 Posted speed limit : 70 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

Angle1 Angle2 : -0.00 deg 15.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 58.00 m
 Receiver height : 1.50 m
 Topography : 2 (Flat/gentle slope; with
 barrier)
 Barrier angle1 : -0.00 deg Angle2 : 15.00 deg
 Barrier height : 2.00 m
 Barrier receiver distance : 3.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: Reg Rd 25

Source height = 2.06 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
2.06	1.50	1.53	1.53

ROAD (0.00 + 51.12 + 0.00) = 51.12 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -0 15 0.52 77.64 0.00 -8.95 -10.82 0.00 0.00 -6.75
 51.12

Segment Leq : 51.12 dBA

Total Leq All Segments: 51.12 dBA

TOTAL Leq FROM ALL SOURCES: 51.12

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
 Description: Mun No 8604 - Current Conditions

Road data, segment # 1: Reg Rd 25

 Car traffic volume : 14022 veh/TimePeriod
 Medium truck volume : 0 veh/TimePeriod
 Heavy truck volume : 3078 veh/TimePeriod
 Posted speed limit : 70 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

 Angle1 Angle2 : -1.00 deg 1.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 58.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Reg Rd 25

 Source height = 2.06 m

ROAD (0.00 + 46.32 + 0.00) = 46.32 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -1 1 0.64 75.51 0.00 -9.65 -19.54 0.00 0.00 0.00
 46.32

Segment Leq : 46.32 dBA

Total Leq All Segments: 46.32 dBA

TOTAL Leq FROM ALL SOURCES: 46.32

Filename: Regional Road 25 Corridor Study Time Period: 16 hours
 Description: Mun No 8604 - Future Conditions

Road data, segment # 1: Reg Rd 25

Car traffic volume : 22878 veh/TimePeriod
 Medium truck volume : 0 veh/TimePeriod
 Heavy truck volume : 5022 veh/TimePeriod
 Posted speed limit : 70 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Reg Rd 25

Angle1 Angle2 : -1.00 deg 1.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 58.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Reg Rd 25

Source height = 2.06 m

ROAD (0.00 + 48.44 + 0.00) = 48.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

-1	1	0.64	77.64	0.00	-9.65	-19.54	0.00	0.00	0.00
48.44									

Segment Leq : 48.44 dBA

Total Leq All Segments: 48.44 dBA

TOTAL Leq FROM ALL SOURCES: 48.44