

**REPORT NO. WA07-090
REVISION 1**

**ENVIRONMENTAL NOISE STUDY
MISSISSAUGA BUS RAPID TRANSIT (BRT) SYSTEM
BRT EAST – HURONTARIO STREET TO RENFORTH DRIVE
CITY OF MISSISSAUGA**

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MAY 28, 2009

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<u>INDEX</u>	<u>PAGE</u>
EXECUTIVE SUMMARY	
1.0 INTRODUCTION	1
2.0 GENERAL APPROACH AND PROJECT DESCRIPTION	4
3.0 SOUND LEVEL CRITERIA	6
4.0 ANALYSIS AND RESULTS	9
5.0 FINDINGS AND RECOMMENDATIONS	22
TABLES	
FIGURES	
PHOTOGRAPHS	
APPENDIX A: TRAFFIC VOLUMES	
APPENDIX B: MEASUREMENTS	
APPENDIX C: CALCULATIONS	
APPENDIX D: STANDARDS	

May 29, 2009 - BRT East

EXECUTIVE SUMMARY

This study has been carried out to investigate the potential noise impact of the proposed Mississauga Bus Rapid Transitway (BRT) East from Hurontario Street to Renforth Drive on the adjacent/nearby noise sensitive areas. The study dealt with the existing and future ambient as well as the future with the undertaking sound levels and their impact on the noise sensitive receptors.

The applicable sound level criteria are based on the Ministry of the Environment (MOE), Ministry of Transportation (MTO), Region of Peel and City of Mississauga noise guidelines and policies for transportation and stationary sources of noise.

Twenty six receptor locations were selected to represent the receptors (21 residential properties and 5 commercial properties) within the study area. Calculations for the busway were based on a Leq 16 hour daytime descriptor (i.e. 07:00-23:00) and a Leq 8 hour nighttime descriptor (i.e. 23:00-07:00). Calculations for the stations were based on a Leq 1 hour descriptor for day (i.e. 07:00 – 10:00), evening (i.e. 19:00 – 20:00) and night (i.e. 06:00-07:00). The day, evening and night hours used for noise assessment were selected to represent the peak (i.e. worst-case) operational hours for the stations.

The daytime ambient sound levels (levels without the busway) are predicted to be in the range of 50 to 65dBA (residential receptors) and 64 to 72dBA (commercial receptors) for the existing conditions and in the range of 51 to 67 dBA (residential receptors) and 65 to 73 dBA (commercial receptors) for the future conditions.

The daytime future sound levels associated with the Busway are predicted to be in the range of 44 to 55dBA (residential receptors) and 55 to 70dBA (commercial receptors), while the future sound levels associated with the BRT stations are predicted to be in the range of <40 to 53dBA day, <40 to 51dBA evening and <40 to 46dBA night (residential receptors).

Attended and unattended sound level measurements were taken at typical receptors (residences) in the study area. The measured daytime ambient sound levels are in the range of 49 to 62 dBA, while the measured nighttime sound levels are in the range of 51 to 60 dBA. The measured hourly ambient sound levels are in the range of 45 to 61 dBA day, 48 to 60 dBA evening and 54 to 63 dBA night.

The excesses of the measured daytime ambient sound levels over the corresponding predicted sound levels are in the range of 1 to 4dBA, which are considered to be acoustically insignificant to noticeable and are attributed to variations between the measured and modeled road traffic volumes and compositions and to the presence of exterior sources of noise that were not part of the prediction model. Based on this, the use of the predicted sound levels was

deemed to yield consistent and reasonable results for the purpose of this study.

Based on the MOE sound level criteria, all the residential receptors are predicted to have insignificant to noticeable noise impacts (in the range of 1 to <5dBA) and accordingly, there is no need to consider the application of noise control measures as the predicted increases do not exceed 5 dBA. On the other hand, some of the commercial receptors are predicted to have insignificant to significant noise impacts (in the range of 1 to <10dBA) and accordingly, there is a need to consider the application of noise control measures as the predicted increases exceed 5 dBA.

Accordingly, the results of this investigation and the recommendations in this study recommend that noise control measures be installed at three different locations (near commercial properties at Tahoe Boulevard/Eastgate Parkway; Tahoe Boulevard/Eglinton Avenue West and Orbitor Drive/Eglinton Avenue West) within the study area as a result of bus operations within the BRT system.

In accordance with an MOE Condition of Approval for the EA Addendum, commitments are made with regards to noise monitoring timing, locations, duration, MOE governing guidelines, report contents and submittal, as well as noise mitigation, if warranted.

With respect to construction noise, the closest residences are identified to be along Audubon Boulevard, Copseholm Terrace, Curia Crescent, Rathburn Road East/Meadows Boulevard between Curia Crescent and Central Parkway East, Alta Court and Chalfield Lane and the closest commercial buildings are identified to be along Orbitor Drive/Eglinton Avenue West, Tahoe Boulevard/Eglinton Avenue West and Tahoe Boulevard/Eastgate Parkway. Typical construction equipment sound levels are provided along with several recommended noise mitigation measures to mitigate the adverse noise effects during construction. The latter include restricting noisy activities to daytime hours, adherence to City's Noise By-Law, implementation of control procedures during construction and the inclusion of special provisions in the contract documents.

Mitigation measures are also recommended to control noise levels due to maintenance activities, which include restricting noisy activities to daytime hours, adhering to the City's Noise Control By-law and seeking and obtaining exemptions as warranted.

1.0 INTRODUCTION

The services of SS Wilson Associates were retained by the Consulting Engineering firm, McCormick Rankin Corp. to prepare an Environmental Noise Study for the Mississauga Bus Rapid Transit (Mississauga BRT).

Mississauga's Rapid Transit program is centered on the Mississauga Bus Rapid Transit (Mississauga BRT) facility, a busway running across the heart of the City. The project is now getting underway, courtesy of funding from the federal, provincial, and municipal governments. The Preliminary Design of the facility is currently being undertaken and construction is scheduled to be completed by 2013.

The Mississauga BRT facility was planned and approved under the *Ontario Environmental Assessment Act* in the early 1990s, and an Environmental Assessment (EA) Addendum for an updated plan was approved in 2005. The EA and EA Addendum were reviewed and approved by the Ministry of the Environment (MOE) subject to some Conditions of Approval. Two of the Conditions of Approval required that additional noise assessment works be completed. The applicable Conditions of Approval are outlined below.

Given the requirements of the MOE Condition of Approvals, an updated noise assessment has been undertaken to identify potential effects, mitigation measures, and to develop a preliminary monitoring strategy to be refined during Detail Design and implemented during the construction and operations components of the project.

This report documents the updated noise assessment for the section of the BRT facility between Hurontario Street and Renforth Drive running alongside Eastgate Parkway and Eglinton Avenue West. That section of the BRT is also known as "BRT East". This noise assessment has been completed for the recommended Preliminary Design. An updated noise assessment is also being completed for the section of the BRT facility between Winston Churchill Boulevard and Erin Mills Parkway to the north of Highway 403 (BRT West). The BRT West noise analysis will be documented in a separate report.

The general location of the BRT East study area is shown in Figure 1.

The objectives of this study are to:

- Measure and predict the existing ambient sound levels;
- Determine the potential changes to the existing ambient sound levels due to the undertaking;
- Assess the predicted changes in the noise environment and to recommend measures to mitigate and monitor noise effects as warranted and in accordance with the recommendations outlined in the 1991 noise report (ref. SS Wilson Associates Noise Report No. W90-72 dated February 1, 1991) and commitments

to future work as identified in the Environmental Assessment and Environmental Assessment Addendum.

A letter will be submitted to the Ministry of the Environment for their review and comment in support of compliance with the above-noted Conditions of Approval.

The Mississauga BRT is also subject to a Screening under the *Canadian Environmental Assessment Act*. In keeping with commitments made in the project-specific CEAA Screening Report, this report will also be submitted to Transport Canada for their review.

Condition of Approval of the EA Report (part of Condition #3)

As a Condition of Approval (part of Condition #3) to the EA Report, the MOE required that written confirmation be provided to indicate that the recommendations of the noise report prepared by S.S. Wilson in 1991 will be adhered to.

3. *Prior to commencement of construction and the completion of detailed construction design of a stage, the Corporation of the City of Mississauga shall supply to the Ministry of Environment and Energy's Director of Central Region for review and approval:*

- *...
A letter stating that all the recommendations contained in the S.S. Wilson and Associates Report, Environmental Noise Study, Proposed Mississauga Busway System, W90-72 (February 1, 1991) will be followed.*

Details regarding compliance with the recommendations from the previous noise report are outlined in Section 5.2 (Recommendations).

Condition of Approval of the EA Addendum Report

In response to the EA Addendum Report, the MOE recommended that following the design of the BRT the City should monitor noise levels near potentially affected residential sites to ensure that noise levels are in keeping with Ministry of the Environment noise guidelines.

In the approved EA, the City committed to monitoring noise levels prior to and following Transitway operation near potentially effected residential sites. During the preparation of the Addendum, public concern was expressed regarding noise levels in the Erin Mills Parkway area. Although the City has demonstrated that any increase in noise falls within Ministry guidelines, it is recommended that the City continue to monitor noise levels after the design stage in the Erin Mills Parkway area to ensure that these levels are in keeping with the Ministry of the Environment noise guidelines.

This study represents a joint effort with the Consulting Engineering Firm, McCormick Rankin Corp., who provided the necessary traffic data and overall project direction.

This Revision 1 incorporate the comments received from the Ministry of the Environment in regards to the clarification of several statements, the correction factor of +5 dBA and typographical errors.

2.0 GENERAL APPROACH AND PROJECT DESCRIPTION

2.1 General Approach

Road traffic (busway) sound levels have been predicted using the Ministry of the Environment (MOE) noise prediction model, ORNAMENT, which is based on the technique developed by the U.S. Federal Highway Administration (FHWA) and enhanced by the Ministry of Transportation and the Ministry of the Environment.

The STAMSON program Version 5.04 (2000) was used for calculating all road and bus traffic sound levels based on analysis of multiple road sections/segments to further enhance its three-dimensional capabilities. STAMSON is the computerized version of the MOE's current noise prediction model, ORNAMENT.

The road traffic sound level calculations are primarily based on the average daily traffic volumes (AADT), percentages of medium and heavy vehicles, posted speed limits, road to receptor distance, elevation differential between the road and the receptor, roadway gradient, pavement type and the type of ground cover between the road and the receptor in question.

Based on MOE guidelines for predicting road traffic noise, the equivalent daytime sound level in dBA, Leq corresponding to the average hourly volume of the 16 hours traffic (07:00-23:00) was used for noise impact assessment, i.e. Leq_{16h} in dBA. For information purposes, the equivalent nighttime sound level in dBA, Leq_{8h} corresponding to the average hourly volume of the 8 hours traffic (23:00-07:00) was included in this study.

For BRT stations, stationary source assessment procedures were employed as was recommended by the MOE. The approach requires the assessment of hourly sound levels (i.e. Leq_{1h}).

Stationary sources sound levels assessed were predicted using an ISO-based prediction model developed by SS Wilson Associates. The stationary sound level calculations are based on reference sound emission levels of buses and cars, bus and car volumes, distance setbacks, acoustic shielding by barriers and other structures, ground and atmospheric attenuation, and grade elevations.

Noise measurements (attended: short term over a period of 4 hours and unattended: long term over a period of 5 days) were carried out to establish the sound emission levels of buses and cars and the prevailing ambient sound levels. The short term attended measurements were used in the stationary source prediction model, while the long term unattended measurements were used to verify the predicted ambient sound levels due to road traffic.

For the purpose of this study, the environmental noise impact assessment is based on the change in sound levels above the future ambient sound levels.

2.2 Project Description

The BRT East system extends from Hurontario Street to Renforth Drive running alongside Eastgate Parkway and Eglinton Avenue West in the City of Mississauga.

BRT East will consist of ten BRT stations (City Centre/Hurontario; Central Parkway; Cawthra Road; Tomken Road; Dixie Road; Tahoe Boulevard; Etobicoke Creek; Spectrum Way; Orbitor Drive & Renforth Drive) and a busway connecting the stations. The busway is grade separated at Sherwoodtowne Boulevard, Central Parkway, Eastgate Parkway, Cawthra Road, Tomken Road, Dixie Road, Fieldgate Drive, Tahoe Boulevard, Eglinton Avenue West, Spectrum Way, Satellite Drive, Orbitor Drive, Explorer Drive and Commerce Boulevard.

The busway will be an exclusive, grade separated, two lane, bus-only roadway with stations that allow for integration with local road bus services. The stations will include such infrastructure items as GO Transit and Mississauga BRT platforms, local bus platforms, passenger drop-off areas, passenger shelters, waiting areas, pedestrian overpasses, concrete safety barriers, fencing, where required, parking facilities and access roads, elevators, stairs, etc.

Plans and profiles pertaining to the existing and proposed project conditions have been supplied by McCormick Rankin Corp.

Road and bus traffic data pertaining to the existing and proposed project conditions have also been supplied by McCormick Rankin Corp.

Appendix A includes the traffic data used in this study.

3.0 SOUND LEVEL CRITERIA

3.1 MOE SOUND LEVEL CRITERIA FOR BUS MOVEMENTS

At the present time, there are no provincial regulations or policies for the control of individual or cumulative bus sound levels operating on provincial or municipal roadways.

The only applicable provincial legislation is the Highway Traffic Act which requires all vehicles to be equipped with exhaust muffling devices. On the other hand, the Federal Government has published noise emission standards for new buses not to exceed 83 dBA at 15m when tested at the manufacturer's facilities.

The following summarizes the MOE noise criteria endorsed for the City of Mississauga BRT system (ref. MOE letter dated November 29, 1990):

1. Bus Movements Between Stations

The noise should be assessed on a 16/8 hour basis, 07:00-23:00 and 23:00-07:00. The criteria should be 55 dBA, day-time and 50 dBA, night-time, or the ambient in either period, whichever is higher. Control measures need be applied only if the excess is more than 5 dB.

2. Bus Stops

Simple bus stops do not have to be separated from the general noise produced by the moving buses.

3. Bus Stations

Bus stations are stationary sources and should be assessed in accordance with NPC-105 (now NPC-205, a copy of which is included in Appendix D). This implies assessment using 1 hour Leq and the limit being defined by the pre-existing ambient noise level.

3.2 MOE SOUND LEVEL CRITERIA FOR CONSTRUCTION EQUIPMENT

The Ministry of the Environment (MOE) Publications NPC-115 "Construction Equipment" and NPC-118, "Motorized Conveyances" deal with sound levels generated by construction equipment. These publications do not set overall combined sound level limits due to construction sites but set limits for noise generated by the individual pieces of equipment used on construction sites.

With respect to truck noise, the governing criteria are contained in the Federal Government safety test standards for manufacturing of new trucks included in

their publication titled "SECTION 1106-Noise Emission Tests for Motor Vehicles, and the relevant Consolidated Regulations of Canada, 1978 amended by SOP-179-115, September 1, 1979: Section 1106". Typical trucks maximum sound emission level is 83 dBA for a vehicle gross weight of over 4500 kg.

3.3 APPLICABLE SOUND LEVEL CRITERIA

The following sound level criteria apply to all vehicular and bus traffic within the BRT system:

- The applicable sound level descriptor is the A-Weighted Equivalent Sound Pressure Level, Leq in dBA established for the daytime period from 07:00 to 23:00, also referred to as Leq16 hr, dBA. Nighttime period from 23:00 to 07:00 assessment of the noise impact will not be considered.
- The objective for outdoor sound levels when applying mitigation measures is the higher of the Leq16 hr 55 dBA or the future do-nothing ambient. Mitigation will attempt to achieve sound levels as close to these levels as is administratively, economically and technically feasible.
- The significance of a noise impact, also referred to as the 'excess' or 'change' will be quantified by comparing the future sound levels with the higher of the Leq16 hr 55 dBA and/or the future do-nothing ambient. The excess or change of the future sound levels relative to the existing ambient must also be determined.
- The degree of effort applied, and action for mitigation of the noise impact should conform to Table 1.
- Where the future sound level exceeds Leq16 hr 55 dBA and the increase in the sound levels above the future do-nothing ambient exceeds 5 dBA, the feasibility of noise control measures within the right-of-way will be investigated. Appropriate measures will be introduced such that, where feasible, a minimum attenuation (averaged over the first row of receivers) of 5 dBA can be achieved.

Additional considerations that must be incorporated are outlined below:

- To define the area of noise impact from the BRT, the smallest study area should be defined using one or more of the following methods:
 - Using 5 dBA contour lines extending from the source to a noise sensitive area where there is no increase above the ambient sound level;
 - A noise sensitive area where there is no increase above the ambient sound level;
 - A perpendicular distance of 200 m from the closest edge of pavement.
- The noise impact on noise sensitive areas is to be determined for outdoor spaces.
- There is no minimum number of residences that define a noise sensitive area. Therefore, all noise sensitive land uses, regardless of size or location, are to be assessed for application of noise control measures.

- The existing ambient sound levels will be based on the existing road and traffic information at the time of project initiation (in this study the existing traffic was based on year 2007).
- Future do-nothing ambient is the sound level 10 years after construction (in this study the future-do-nothing traffic was based on year 2017) of a Busway if no action had been taken to improve transportation facilities.
- Future sound levels from the project will be based on traffic projections to the horizon years of the project (in this study the future BRT traffic was based on year 2021).
- Off right-of-way noise control measures will not be considered.
- Impact assessment ratings may be interpreted based on Table 1.
- The sound levels will be established using prediction models acceptable to the City of Mississauga and Province of Ontario.
- Consideration must be given to the noise impacts of moving traffic on the BRT busway as well as stationary noise sources such as equipment and bus/car operations within the BRT stations.

4.0 ANALYSIS AND RESULTS

4.1 AMBIENT/BACKGROUND NOISE

Ambient noise used in the context of this report is the sound levels at the selected receptor locations without the additional noise generated by the BRT East system.

The existing ambient/background sound levels are due to vehicular traffic on the nearby highways/roadways in the area including Highway 403, Eastgate Parkway, Eglinton Avenue West, the intersecting arterial roads and the associated interchange ramps of Hwy 403. The following is a list of the transportation sources of noise considered in this study:

- Highway 403
- Eastgate Parkway
- Eglinton Avenue West
- Hurontario Street
- Central Parkway East
- Cawthra Road
- Tomken Road
- Dixie Road
- Renforth Drive

It should be noted that there are other major sources of transportation noise affecting the area of concern which were not included in the estimation of the ambient noise. The sources include aircraft and railway noise which were specifically excluded from the analysis in order to comply with the MOE recommendation for the exclusion of sources of noise that are fairly intermittent in nature.

Ambient noise due to vehicular traffic movements on the above-noted highways/roadways were calculated using the MOE ORNAMENT noise prediction model (STAMSON Version 5.04(2000)) based on the road traffic data supplied by McCormick Rankin Corp.

The predicted day and night ,i.e. Leq(16h) and Leq(8h) ambient sound levels are listed in Table 4.1 (existing ambient)/(future-do-nothing ambient) and in Table 4.2 (existing ambient), while the predicted hourly day, evening and night (i.e. Leq(1h)) ambient sound levels are listed in Table 4.3.

Appendix A contains the road traffic data used for the ambient noise calculations, while Appendix C includes sample ambient noise calculations.

4.2 POINTS OF RECEPTION

Points of reception are considered any point on the premises of a person where sounds originating from other than the premises are received.

For the purposes of this study, twenty six locations were selected to represent the closest points of reception to both the busway and stations, which may potentially be affected by noise. The receptor heights were taken at Outdoor Living Areas (OLA's) when calculating the BRT busway sound levels and at typical first and second storey windows when calculating the BRT stations sound levels.

The following gives a brief description of the selected receptors (denoted Re1 to Re26):

Residential Receptors

- Re1 Apartment building on Tucana Court.
- Re2 Townhouse on Porto Fino Place.
- Re3 Apartment building on Acorn Place.
- Re4 House #292 Laurentian Avenue.
- Re5 House #446 Aberfoyle Court.
- Re6 House along Sagamore Circle.
- Re7 House on Bigham Crescent.
- Re8 House #1713 Chalkdene Grove.
- Re9 House #1685 Copseholm Trail.
- Re10 House #1507 Bough Beeches Boulevard.
- Re11 House #4384 Poltava Crescent.
- Re12 House #1311 Underwood Drive.
- Re13 House #1199 Highgate Place.
- Re14 House #4402 Lee Drive.
- Re15 House #4404 Shelby crescent.
- Re16 House #4336 Forest Fire Lane.
- Re17 House #4329 Wilcox Road.
- Re18 House #4328 Curia Circle.
- Re19 Townhouses #385-405 Rathburn Road.
- Re20 House #4331 Alta Court.
- Re21 House #217 Chalfield Lane.

Commercial Receptors

- Re22 Commercial building at south-east corner of Sherwoodtowne Boulevard and Highway 10.
- Re23 Commercial building at south-east corner of Tahoe Boulevard and Eastgate Parkway.
- Re24 Commercial building at north of intersection of Tahoe Boulevard and

- Eglinton Avenue West.
- Re25 Commercial buildings at north of intersection of Orbitor Drive and Eglinton Avenue West.
- Re26 Centennial Centre, 2 storey commercial buildings along the south side of Eglinton Avenue West between Commerce Boulevard and Renforth Drive.

Figures 2.1 to 2.12 show the locations of the selected receptors.

Photographs 1 to 24 show different views of the study area and surroundings.

4.3 DESCRIPTION OF THE NOISE SOURCES

The primary sources of noise associated with the proposed BRT system are bus movements operating on the bus lanes and all bus activities within the stations. Other sources of noise of lesser magnitude include automobile traffic using the designated parking areas associated with the stations and possibly mechanical equipment associated with the stations. The noise emitted by buses is due to bus exhaust, engine and tire/ground interaction depending on the bus speed and the type of pavement.

Since noise prediction methodologies for buses moving on a roadway or within a station are different, the description of the specific bus activities and associated sound levels will be dealt with separately.

1. In-Between Stations

At Ground Level

Buses are expected to operate between stations at up to 90 km/h, except near the stations where buses will be accelerating and decelerating.

The traffic noise prediction model used for the assessment of bus movements between the stations is the MOE noise prediction model "ORNAMENT" (STAMSON Version 5.04(2000)).

For this analysis, no other sources of noise were considered along the busway since buses are the predominant part of vehicular traffic allowed within the BRT system corridor.

In Cut Sections

The BRT corridor is planned to be in a retained (i.e. below grade) cut at a limited number of sections along the proposed alignment as summarized below:

- Proximity to residential:

- 100m near Fieldgate Drive
- Proximity to Offices:
 - 10m near Sherwoodtowne Boulevard
 - 40m near Tahoe Boulevard
 - 25m near Bell Mobility Offices
 - 20m near Orbitor Drive

When buses travel in cut sections, they will be totally/partially shielded depending on the geometry of the intervening lands between the BRT lanes and the receptors. This acoustic shielding effect will reduce the bus sound levels. On the other hand, when buses travel in cut sections there will be multiple reflections “reverberations” as a result of the presence of hard/reflecting walls. These reverberations will increase the bus sound levels. When the effects of both acoustic shielding and reverberations are taken into account, the overall result

A typical section where the possible acoustic effects may develop is shown in Figure 3.1, where the right-of-way is restricted. Other sections may include an underpass below other existing roadways.

For bus movements along the BRT busway in a retained cut, sound waves reflect back and forth across the alignment one or more times before ultimately progressing outwards towards nearby receptors. These multiple reflections have the potential to increase the sound levels at certain points of reception, depending on the geometry of the situation.

While cut sections, in general, are sometimes considered as sound barriers as a result of their ability to diffract the sound waves around their edge(s), the added reflected sound waves create a reverberant sound field thus resulting in higher sound levels which may offset the noise reduction due to the sound barrier effect created by the cut section.

For receptors further away from deep cuts, the net result is minor reduction in the sound levels and further away from shallow cuts, the net result is minor increase in the sound levels. For close-by receptors, the net result is a noticeable increase in the sound levels for both deep and shallow cuts.

For elevated receptors, near and far, the net result is always a noticeable increase (in the order of 4 to 6 dBA) in the sound levels in addition to prolonged exposure to the noise signal and the possible change of the character of noise to be that of an echo.

Therefore, the terms “net result”, “net effect”, “effect” and “added effect” refer simply to the fact that both cut section effects (i.e. acoustic shielding and reverberations) are accounted for in the calculations of bus sound levels while traveling below grade in cut sections.

The foregoing findings are based on the assumption that the surfaces of the cut section are hard reflecting such as with the use of concrete and asphalt with nearly vertical side walls.

Figure 3.2 illustrates a typical BRT section in a cut that is in the order of 3-4m high and typical multiple reflection paths; single and double reflected sound rays and potential for sound barrier effect.

A ray tracing and energy integrating sound level prediction model has been developed to model typical cross-sections along the proposed BRT alignment where noise-sensitive receptors exist. The model took into account the paths of the primary noise signal as well as four (4) reflected sound rays with single and two reflections. Based on this analysis, the following is concluded:

- For residential receptors at 100+m, the added net effect is up to 4 dBA for ground floor receptors. For higher floors, the effect is up to 5 dBA.
- For office receptors at 10-25m, there is no expected sound level reduction and the added effect is up to 6 dBA depending on the receptor height in the offices.

For simplification purposes, a correction factor of +5 dBA has been added to the predicted BRT free-field traffic at all receptors of concern affected by the noted cut sections.

In summary, for all BRT cut sections, an adjustment factor of +5 dBA is manually added to the corresponding STAMSON segments. For BRT sections at ground level, no adjustments were added to the corresponding STAMSON segments. The +5dBA adjustment used in the prediction of the future BRT sound levels has nothing to do with BRT daily/hourly traffic volumes.

2. Within the Stations

The primary sources of noise within a bus station are due to a variety of bus activities and movements within the designated areas of the stations where buses accelerate, decelerate, idle and move at constant speeds. Such activities generate different sound levels and the time or duration of each event varies. Since the ORNAMENT model cannot deal with such complex evaluations, a different approach was followed whereby the sound emission levels of buses operating under different conditions were actually measured in Mississauga and the results were then used to compose overall noise exposure levels at the specific points of reception.

Bus sound level measurements were taken recently within the City of Mississauga's Transit Garage located at 975 Central Parkway West. The

measured bus sound emission levels were used in the subsequent calculations of the bus station sound levels.

Sound levels due to bus activities within the bus stations were calculated using an ISO based 3-D computer program developed by SS Wilson Associates for multiple receptors and multiple noise sources. The program takes into account the following factors:

- Reference sound levels and reference distances for the various bus movements or activities.
- Reference sound levels for vehicular traffic activities within the parking area.
- Volume of buses.
- Divergence (distance) attenuation.
- Sound barrier attenuation, where applicable.
- Ground and Atmospheric attenuation (as modified by source/receiver elevations and the intervening sound barrier).
- Source and receptor elevations.

The predicted day and night (i.e. $Leq(16h)$ and $Leq(8h)$) overall future sound levels including the BRT bus lane sound levels are listed in Table 4.2, while the predicted hourly day, evening and night (i.e. $Leq(1h)$) BRT bus station sound levels are listed in Table 4.3.

Appendix A contains the bus traffic data used for bus noise calculations, while Appendix C includes sample bus noise calculations.

The BRT Bus volumes used are based on the horizon year 2021 as listed in the last two sheets (tables) in Appendix A. The bus activity at BRT Stations Table (second last sheet in Appendix A) lists bus volumes (stopping/through/terminating) for 24 hr/day/evening/night periods. The BRT station peak hour volumes listed in columns 5 to 7 (from the left) were used for the daytime peak period of 7 a.m. – 10 a.m., while the evening peak hour (7 p.m. – 8 p.m.) was based on 35% of the entire evening period volume and the night peak hour (6 a.m. – 7 a.m.) was based on 30% of the entire night period volume as advised by MRC.

The Bus volumes on BRT Links (2021) Table (last sheet in Appendix A) includes 24 hour bus volumes for the horizon years 2014 and 2021 as well as day (12 hr)/evening 4 hr/night (8 hr) bus volumes for the horizon year 2021. The bus volumes corresponding to the horizon year 2021 are used in this Noise Report.

Since no detailed station plans are available at this time to show the design of the specific station where a station building will be constructed, the noise from any potential mechanical equipment such as ventilation fans and air

conditioning equipment was not considered at this point. It is worth noting that the noise from mechanical equipment are expected to be lower than the noise generated by the bus/car movements and also due to the present of high ambient/background sound levels.

4.4 SOUND LEVEL MEASUREMENTS

General

Short term (attended) bus and long term (un-attenuated) ambient sound level readings were taken during the course of preparation of this noise study.

The scope of bus noise measurements was to conduct actual field testing of the sound levels emitted by the City of Mississauga buses when operated under normal operating conditions for the purpose of estimating the overall sound levels generated by the busway and stations. The bus sound levels measured may be considered as sound emission levels for buses performing different operations such as idling, accelerating, decelerating, etc.

The scope of the ambient noise measurements was to conduct actual field testing to confirm the accuracy of the predicted ambient noise level in order to support and enhance the calculated levels and indicate if and where anomalies exist in the prediction model.

Instrumentation

The attended bus sound level measurements were performed using the following equipment:

- Rion NA-28 & NA-27, Type 1 Precision Integrating Sound Level Meters and Real Time Frequency Analyzers fitted with 1/1 & 1/3 Octave Bands filters and 1/2" condenser microphones c/w windscreen and mounted on tripods.
- Bruel & Kjaer Precision Calibrator Model B&K 4231.

The unattended ambient sound level measurements were performed using the following equipment:

- Three Rion NL-22 Integrating Sound Level Meters fitted with 1/2" condenser microphones c/w windscreens. The sound level meters were contained in weather-protected environmental casings.
- Bruel & Kjaer Precision Calibrator Model B&K 4231.
- Ancillary field equipment including tripods and telescopic poles

Procedures

The sound level measurement procedures were primarily based on the Ministry

of Environment procedures in their Publication NPC-103 "Procedures", the recommendations of the instrument manufactures and the best engineering practices to suit site specific conditions. The sound level meters were checked and calibrated before and following completion of the measurement sessions without any appreciable change in the sound levels.

The weather conditions during the measurement sessions were favourable for measurements as the local wind speed did not exceed 15 km/hr and there was no precipitation.

The attended bus measurements were carried out on Friday, September 28 and Friday, October 3, 2007, while the un-attenuated ambient measurements were carried out from September 22 to 26, 2008.

Locations

The following gives a brief description of the sound level measurements locations:

Attended Bus Measurements

The measurements were conducted within the City of Mississauga Transit Garage located at 975 Central Parkway West at set distance setbacks of 10m from bus moving lane and of 7.5m from bus idling lots.

The buses tested included typical vehicles of the Mississauga Transit fleet that will be used on the BRT corridor including articulated vehicles due to their potential for higher sound levels.

Unattended Ambient Measurements

Three locations were selected for noise measurements. The measurement locations are taken at receptors Re6, Re11 and Re16.

Location Re16 represents residences located south of the proposed Cawthra Road bus station, location Re11 represents residences located south of the proposed Dixie Road bus station, and location Re6 represents residences/commercial buildings located south of the proposed Renforth Drive bus station.

Table 2 includes a summary of the logarithmically averaged bus and car sound levels, which were used for sound level modeling in this report.

Table 3.1 lists the measured daytime (averaged over a 15 hour period from 7 a.m. to 11 p.m.) and nighttime (averaged over an 8 hour period from 11 p.m. to 7 a.m.) ambient sound levels. Table 3.2 lists the measured lowest hourly ambient

sound levels for the day (3 hour period of 7 a.m. to 10 a.m.), evening (1 hour period 7 p.m. – 8 p.m.) and night (1 hour period 6 a.m. to 7 a.m.). the day/evening/night time periods referenced in Table 3.2 coincide with the BRT stations peak activity hours, which were used in the stationary noise impact assessment. When the Leq (8h) nighttime sound levels listed in Table 3.1 are compared with the Leq (1h) nighttime sound levels, the latter levels are higher than the former levels due to the fact that vehicular traffic during the early morning hours of 6 a.m. to 7 a.m. is higher than the hourly vehicular traffic when averaged over the whole 8 hour nighttime period of 11 pm. To 7 a.m.

Figures 2.3, 2.5 and 2.8 show the unattended ambient noise measurement locations.

Appendix B includes the noise measurement results.

4.5 RESULTS

The overall existing sound levels were found to be largely due to vehicular traffic on the existing Highway 403, interchange ramps and arterial roads.

The measured existing day and night ambient sound levels are in the range of Leq (16h) 49 to 62 dBA day and 51 to 60 dBA night (ref. Table 3.1).

The measured lowest existing hourly ambient sound levels are Leq(1h) 45 to 61 dBA day, 48 to 60 dBA evening and 54 to 63 dBA night (ref. Table 3.2).

Sound levels were predicted due to three different noise sources:

1. Bus traffic along the Busway.
2. Activities within the stations. This includes local and BRT buses entering into, existing from, maneuvering and idling within the station boundaries as well as cars entering into, existing from and idling within the Kiss & Ride and Park & Ride Facilities (where applicable).
3. Vehicular traffic on the existing Highway 403, interchange ramps and arterial roads. These constitute the sources of ambient sound levels.

The predicted existing ambient sound levels are in the range of Leq (16h) 50 to 65dBA day (residential receptors) and 64 to 72 dBA (commercial receptors) (ref. Tables 4.1 and 4.2).

The predicted future ambient sound levels are in the range of Leq (16h) 51 to 67dBA day (residential receptors) and 65 to 73 dBA (commercial receptors) (ref. Table 4.1).

The predicted future overall project sound levels (including the BRT system) are in the range of Leq (16h) 52 to 67dBA day (residential receptors) and 68 to 75

dBA (commercial receptors) (ref. Table 4.2).

The predicted lowest existing hourly ambient sound levels are Leq(1h) 49 to 65dBA day, 48 to 64dBA evening and 46 to 64dBA night, while the predicted highest hourly future BRT station sound levels are Leq(1h) <40 to 53dBA day, <40 to 51dBA evening and <40 to 46dBA night (ref. Table 4.3).

Table 5.1 includes comparisons between the measured and predicted average day and night ambient sound levels, while Table 5.2 includes comparisons between the measured and predicted lowest hourly day, evening and night ambient sound levels. The reported sound level differences can be attributed to several factors including but not limited to differences in traffic volumes, traffic compositions, traffic speeds, extraneous sources, inclement/favourable meteorological conditions, etc., between the measured and predicted levels.

The comparisons show differences of 1 to 4 dBA during the day between the measured and predicted sound levels. These differences are considered to be acoustically insignificant to noticeable and are attributed to variations in the road traffic volumes/compositions used in the predictions and the one measured in the field and to the presence of external noise sources that could not be accounted for in the prediction model. Therefore, the use of the predicted levels in this study is considered as being more consistent for noise impact assessment purposes.

It should be noted that the hourly ambient sound levels are only used in the establishment of the applicable sound level criteria for the stationary noise impact assessment of BRT stations (ref. MOE Publication NPC-205).

With regards to the listed ambient sound levels, we offer the following additional comments and explanations:

- Receptor Re6 is located at a considerable distance setback from the proposed Renforth Drive BRT Station. The predicted hourly BRT Station sound levels are Leq (1h) 46 dBA day/<46 dBA evening/<45 dBA night. These sound levels are less than the Exclusion Limits (i.e. the minimum ambient levels) of Leq (1h) 50 dBA day/47 dBA evening/45 dBA night set by the MOE for this study area [this study area Class 1 Area (Urban)]. Therefore, it is irrelevant which set of hourly ambient levels is used as both sets are higher than the MOE Exclusion Limits.
- Receptor Re11 is physically shielded by an earthen berm located south of Eastgate Parkway between Dixie Road and Fieldgate Drive) from the proposed Dixie BRT Station. The predicted hourly BRT station sound levels are Leq (1h) <53 dBA day/<51 dBA evening/<46 dBA night. These sound levels are less than the measured and predicted hourly ambient sound levels. Therefore, the noise impact assessment/results will not be affected as both ambient sound level sets are higher than the BRT station sound levels.
- Receptor R16 is physically shielded by an earthen berm (located south of Eastgate Parkway between Cawthra Road and Tomken Road) from the

proposed Cawthra BRT station. The predicted hourly BRT Station sound levels are Leq (1h) <40 dBA day/<40 dBA evening/<40 dBA night. These sound levels are less than the Exclusion Limits (i.e. the minimum ambient levels) of Leq (1h) 50 dBA day/47 dBA evening/45 dBA night set by the MOE for this study area [Class 1 Area (Urban)]. Therefore, it is irrelevant which set of hourly ambient levels is used as both sets are higher than the MOE Exclusion Limits.

Based on the above reasoning, it is equally valid to use either sets of hourly ambient sound levels. However, in the March 15, 2009 Noise Report, the predicted hourly/daily/nightly ambient sound levels are used for noise impact assessment purposes as they yield more consistent data.

4.6 IMPACT ASSESSMENT

In impact assessment of highway projects, in general the MOE recommends comparing the predicted future sound levels of the undertaking with the existing ambient sound levels and/or the future-do-nothing without the undertaking sound levels. The degree of change between any two sound levels reflects the significance of the impact, whether an increase in the level (undesirable) or a decrease in the level (desirable). In addition, the magnitude of the change is also important in assessing how the public would react, in general, to the increased or decreased highway noise levels.

For this project, a new dimension has been added, which is the BRT noise component as it relates to the existing ambient due to Highway 403, interchange ramps and arterial roads. The latter noise is also subject to change from existing to future conditions with the natural increase in highway/roadway traffic without the BRT component. The existing Highway 403, interchange ramps and arterial roads traffic is a dynamic element, which is expected to also increase with or without the BRT system.

Accordingly, the impact assessment methodology followed in this study relied on the following:

- (i) For receptors located along the BRT route, the impact is assessed for Outdoor Living Areas (OLA's) and is based on the following:
 - Comparing the future sound level including the BRT noise component with the future sound level excluding the BRT noise component.
 - For information purposes, we are providing a comparison of the future sound level including the BRT system component noise with the existing ambient sound level, which represents the actual magnitude of the change in sound level the general public will be exposed to due to the combined effect of the future road noise and the BRT system noise. While this comparison is factual, it does not represent the potential change due to

the BRT system noise and accordingly, was not used for decision making purposes.

- (ii) For receptors located in proximity to the BRT stations (not bus stops), the impact is assessed at the first and second storey windows on the most exposed building façades of the residential dwellings and is based on comparing the future (worst case scenario) BRT station noise levels with the higher of the existing highway/roadway ambient noise level or the minimum exclusionary sound level limits set by the MOE for urban Class 1 areas similar to the one under consideration.

The data included in Tables 4.1 and 4.2 show that the ambient and future sound levels at most of the selected receptors are higher than the MOE/Region/City day-time Leq 55 dBA objective.

The data included in Table 4.2 show that the calculated excesses of the future sound levels over the ambient levels are up to 4 dBA (i.e. acoustically noticeable) at the residential receptors and up to 6 dBA (i.e. acoustically significant) at the commercial receptors. The calculated excesses are within the maximum 5 dBA excess criterion at the residential receptors, but are over the maximum 5 dBA excess criterion at the commercial receptors.

The data included in Table 4.3 show that in the case of the station activities, there is no calculated excess sound level over the ambient, i.e. the station sound levels are predicted to be within the applicable criteria.

4.7 MITIGATION

For bus movements along the BRT busway, mitigation is warranted if the excess of the future sound levels above the ambient is greater than 5 decibels in the Outdoor Living Areas (OLA's).

For bus/car operations within the BRT stations, mitigation is warranted if the future sound levels exceed the higher of the existing ambient levels or the MOE exclusionary limits for urban Class 1 areas. (MOE Class 1 Area means an area with an acoustical environment typical of a major population centre, where the background noise is dominated by the urban hum).

The purpose of mitigation, when introduced is to reduce (as administratively, economically and technically feasible) the predicted future project noise levels to the objective level. The objective level is the higher of ambient noise level or Leq (16h) 55 dBA in the case of bus movements along the BRT busway and the higher of ambient noise level or Leq (1h) 50 dBA day/47dBA evening/45dBA night in the case of bus/car activities within the BRT stations.

In accordance with the applicable sound level criteria, no noise mitigation is

warranted at all the residential receptors (Re1 to Re21) and two commercial receptors (Re22 and Re26) since the noise impact due to the BRT Busway is predicted to be less than 5 dBA and the noise impact due to the BRT stations is predicted to be within the prevalent ambient noise.

For three commercial receptors (Re23, Re24 and Re25), noise mitigation is warranted since the noise impact due to the BRT Busway is predicted to be more than 5 dBA due to the placing of the BRT corridor in a retained (i.e. below grade) cut.

Possible noise control measures include the use of sound absorbing wall finishes (panels capable of providing minimum absorptive co-efficient of 0.6 at 250 Hz and progressively higher values at higher frequencies and/or plantings) and/or side walls on outward slopes, which can reduce or eliminate the added effects of multiple reflections/reverberations. The sound absorbing wall finish is recommended to be installed to cover not less than 80% of the retained cut wall areas and shall have the following extents:

- Re23 at Tahoe Boulevard/Eastgate Parkway: 120m north/120m south of Tahoe boulevard centre line at Eastgate Parkway
- Re24 at Tahoe Boulevard/Eglinton Avenue West: 75m east/75m west of Tahoe boulevard centre line at Eglinton Avenue West
- Re25 at Orbitor Drive/Eglinton Avenue West: 120m east/120m west of Orbitor Drive centre line at Eglinton Avenue West

Figures 4.1 to 4.3 show different wall cut acoustic treatment concepts.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 FINDINGS

This study has been carried out to research all aspects related to the potential noise impact of the BRT system on the nearby noise-sensitive areas which also include nine bus stations. The study dealt with documentation of the existing ambient conditions, the applicable criteria, the future sound levels and noise control measures, where warranted. The study has found that:

1. Vehicular traffic on Highway 403, interchange ramps and arterial roads is considered as the major source of environmental ambient noise within the study area.
2. The predicted sound levels at most of the residences prior to undertaking of the BRT system do exceed the Provincial/Region/City objective of Leq 16 hours 55 dBA due to their close proximity and wide exposure to the existing network of highways and roads. For existing residences (i.e. all residences within the study area), outdoor noise control measures are not warranted if the Outdoor Living Areas sound levels exceed 55dBA.
3. The established excess sound levels due to the BRT system over the existing and future-do-nothing ambient sound levels at all residences are predicted to be no greater than 4dBA; i.e. within the maximum allowable excess of 5 dBA.
4. The established excess sound levels due to the BRT system over the existing and future-do-nothing ambient sound levels at three commercial/office buildings are predicted to be up to 6dBA; i.e. over the maximum allowable excess of 5 dBA.
5. The BRT alignment has been selected in areas that are dominated by noise from well established arterial roads and Highway 403; i.e. the alignment is acoustically compatible with the existing land uses.

5.2 RECOMMENDATIONS

In accordance with MOE Condition of Approval #3, the following recommendations are made in keeping with the 1991 Noise Report:

1991 Noise Report Recommendations	Preliminary Design Recommendations
1. The noise impact due to ultimate bus traffic on the proposed Busway system is considered minor with respect to all locations along the proposed alignment since the increase in sound levels due to bus traffic on the proposed Busway would	Recommendation verified during this assessment for all residential properties. For three commercial/office buildings, the Busway noise impact due to buses traveling in retained cuts is

be a maximum of 5 dBA. This increase is within the MOE/MTO acceptable Protocol criteria for new and expanded roadway projects. Accordingly, additional noise control measures are <u>NOT</u> required.	predicted to exceed 5 dBA. The predicted increases are over the MOE/MTO acceptable Protocol criteria for new and expanded roadway projects. Accordingly, additional noise control measures are required.
2. In the case of the receptors located in the vicinity of the proposed stations, the overall combined noise impact is also considered minor with respect to all proposed stations, and additional noise control measures are also NOT warranted.	Recommendation verified during this assessment
3. To meet the MOE requirements for stationary noise sources during the construction phase of the proposed undertaking, construction equipment used on the site should meet the sound emission level standards set by the MOE. The MOE assesses noise impact during the construction period against the sound level standards set out in Publications NPC-115 and NPC-118 (see Appendix D). These standards limit the allowable levels from the equipment at source rather than at the receiver. In order to meet the above requirements, the equipment will have to be certified by the manufacturer. If such certification is not available or if the equipment is not new, it will be required that the proponent certifies that the actual equipment used based on “on-site” measurements, under typical operating conditions comply with the MOE requirements. Other relevant standards include the Federal Government Standards regulating the noise emissions from heavy and medium trucks.	Recommendation verified during this assessment The following Federal and Provincial Government Standards will be met for this project: - Noise Emissions (Standard 1106) - NPC-115 (Construction Equipment) - NPC-118 (Motorized Conveyances) Appendix D includes copies of these Standards.

4. To improve the acoustical performance of the proposed Busway cuts we recommend that the wall construction materials have reasonable sound absorptive qualities and/or by constructing the cut sidewalls using an outward slope or slant. These measures will improve both the noise perceived at the near-by receptors, the transit system riders	Recommendation verified during this assessment Possible noise control measures include the use of sound absorbing wall finishes (panels capable of providing minimum absorptive coefficient of 0.6 at 250 Hz and progressively higher values at higher frequencies and/or plantings) and/or side walls on outward slopes, which can reduce or eliminate the added effects of multiple reflections/reverberations. The sound absorbing wall finish is recommended to be installed to cover not less than 80% of the wall areas and shall have the following extents: - BRT underpass at Tahoe Boulevard/Eastgate Parkway: 120m north/120m south of Tahoe boulevard centre line at Eastgate Parkway - BRT underpass at Tahoe Boulevard/Eglinton Avenue West: 75m east/75m west of Tahoe boulevard centre line at Eglinton Avenue West - BRT underpass at Orbitor Drive/Eglinton Avenue West: 120m east/120m west of Orbitor Drive centre line at Eglinton Avenue West
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Monitoring

In accordance with an MOE Condition of Approval for the EA Addendum, the following outlines commitments to noise monitoring:

- Sound level monitoring of the existing ambient shall be carried out in advance of construction and following Transitway operations at the residences near the Cawthra Road, Dixie Road and Renforth Drive BRT stations. Monitoring shall be carried out continuously (24 hours, on hourly basis) over a minimum period of 5 days to include 3 weekdays, Saturday and Sunday at typical points of reception that are expected to receive the highest impact.
- Monitoring shall be based on the Ministry of Environment Publications NPC-

- 102 “Instrumentation” and NPC-103 “Procedures” (copies included in Appendix D).
- A noise monitoring report shall be prepared to contain all the relevant data and in accordance with the relevant technical requirements included in MOE Publications NPC-133 “Guidelines on Information Required for the Assessment of Planned Stationary Sources of Sound) and NPC-134 “Guidelines on Information for the Assessment of Planned New Land Uses with respect to Sound and Vibration Impacts” (copies included in Appendix D).
 - Noise monitoring reports will be submitted to Transport Canada at appropriate intervals during construction.
 - It is possible that the monitoring may identify noise effects that will warrant a review of the application of new noise mitigation measures. Should mitigation be warranted a review of appropriate noise control measures will be completed with consideration given to the technical, administrative and economic feasibility of the various mitigation alternatives.
 - The monitoring plan will be refined and finalized in advance of construction and in consultation with MOE.

Construction Noise

Worst-case construction noise levels have the potential to be very loud during some short periods of time. However, noise effects from construction are relatively short compared to operational noise effects, and therefore, they are usually better tolerated by the community at large. As previously noted, the closest sensitive receptors are residences along Audubon Boulevard, Copseholm Terrace, Curia Crescent, Rathburn Road East/Meadows Boulevard between Curia Crescent and Central Parkway East, Alta Court and Chalfield Lane and commercial buildings along Orbitor Drive/Eglinton Avenue West, Tahoe Boulevard/Eglinton Avenue West and Tahoe Boulevard/Eastgate Parkway. There are no other sensitive receptors (e.g. hospitals, daycares, seniors residences) in such close proximity to the alignment.

The following provides an overview of typical construction equipment sound levels.

EQUIPMENT DESCRIPTION	SOUND LEVEL dBA at 15 m Reference Distance
Idling Truck	73
Trucks Unloading	78
Truck Movement	83
Bulldozer	85
Front End Loader	85
Chain Saw	78
Scraper	88
Roller	80
Backhoe	85

EQUIPMENT DESCRIPTION	SOUND LEVEL dBA at 15 m Reference Distance
Crane	83
Diesel Generator	78
Grader	85
Compactor	74
Curb Machine	89
Concrete Truck (Unloading)	73
Cable Trencher	85
Asphalt Machine	74
Jack Hammer	85
Compressor	85

With the application of the following noise mitigation, it is not anticipated that there will be significant adverse noise effects during construction:

- Restricting noisy activities to daytime hours where possible;
- Adhering to the City of Mississauga's Noise Control By-law; and
- Implementing the noise control procedures during construction.

To minimize the potential for construction noise effects, the following provisions will be written into the contract documentation for the contractor.

- General construction will be limited to the time periods outlined in the City of Mississauga's Noise Control By-law. If construction activities are required outside of these hours, exemptions will be sought in advance by the contractor, directly from the City of Mississauga.
- There will be explicit indication that contractors are expected to comply with all applicable requirements of the contract and local noise by-laws. Enforcement of noise control by-laws will be the responsibility of the City of Mississauga for all work done by contractors.
- All equipment will be properly maintained to limit noise emissions in compliance with MOE NPC-115 guidelines. As such, all construction equipment will be operated with effective muffling devices that are in good working order.
- The contract documents will contain a provision that any initial noise complaint will trigger verification that the general noise control measures agreed to be in effect.
- In the presence of persistent noise complaints, all construction equipment will be verified to comply with MOE NPC-115 guidelines.
- In the presence of persistent complaints and subject to the results of a field investigation, alternative noise control measures may be required, where reasonably available. In selecting appropriate noise control and mitigation measures, consideration will be given to the technical, administrative and economic feasibility of the various alternatives.
- Construction mitigation alternatives include but are not limited to:

- Re-scheduling of noisy operations to daytime hours, where possible;
- Use of alternate, quieter equipment or methods, where available; and
- The use of portable, localized noise barriers for critical areas.
- The monitoring program (discussed above) will be implemented to monitor for potential effects due to construction noise. The noise monitoring program requirements will be identified during Detail Design and MOE will be consulted as necessary in the development of the program.
- Noise monitoring reports will be submitted to Transport Canada at appropriate intervals during construction.

Maintenance Noise

Worst-case maintenance noise levels have the potential to be very loud during some short periods of time. However, noise effects from maintenance activities are relatively short compared to operational noise effects, and therefore, they are usually better tolerated by the community at large.

With the application of the following noise mitigation, it is not anticipated that there will be significant potential noise effects during future maintenance activities:

- Restricting noisy activities to daytime hours where possible; and
- Adhering to the City of Mississauga's Noise Control By-law and seeking and obtaining exemptions as warranted.

TABLES

TABLE 1
SUMMARY OF NOISE IMPACT RATING AND ACTION FOR MITIGATION

Future Sound Level, Leq_{16 hr}	Change Above Future Do-Nothing Ambient, dBA	Impact Rating	Mitigation
Equal to or greater than 55 dBA and less than 65 dBA	0 - 3	Insignificant	None
	3 - 5	Noticeable	None
	>5 - 10	Significant	Investigate noise control measures and mitigate to achieve criteria (minimum attenuation is 5 dBA)
	10 +	Very Significant	Investigate noise control measures and mitigate to achieve criteria (minimum attenuation is 5 dBA)
Greater than 65 dBA	0 - 3	Insignificant	Investigate noise control measures and mitigate to achieve criteria (minimum attenuation is 5 dBA)
	3 - 5	Noticeable	Investigate noise control measures and mitigate to achieve criteria (minimum attenuation is 5 dBA)
	>5 - 10	Significant	Investigate noise control measures and mitigate to achieve criteria (minimum attenuation is 5 dBA)
	10 +	Very Significant	Investigate noise control measures and mitigate to achieve criteria (minimum attenuation is 5 dBA)

Note: Mitigation efforts are subject to administrative, economical and technical feasibility.

TABLE 2
SUMMARY OF BUS AND CAR SOUND EMISSION LEVELS

Activity	Sound Emission Level
Bus Moving (slow speed)	73 dBA @ 10m
Bus Idling (normal idle)	71 dBA @ 7.5m
Car Moving (slow speed)	60 dBA @ 15m
Car Idling (normal idle)	56 dBA @ 7.0m

TABLE 3.1
MEASURED DAY AND NIGHT AMBIENT SOUND LEVELS

Location	Day Leq (16h)	Night Leq (8h)
Re6	61 to 62 dBA	59 to 60 dBA
Re11	56 to 57 dBA	54 to 55 dBA
Re16	49 to 54 dBA	51 to 52 dBA

TABLE 3.2
MEASURED LOWEST HOURLY AMBIENT SOUND LEVELS

Location	Day Leq (1h)	Evening Leq (1h)	Night Leq (1h)
Re6	61 dBA	60 dBA	63 dBA
Re11	56 dBA	54 dBA	57 dBA
Re16	45 dBA	48 dBA	54 dBA

Notes

- (1) MOE time periods:
- Day: 7am -7pm
 - Evening 7pm-11pm
 - Night: 11pm-7am
- (2) Time periods used in this study to coincide with BRT station peak hours:
- Day: 7am-10am
 - Evening: 7pm-8pm
 - Night: 6am-7am

TABLE 4.1
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
BRT EAST
WITHOUT BUSWAY
CITY OF MISSISSAUGA

Receptor Code	Receptor Name	Existing Sound Levels dBA	Future Sound Levels dBA	Excess Criteria for mitigation dBA	Future Sound Levels Minus Existing Sound Levels	Significance of the Change due to the Future Sound Levels Minus Existing Sound Levels	Noise Control measures As per Protocol
Re1	Without BRT	62.3	63.9	5	2	Insignificant	Not required
Re2	Without BRT	63.2	65.2	5	2	Insignificant	Not required
Re3	Without BRT	63.0	64.2	5	1	Insignificant	Not required
Re4	Without BRT	63.6	65.2	5	2	Insignificant	Not required
Re5	Without BRT	62.8	64.4	5	2	Insignificant	Not required
Re6	Without BRT	59.2	60.3	5	1	Insignificant	Not required
Re7	Without BRT	50.0	51.1	5	1	Insignificant	Not required
Re8	Without BRT	55.7	56.8	5	1	Insignificant	Not required
Re9	Without BRT	53.9	55.1	5	1	Insignificant	Not required
Re10	Without BRT	54.4	55.4	5	1	Insignificant	Not required
Re11	Without BRT	54.2	54.8	5	1	Insignificant	Not required
Re12	Without BRT	54.5	55.6	5	1	Insignificant	Not required
Re13	Without BRT	52.5	53.5	5	1	Insignificant	Not required
Re14	Without BRT	53.6	54.5	5	1	Insignificant	Not required
Re15	Without BRT	52.9	54.0	5	1	Insignificant	Not required
Re16	Without BRT	53.3	54.4	5	1	Insignificant	Not required
Re17	Without BRT	61.6	63.2	5	2	Insignificant	Not required
Re18	Without BRT	64.1	65.7	5	2	Insignificant	Not required
Re19	Without BRT	64.5	66.2	5	2	Insignificant	Not required
Re20	Without BRT	65.2	66.9	5	2	Insignificant	Not required
Re21	Without BRT	64.6	65.3	5	1	Insignificant	Not required
Re22	Without BRT	72.1	73.3	5	1	Insignificant	Not required
Re23	Without BRT	63.9	65.0	5	1	Insignificant	Not required
Re24	Without BRT	64.2	65.3	5	1	Insignificant	Not required
Re25	Without BRT	64.6	65.7	5	1	Insignificant	Not required
Re26	Without BRT	66.4	67.5	5	1	Insignificant	Not required

Impact Assessment Receptor
0 to < 3 dB change : Insignificant
=>3 to < 5 dB change : Noticeable

=> 5 to < 10 dB change: Significant
=> 10 dB change : Very Significant

TABLE 4.2
ENVIRONMENTAL NOISE IMPACT ASSESSMENT
BRT EAST
WITH BUSWAY
CITY OF MISSISSAUGA

Receptor Code	Receptor Name	Existing Sound Levels dBA	Future Sound Levels dBA	Excess Criteria for mitigation dBA	Future Sound Levels Minus Existing Sound Levels	Significance of the Change due to the Future Sound Levels Minus Existing Sound Levels	Noise Control measures As per Protocol
Re1	With BRT	62.3	63.9	5	2	Insignificant	Not required
Re2	With BRT	63.2	65.2	5	2	Insignificant	Not required
Re3	With BRT	63.0	64.2	5	1	Insignificant	Not required
Re4	With BRT	63.6	65.2	5	2	Insignificant	Not required
Re5	With BRT	62.8	64.4	5	2	Insignificant	Not required
Re6	With BRT	59.2	60.4	5	1	Insignificant	Not required
Re7	With BRT	50.0	52.0	5	2	Insignificant	Not required
Re8	With BRT	55.7	52.2	5	-3	Noticeable	Not required
Re9	With BRT	53.9	56.7	5	3	Insignificant	Not required
Re10	With BRT	54.4	56.5	5	2	Insignificant	Not required
Re11	With BRT	54.2	58.7	5	5	Noticeable	Not required
Re12	With BRT	54.5	56.0	5	2	Insignificant	Not required
Re13	With BRT	52.5	54.2	5	2	Insignificant	Not required
Re14	With BRT	53.6	56.2	5	3	Insignificant	Not required
Re15	With BRT	52.9	54.1	5	1	Insignificant	Not required
Re16	With BRT	53.3	54.4	5	1	Insignificant	Not required
Re17	With BRT	61.6	63.4	5	2	Insignificant	Not required
Re18	With BRT	64.1	65.9	5	2	Insignificant	Not required
Re19	With BRT	64.5	66.4	5	2	Insignificant	Not required
Re20	With BRT	65.2	67.2	5	2	Insignificant	Not required
Re21	With BRT	64.6	65.4	5	1	Insignificant	Not required
Re22	With BRT	72.1	75.0	5	3	Insignificant	Not required
Re23	With BRT	63.9	68.7	5	5	Noticeable	Not required
Re24	With BRT	64.2	70.8	5	7	Significant	To Be Investigated
Re25	With BRT	64.6	70.9	5	6	Significant	To Be Investigated
Re26	With BRT	66.4	67.8	5	1	Insignificant	Not required

Impact Assessment Rating :

0 to < 3 dB change : Insignificant

=>3 to < 5 dB change : Noticeable

=> 5 to < 10 dB change: Significant

=> 10 dB change : Very Significant

**TABLE 4.3
ENVIRONMENTAL NOISE ASSESSMENT
PROPOSED MISSISSAUGA BRT EAST STATIONS**

Receptor	Time	Maximum Bus Station Sound Level Leq (1h)	Minimum Ambient Noise Level Leq (1h)	MOE Exclusion Limit Leq (1h)	Applicable Criteria Leq (1h)	Excess of Bus Station Sound Level Above Applicable Criteria
Central Parkway East Bus Station						
Re19	Day	51 dBA	65 dBA	50 dBA	65 dBA	n/a
	Evening	48 dBA	64 dBA	47 dBA	64 dBA	n/a
	Night	44 dBA	64 dBA	45 dBA	64 dBA	n/a
Cawthra Road Bus Station						
Re16	Day	<40 dBA	59 dBA	50 dBA	59 dBA	n/a
	Evening	<40 dBA	58 dBA	47 dBA	58 dBA	n/a
	Night	<40 dBA	57 dBA	45 dBA	57 dBA	n/a
Tomken Road Bus Station						
Re14	Day	52 dBA	53 dBA	50 dBA	53 dBA	n/a
	Evening	49 dBA	54 dBA	47 dBA	54 dBA	n/a
	Night	44 dBA	49 dBA	45 dBA	49 dBA	n/a

TABLE 4.3 Cont'd
ENVIRONMENTAL NOISE ASSESSMENT
PROPOSED MISSISSAUGA BRT EAST STATIONS

Receptor	Time	Maximum Bus Station Sound Level Leq (1h)	Minimum Ambient Noise Level Leq (1h)	MOE Exclusion Limit Leq (1h)	Applicable Criteria Leq (1h)	Excess of Bus Station Sound Level Above Applicable Criteria
Dixie Road Bus Station						
Re12	Day	53 dBA	60 dBA	50 dBA	60 dBA	n/a
	Evening	51 dBA	60 dBA	47 dBA	60 dBA	n/a
	Night	46 dBA	57 dBA	45 dBA	57 dBA	n/a
Renforth Drive Bus Station						
Re7	Day	46 dBA	49 dBA	50 dBA	49 dBA	n/a
	Evening	46 dBA	48 dBA	47 dBA	48 dBA	n/a
	Night	45 dBA	46 dBA	45 dBA	46 dBA	n/a

TABLE 5.1
COMPARISON OF MEASURED VERSUS PREDICTED DAY AND NIGHT AMBIENT SOUND LEVELS

Location	Time	Measured Ambient Level	Predicted Ambient Level	Difference (Measured - Predicted Ambient)
Re6	Day, Leq(16h)	61 to 62 dBA	58 dBA	3 to 4 dBA
	Night, Leq(8h)	59 to 60 dBA	51 dBA	8 to 9 dBA
Re11	Day, Leq(16h)	56 to 57 dBA	58 dBA	-1 to -2 dBA
	Night, Leq(8h)	54 to 55 dBA	51 dBA	3 to 4 dBA
Re16	Day, Leq(16h)	49 to 54 dBA	53 dBA	-4 to 1 dBA
	Night, Leq(8h)	51 to 52 dBA	47 dBA	4 to 5 dBA

TABLE 5.2
COMPARISON OF MEASURED VERSUS PREDICTED HOURLY AMBIENT SOUND LEVELS

Location	Time	Measured Ambient Level, Leq(1h)	Predicted Ambient Level, Leq(1h)	Difference (Measured - Predicted Ambient)
Re6	Day	61 dBA	58 dBA	3 dBA
	Evening	60 dBA	58 dBA	2 dBA
	Night	63 dBA	56 dBA	7 dBA
Re11	Day	56 dBA	59 dBA	-3 dBA
	Evening	54 dBA	58 dBA	-4 dBA
	Night	57 dBA	56 dBA	1 dBA
Re16	Day	45 dBA	54 dBA	-9 dBA
	Evening	48 dBA	53 dBA	-5 dBA
	Night	54 dBA	52 dBA	2 dBA

Notes

- (1) MOE time periods:
- Day: 7am -7pm
 - Evening 7pm-11pm
 - Night:11pm-7am
- (2) Time periods used in this study to coincide with BRT station peak hours:
- Day: 7am-10am
 - Evening: 7pm-8pm
 - Night: 6am-7am

FIGURES



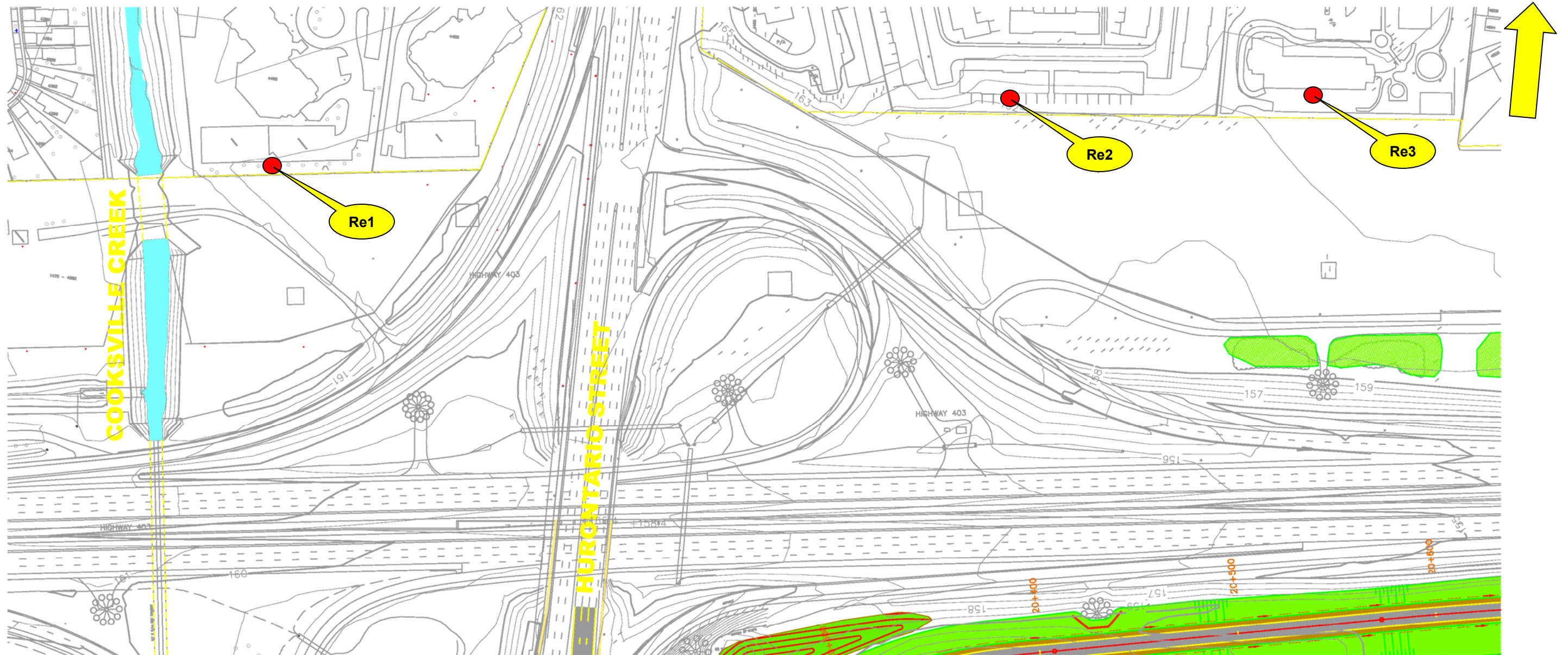


FIGURE 2.1
POINTS OF RECEPTION

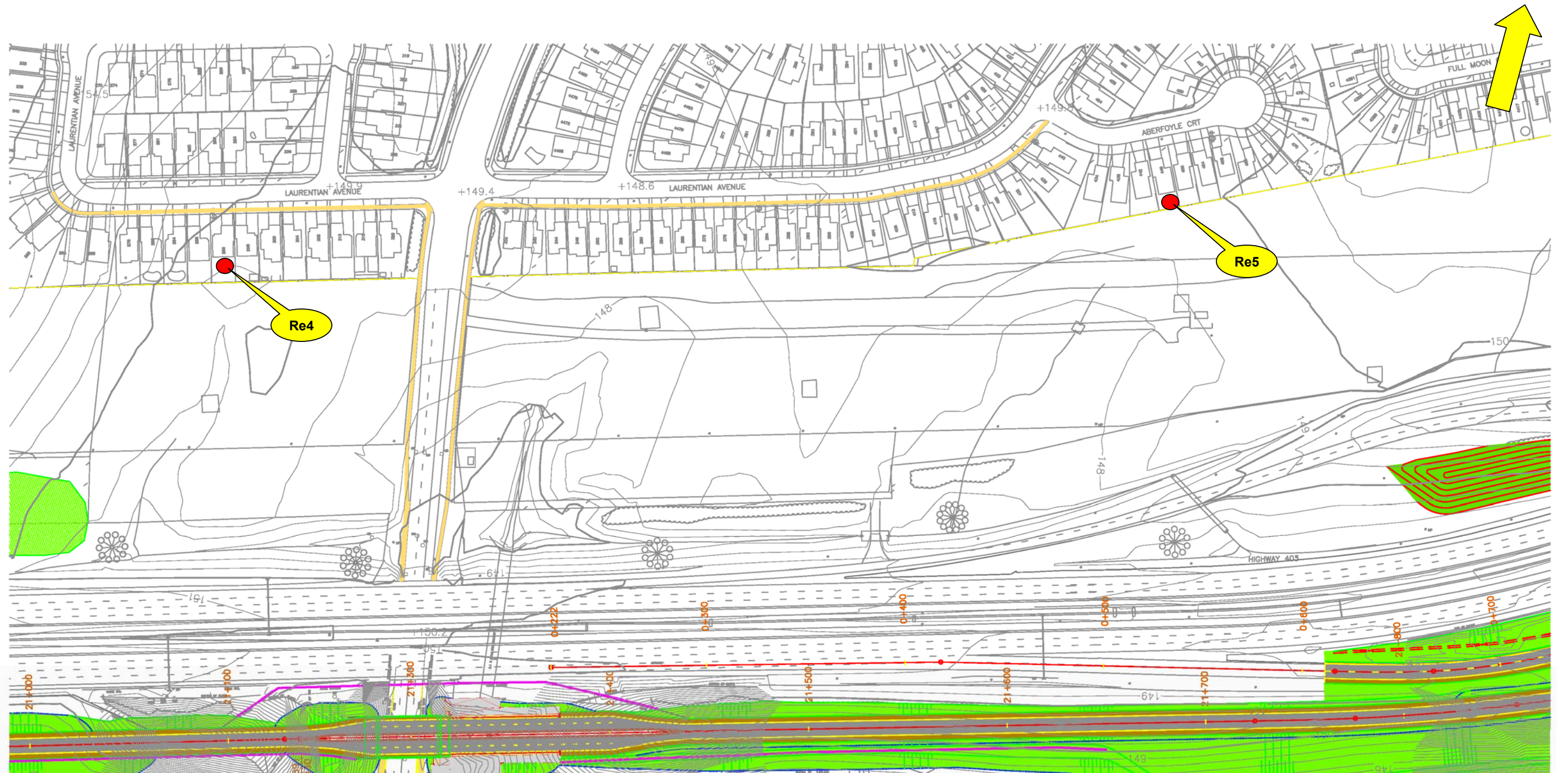
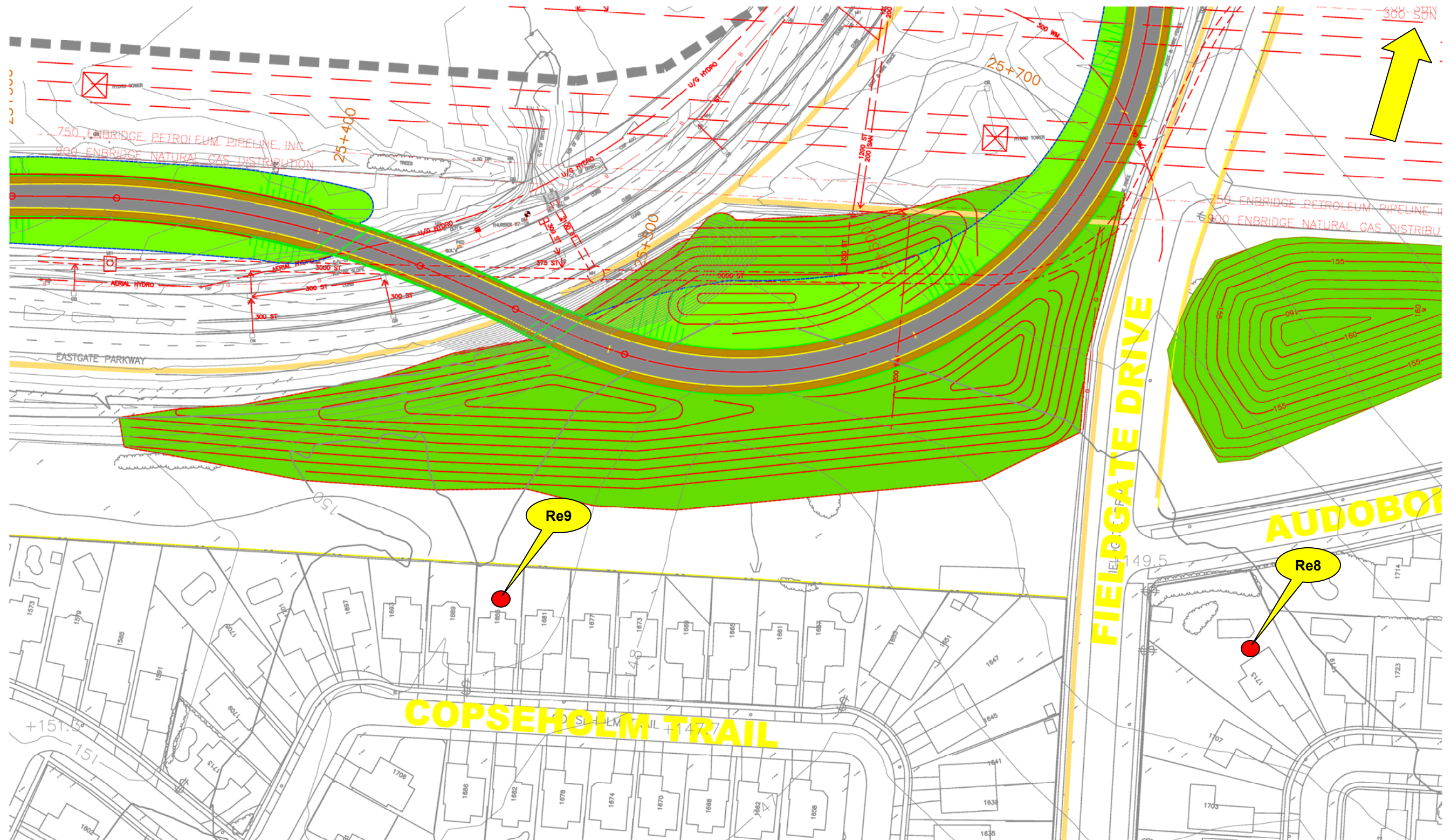


FIGURE 2.2
POINTS OF RECEPTION



FIGURE 2.3
POINTS OF RECEPTION



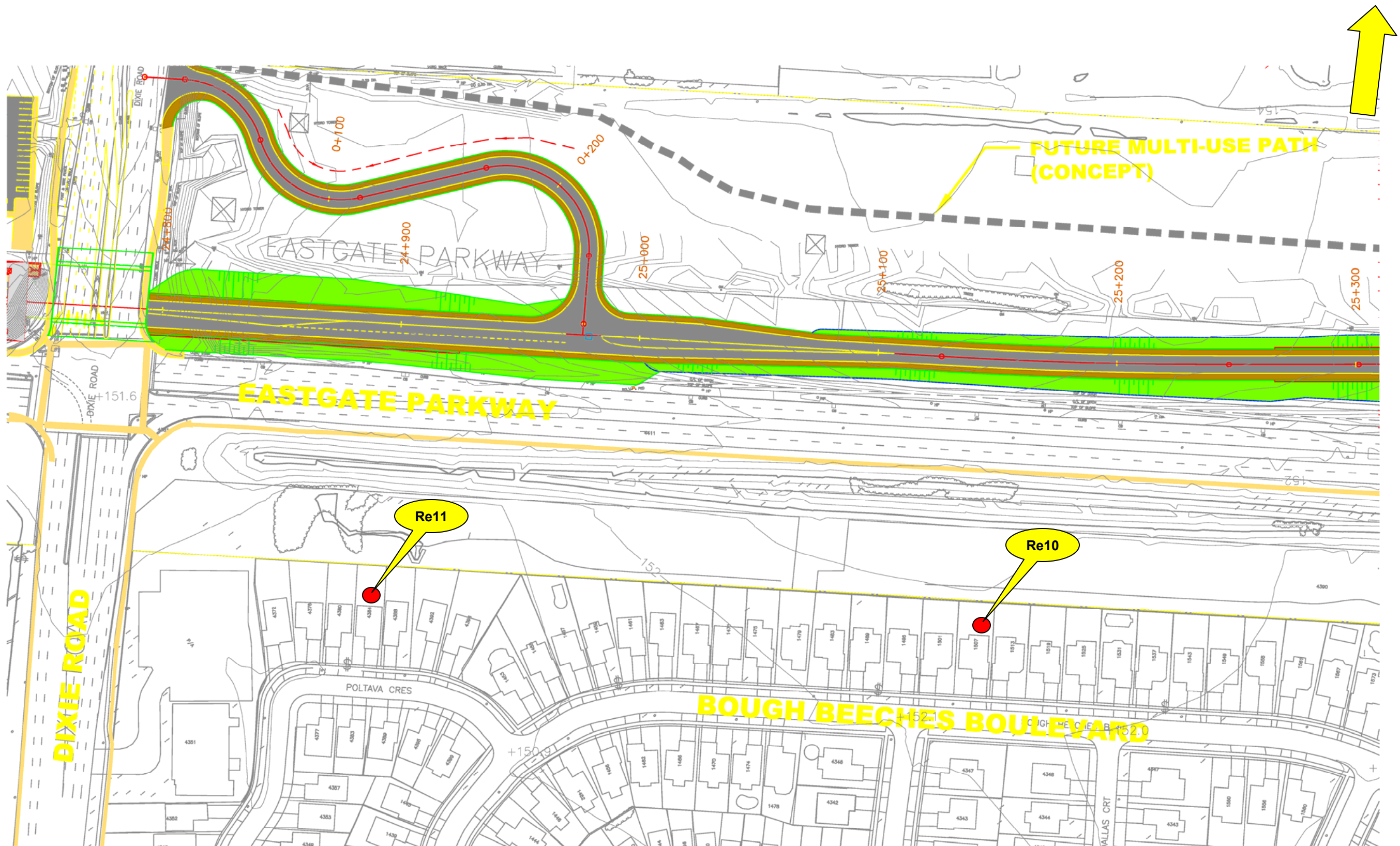


FIGURE 2.5
POINTS OF RECEPTION

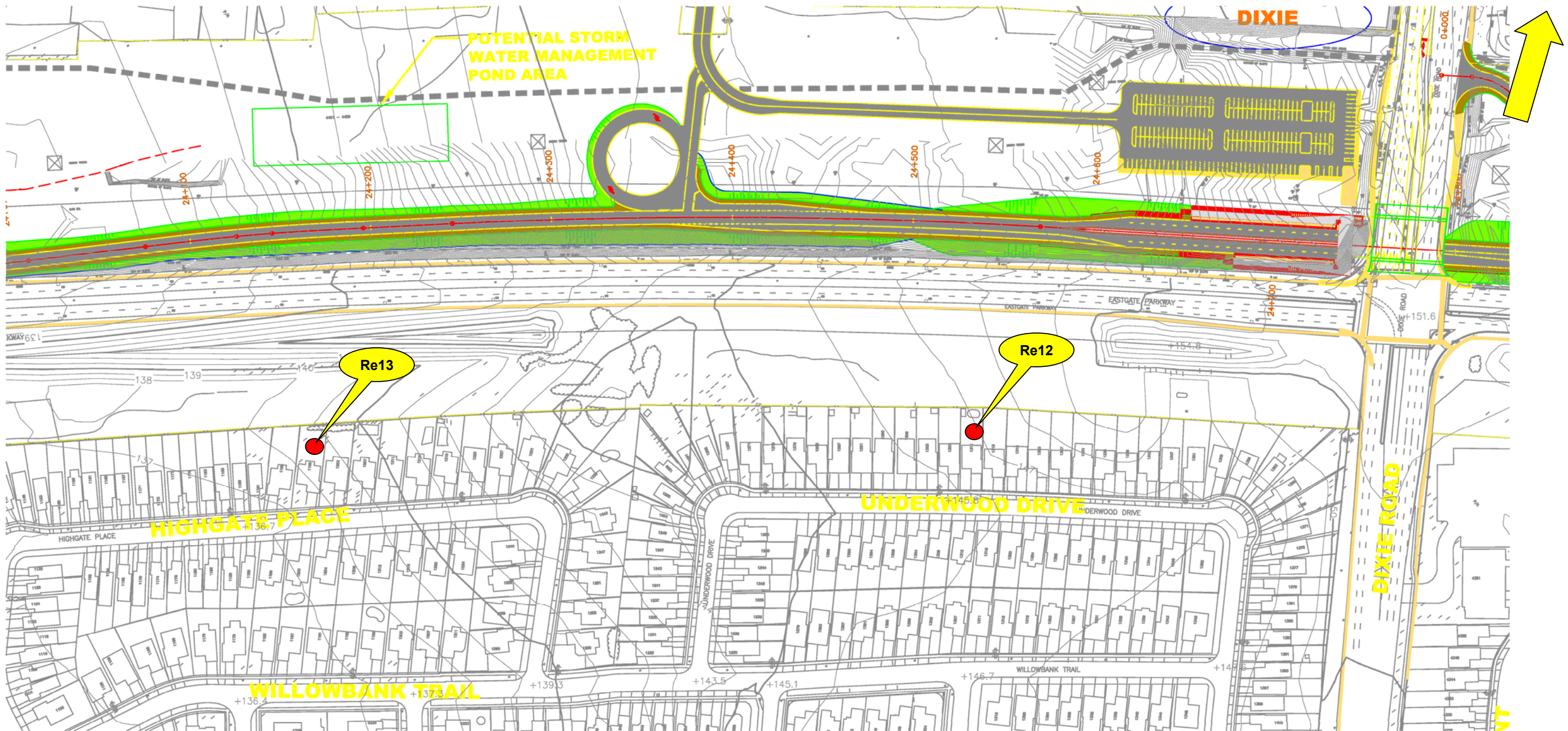


FIGURE 2.6
POINTS OF RECEPTION

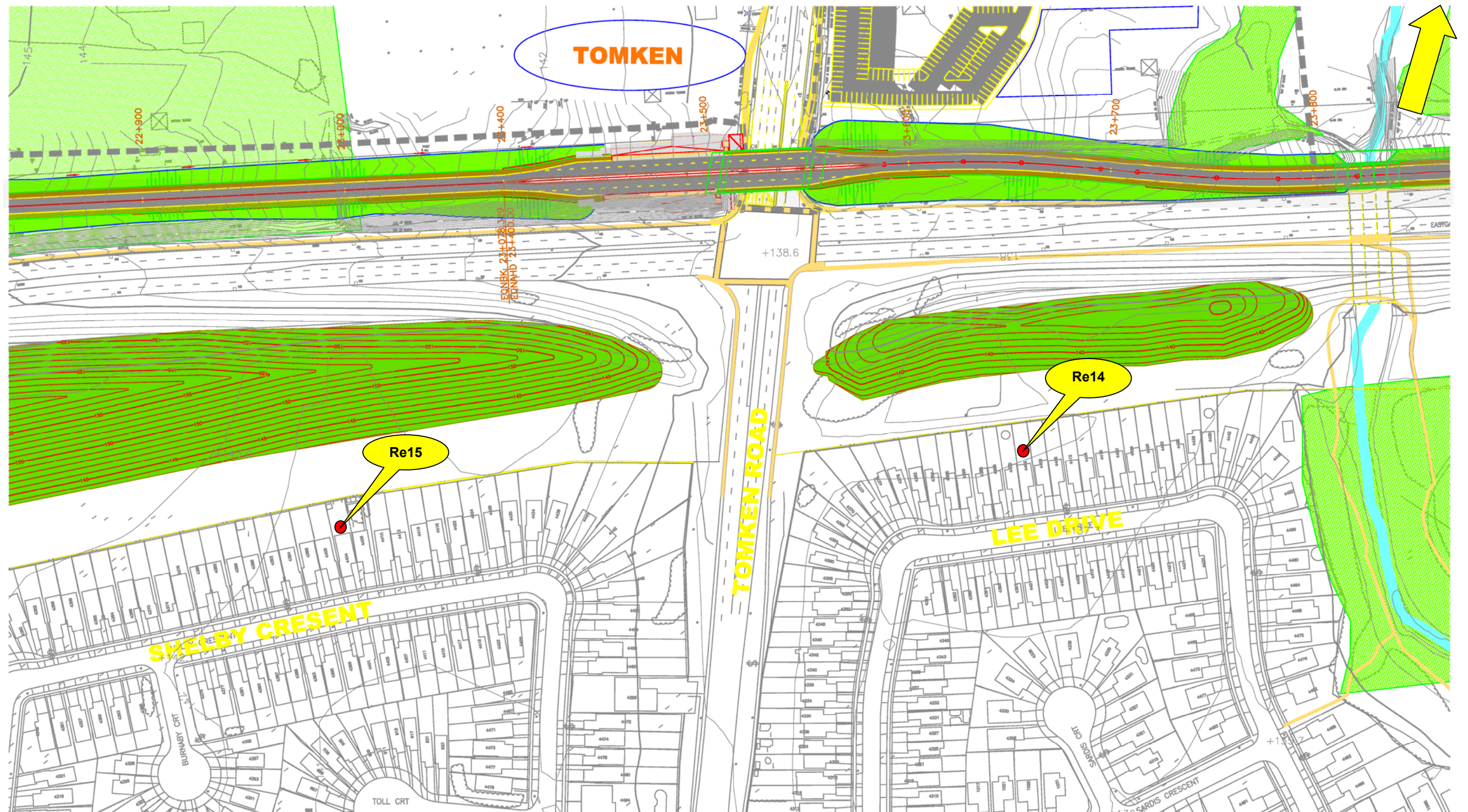


**FIGURE 2.7
POINTS OF RECEPTION**

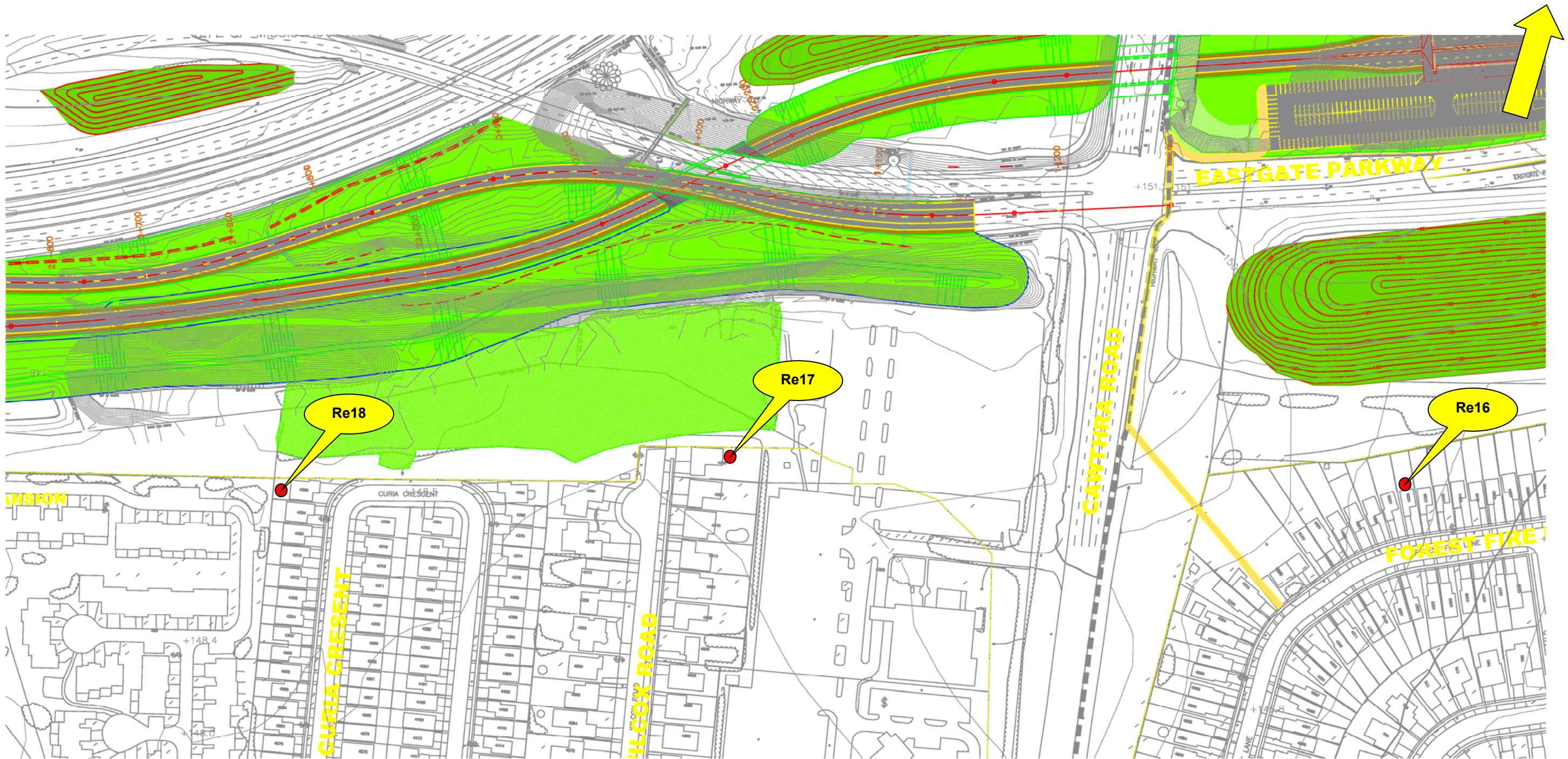


FIGURE 2.8
POINTS OF RECEPTION

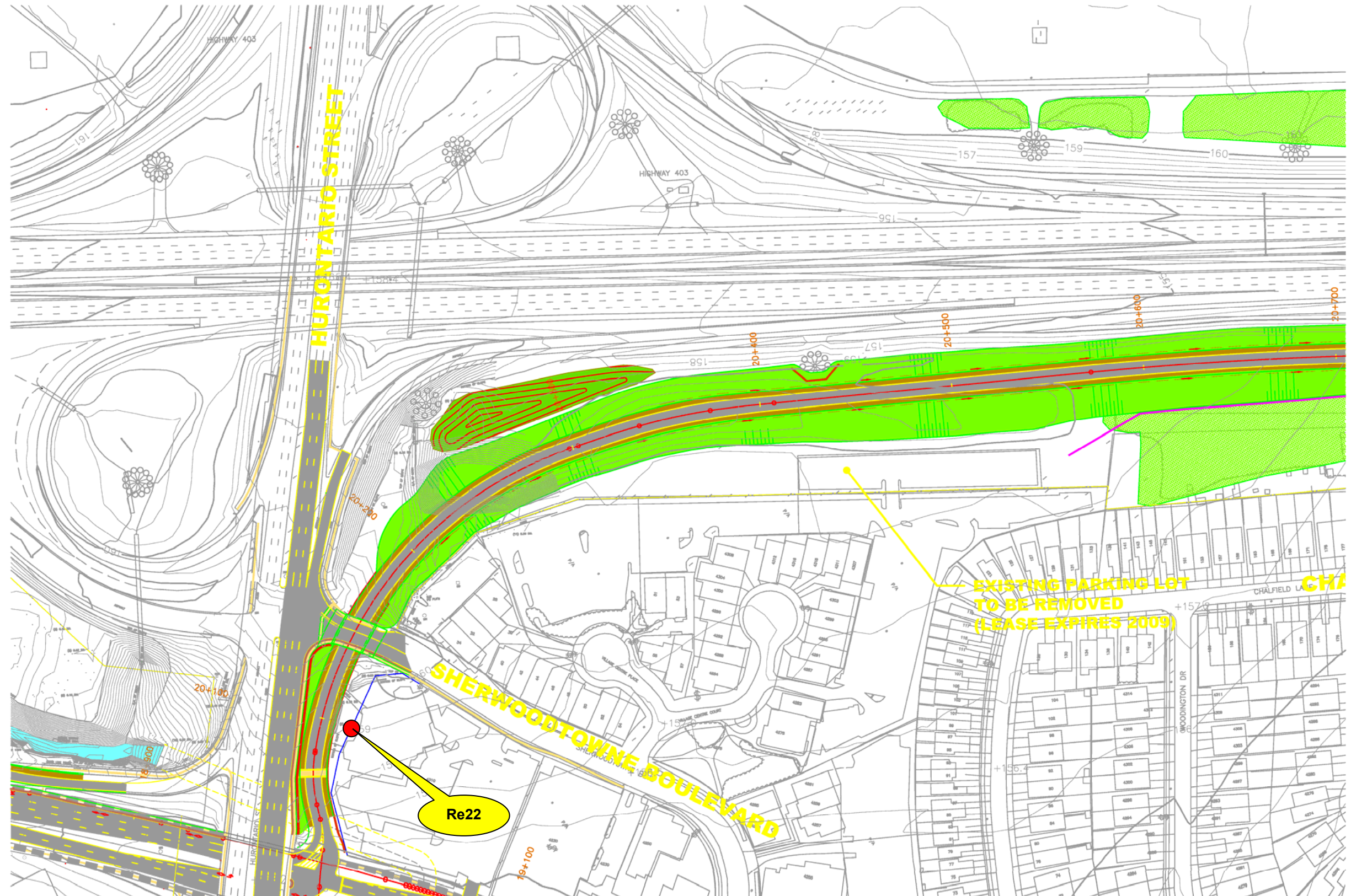


**FIGURE 2.10
POINTS OF RECEPTION**

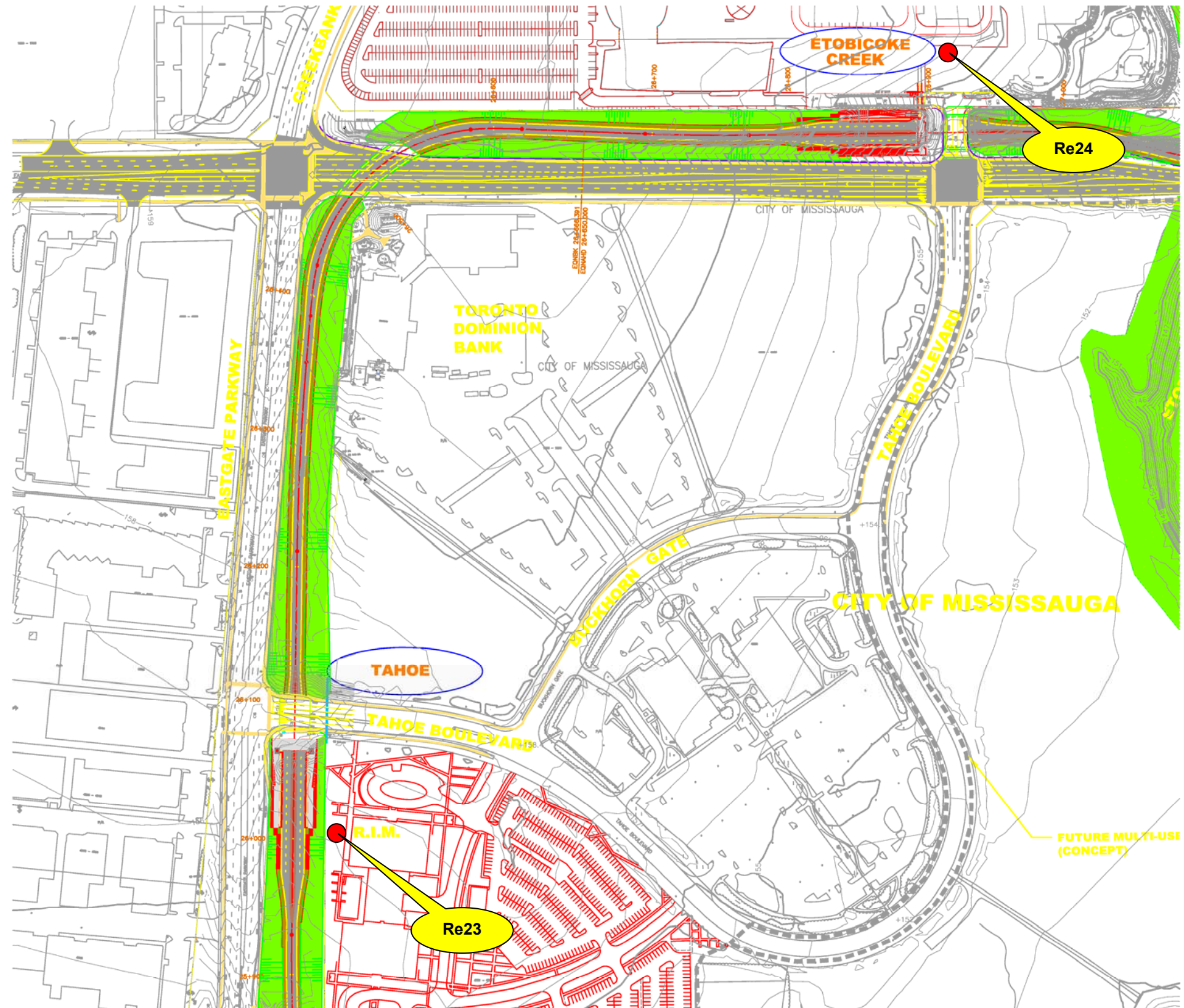


**FIGURE 2.11
POINTS OF RECEPTION**

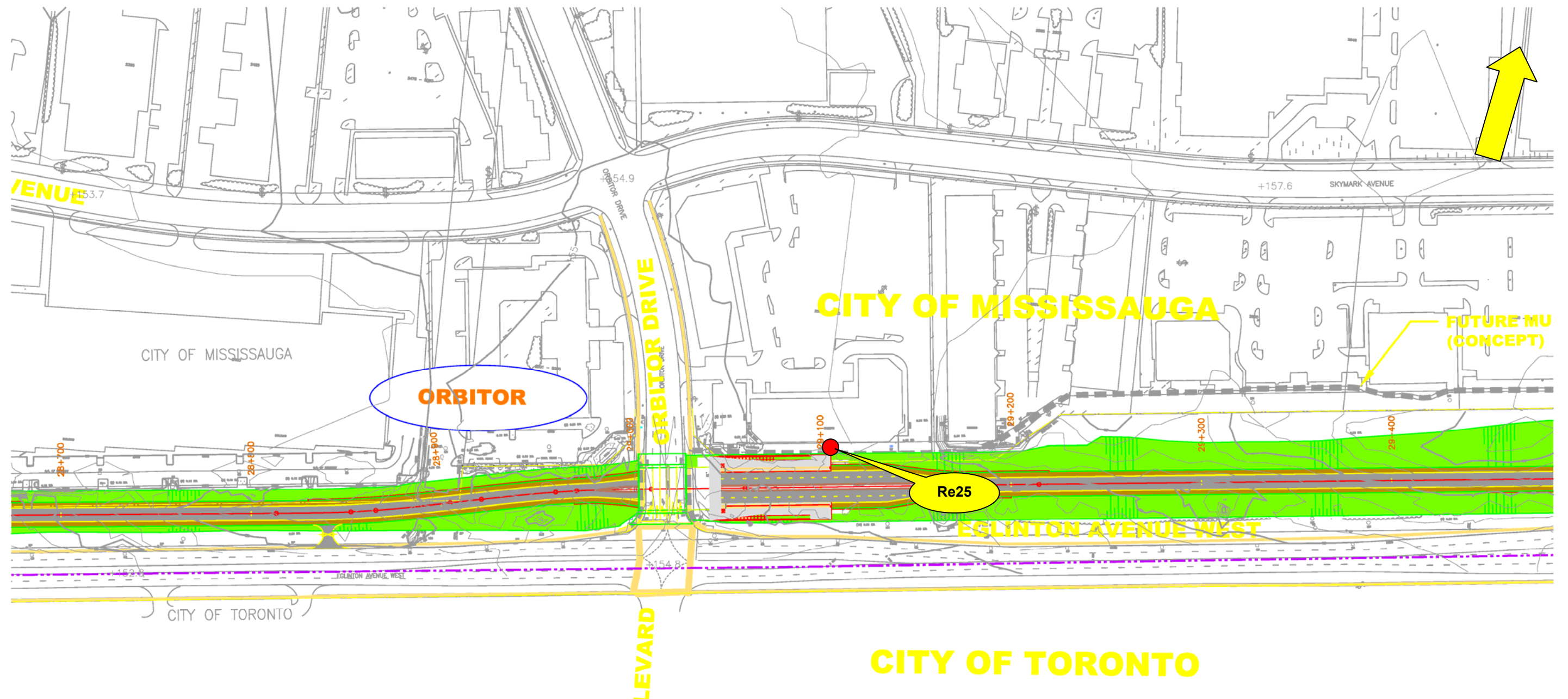
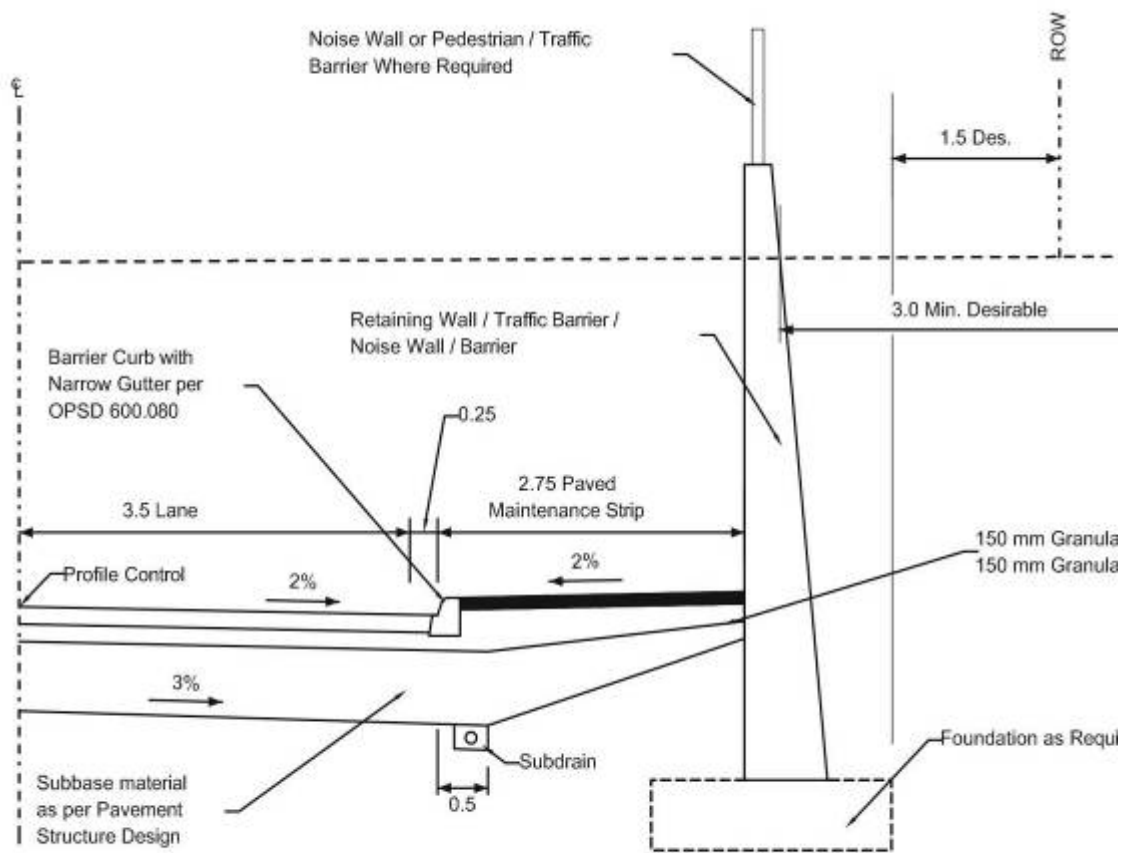


FIGURE 2.12
POINTS OF RECEPTION



Cut Section Where Right-of-Way is Restricted

**FIGURE 3.1
BUSWAY RETAINED CUT**

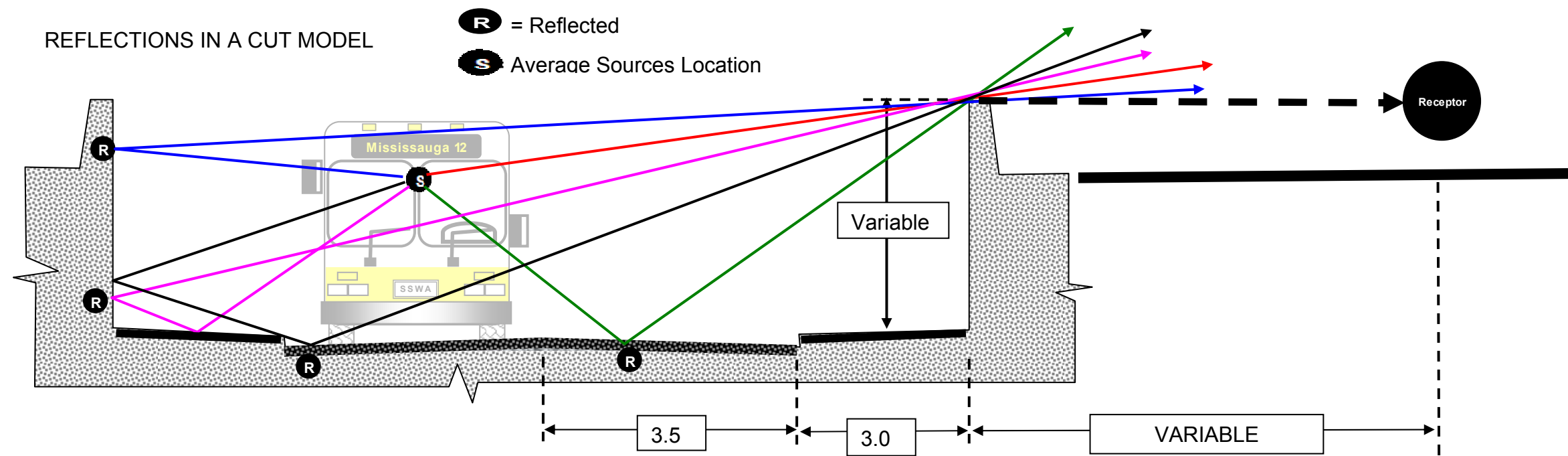


FIGURE 3.2
SOUND REFLECTIONS IN A RETAINED CUT

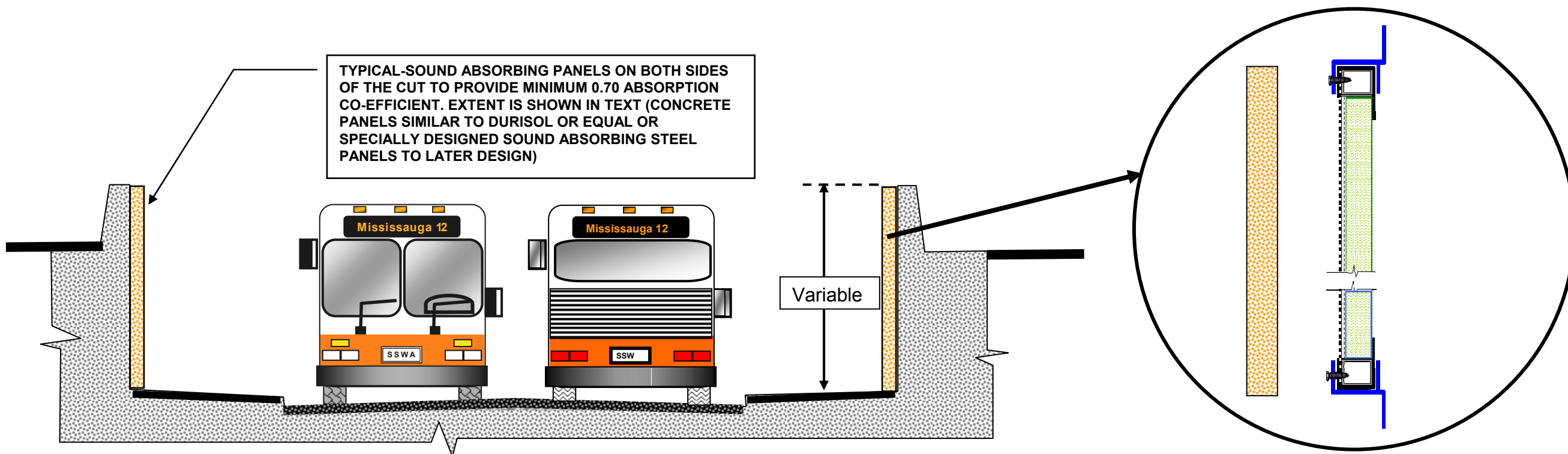


**FIGURE 4.1
SOUND ABSORBING PANELS**

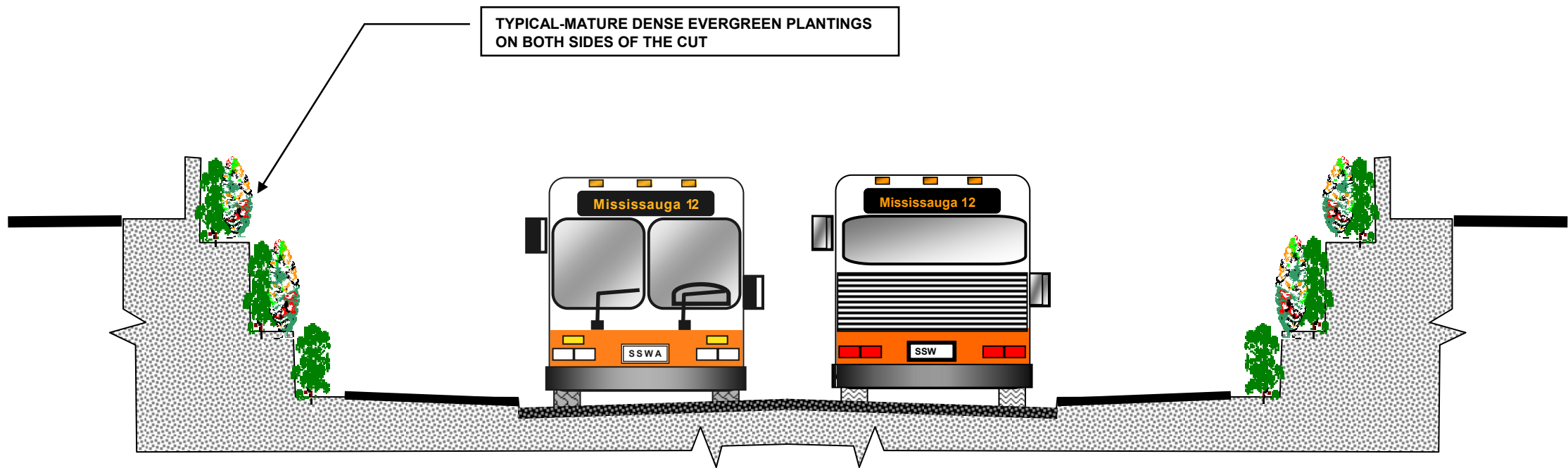


FIGURE 4.2
SOUND ABSORBING PLANTINGS

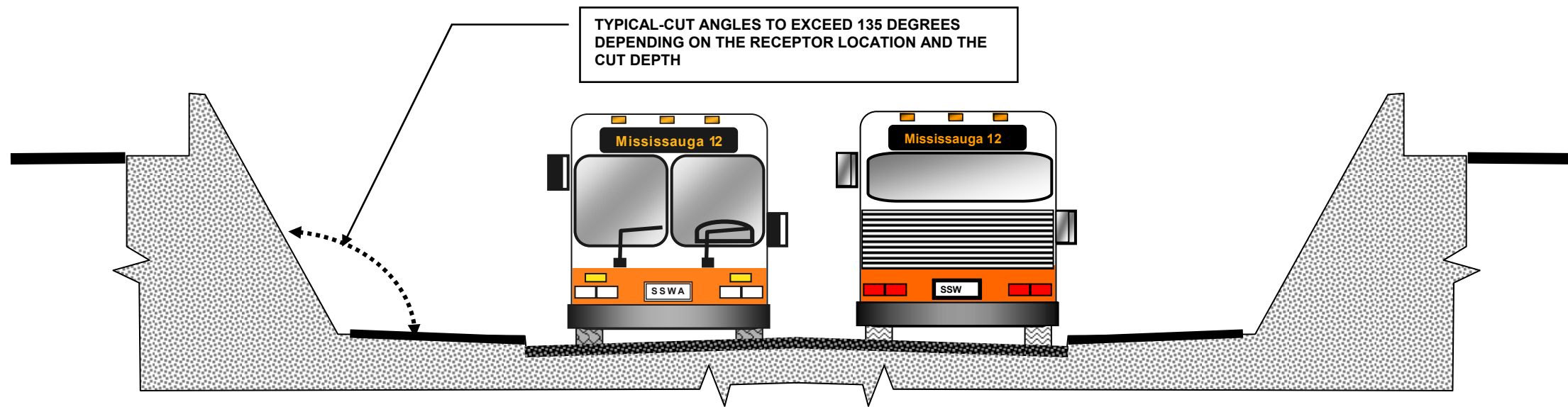


FIGURE 4.3
ADJUSTING THE SLOPE OF THE CUT SIDES

PHOTOGRAPHS



Photo 1: Tucana Court Apartment Building – View 1 South



Photo 2: Tucana Court Apartment Building – View 2 South



Photo 3: Acorn Place Townhouses – View 1 South



Photo 4: Acorn Place Townhouses – View 2 South



Photo 5: Acorn Place Apartment Building – View 1 South



Photo 6: Acorn Place Apartment Building – View 2 South



Photo 7: Acorn Place Townhouse – View from Highway 403



Photo 8: Acorn Place Apartment Building – View from Highway 403



Photo 9: Sagamore Crescent Residences – View 1



Photo 10: Sagamore Crescent Residences – View 2



Photo 11: Audubon Boulevard Residences – View 1



Photo 12: Audubon Boulevard Residences – View 2



Photo 13: Copseholm Terrace Residences – View 1



Photo 14: Copseholm Terrace Residences – View 2



Photo 15: Berm south of Eastgate Pkwy & east of Dixie Road – View 1



Photo 16: Berm south of Eastgate Pkwy & east of Dixie Road – View 2

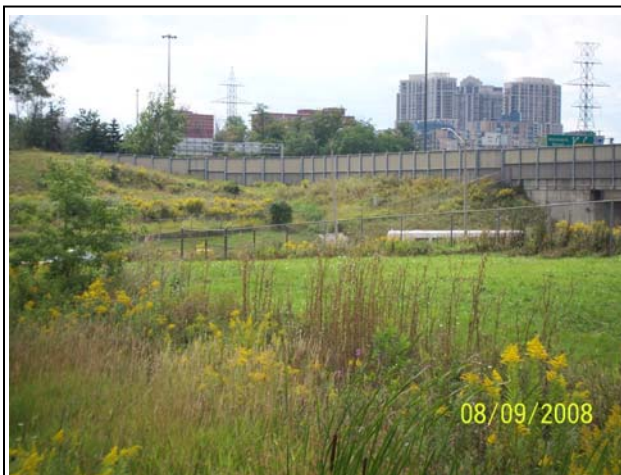


Photo 17: MTO Noise Wall at south-east corner of Highway 403 & Central Pkwy E – View 1



Photo 18: MTO Noise Wall at south-east corner of Highway 403 & Central Pkwy E – View 2



Photo 19: MTO Noise Wall/Berm at south-east corner of Highway 403 & Central Pkwy E – View 3



Photo 20: MTO Noise Berm at south-east corner of Highway 403 & Central Pkwy E – View 4



Photo 21: MTO Noise Wall at south-west corner of Highway 403 & Central Pkwy E – View 1



Photo 22: MTO Noise Berm at south-west corner of Highway 403 & Central Pkwy E – View 2



Photo 23: MTO Noise Berm at south-west corner of Highway 403 & Central Pkwy E – View 3



Photo 24: MTO Noise Berm at south-west corner of Highway 403 & Central Pkwy E – View 4

APPENDIX A

TRAFFIC VOLUMES

Highway 403 between Hurontario Street and Cawthra Road

Indicator	From MTO Inventory Count System Hurontario to Cawthra		
	Current	Projected 2017	
ROW Width	180m	180m	Note: from Centreline of 403 to N. Property Line of Hydr
No. of Lanes	6 + 2 HOV + 2 Aux	NA	
Roadway Gradient	0.30%	0.30%	
SADT	177,700 ¹ (177,000) ²	260,900 ³	
Medium Truck %	NA	NA	
Heavy Truck %	NA	NA	
Total Truck %	10% ⁴	10% ⁵	
Posted Speed Limit	100 km/h	100 km/h	
Day Split (07:00 to 23:00)	NA	NA	
Night Split (23:00 to 07:00)	NA	NA	
EB Split	NA	NA	
WB Split	NA	NA	

Notes

1. 2004 SADT from Provincial Highways Traffic Volumes, MTO Engineering Standards Branch – Traffic Office - **NOTE that volumes are for Highway 403 between Hurontario Street and Eglinton Avenue; the MTO summary does not specify whether this represents conditions east or west of Cawthra Road**
2. Estimated based on linear regression of SADT for 1998 to 2004 and extrapolated to 2007
3. Estimated based on linear regression of SADT for 1998 to 2004 and extrapolated to 2017 - **NOTE that where the 2004 Highway 401 demand was at this level (Morningside Avenue to Nielson Road), the cross-section is 14 - 16 lanes and the current Highway 403 cross-section at this location is 10 lanes (including 2 HOV lanes**
4. Provided by MTO Traffic Planning and Information Services Section with following disclaimer: "The Ministry method of collecting data by vehicle length, and the classification of vehicles, cannot accurately determine if the vehicle is a "Commercial" vehicle rather than a regular vehicle. For example there is no technology available to differentiate between taxis, airport limousines, cube vans, recreational vehicles, passenger vehicles or pick-up trucks pulling trailers, long tractor semi-trailer combinations etc. Commercial percentages should therefore be used cautiously for decision making purposes."
5. Assumed to remain the same as current conditions

Hwy 403 between Hurontario Street and Cawthra Road

From MTO Inventory Count System (No Data Available)
Hurontario to Cawthra

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Sum		Dir. Split			
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB		
00:00 to 01:00																				
01:00 to 02:00																				
02:00 to 03:00																				
03:00 to 04:00																				
04:00 to 05:00																				
05:00 to 06:00																				
06:00 to 07:00																				
07:00 to 08:00																				
08:00 to 09:00																				
09:00 to 10:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available		
10:00 to 11:00																				
11:00 to 12:00																				
12:00 to 13:00																				
13:00 to 14:00																				
14:00 to 15:00																				
15:00 to 16:00																				
16:00 to 17:00																				
17:00 to 18:00																				
18:00 to 19:00																				
19:00 to 20:00																				
20:00 to 21:00																				
21:00 to 22:00																				
22:00 to 23:00																				
23:00 to 00:00																				
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Day Split	NA		NA		NA		NA		NA		NA		NA		NA					
Night Split	NA		NA		NA		NA		NA		NA		NA		NA					
Count Date	NA		NA		NA		NA		NA		NA		NA							
Lanes 2-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						
HOV 1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						

Hwy 403 between Cawthra Road and Eglinton Avenue

Indicator	From MTO Inventory Count System Cawthra to Eglinton	
	Current	Projected 2017
ROW Width	No Data	No Data
No. of Lanes	6 + 2 HOV	NA
Roadway Gradient	X.X %	X.X %
SADT	177,700 ¹ (177,000) ²	260,900 ³
Medium Truck %	NA	NA
Heavy Truck %	NA	NA
Total Truck %	15% ⁴	15% ⁵
Posted Speed Limit	100 km/h	100 km/h
Day Split (07:00 to 23:00)	NA	NA
Night Split (23:00 to 07:00)	NA	NA
EB Split	NA	NA
WB Split	NA	NA

Notes

1. 2004 SADT from Provincial Highways Traffic Volumes, MTO Engineering Standards Branch – Traffic Office - **NOTE that volumes are for Highway 403 between Hurontario Street and Eglinton Avenue; the MTO summary does not specify whether this represents conditions east or west of Cawthra Road**

2. Estimated based on linear regression of SADT for 1998 to 2004 and extrapolated to 2007

3. Estimated based on linear regression of SADT for 1998 to 2004 and extrapolated to 2017 - **NOTE that where the 2004 Highway 401 demand was at this level (Morningside Avenue to Nielson Road), the cross-section is 14 - 16 lanes and the current Highway 403 cross-section at this location is 10 lanes (including 2 HOV lanes**

4. Provided by MTO Traffic Planning and Information Services Section with following disclaimer: "The Ministry method of collecting data by vehicle length, and the classification of vehicles, cannot accurately determine if the vehicle is a "Commercial" vehicle rather than a regular vehicle. For example there is no technology available to differentiate between taxis, airport limousines, cube vans, recreational vehicles, passenger vehicles or pick-up trucks pulling trailers, long tractor semi-trailer combinations etc. Commercial percentages should therefore be used cautiously for decision making purposes."

5. Assumed to remain the same as current conditions

Hwy 403 between Cawthra Road and Eglinton Avenue

From MTO Inventory Count System (No Data Available)
Cawthra to Eglinton

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Sum		Dir. Split	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
00:00 to 01:00																		
01:00 to 02:00																		
02:00 to 03:00																		
03:00 to 04:00																		
04:00 to 05:00																		
05:00 to 06:00																		
06:00 to 07:00																		
07:00 to 08:00																		
08:00 to 09:00																		
09:00 to 10:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
10:00 to 11:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
11:00 to 12:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
12:00 to 13:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
13:00 to 14:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
14:00 to 15:00																		
15:00 to 16:00																		
16:00 to 17:00																		
17:00 to 18:00																		
18:00 to 19:00																		
19:00 to 20:00																		
20:00 to 21:00																		
21:00 to 22:00																		
22:00 to 23:00																		
23:00 to 00:00																		
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Day Split	NA		NA		NA		NA		NA		NA		NA		NA			
Night Split	NA		NA		NA		NA		NA		NA		NA		NA			
Count Date	NA		NA		NA		NA		NA		NA		NA					
Lanes 2-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
HOV 1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				

Hurontario Street South of Highway 403

Indicator	From City of Mississauga Burnhamthorpe to Clarica		From DMG ⁵ South of Hwy 403
	Current	Projected 2017	2006
ROW Width	Approx. 55m	Approx. 55m	Approx. 55m
No. of Lanes	6	6	6
Roadway Gradient	2.30%	2.30%	2.30%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	6.3% ⁴
Posted Speed Limit	60 km/h	60 km/h	60 km/h
Day Split (07:00 to 23:00)	89% ¹	89% ²	NA
Night Split (23:00 to 07:00)	11% ¹	11% ²	NA
NB Split	52% ³	52% ²	54% ⁴
SB Split	48% ³	48% ²	46% ⁴

Notes

1. Data for single day - Wednesday 02-May-07
2. Assumed to remain the same as current conditions
3. 24-hour average for Wednesday 02-May-07
4. Average for single day cordon count between 5:00 am and 9:00 pm (specific location unidentified)
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Hurontario Street south of Highway 403

	From City of Mississauga Burnhamthorpe to Clarica				From UoT Joint Program in Transportation - Data Management Group (2006) South of Hwy 403													
Hour	Wednesday		Dir. Split		NB				SB				Total Vehicles		Trucks/Transit		Dir. Split	
	NB	SB	NB	SB	Total	Auto	Truck	Transit	Total	Auto	Truck	Transit	NB	SB	NB	SB	NB	SB
00:00 to 01:00	328	426	44%	56%														
01:00 to 02:00	175	226	44%	56%														
02:00 to 03:00	139	169	45%	55%														
03:00 to 04:00	119	111	52%	48%														
04:00 to 05:00	165	94	64%	36%														
05:00 to 06:00	476	246	66%	34%	491	448	33	10	225	186	32	7	491	225	43	39	69%	31%
06:00 to 07:00	1449	737	66%	34%	2044	1777	220	47	1001	835	139	27	2044	1001	267	166	67%	33%
07:00 to 08:00	2017	1437	58%	42%	2638	2393	182	63	1513	1306	154	53	2638	1513	245	207	64%	36%
08:00 to 09:00	2040	1583	56%	44%	2296	2094	155	47	1519	1397	76	46	2296	1519	202	122	60%	40%
09:00 to 10:00	1465	1278	53%	47%	1816	1603	177	36	1392	1204	148	40	1816	1392	213	188	57%	43%
10:00 to 11:00	1329	1281	51%	49%	1689	1478	179	32	1099	965	115	19	1689	1099	211	134	61%	39%
11:00 to 12:00	1552	1382	53%	47%	2035	1815	197	23	1183	1031	116	36	2035	1183	220	152	63%	37%
12:00 to 13:00	1584	1495	51%	49%	2030	1807	187	36	1127	1010	88	29	2030	1127	223	117	64%	36%
13:00 to 14:00	1678	1407	54%	46%	2153	2027	105	21	2377	2278	71	28	2153	2377	126	99	48%	52%
14:00 to 15:00	1604	1459	52%	48%	2593	2466	94	33	2213	2108	67	38	2593	2213	127	105	54%	46%
15:00 to 16:00	1728	1625	52%	48%	2902	2772	97	33	3025	2958	38	29	2902	3025	130	67	49%	51%
16:00 to 17:00	1589	1751	48%	52%	3008	2927	63	18	2981	2919	36	26	3008	2981	81	62	50%	50%
17:00 to 18:00	1686	1857	48%	52%	2455	2405	28	22	3567	3517	35	15	2455	3567	50	50	41%	59%
18:00 to 19:00	1720	1826	49%	51%	2527	2418	76	33	2507	2426	50	31	2527	2507	109	81	50%	50%
19:00 to 20:00	1514	1575	49%	51%	2397	2303	69	25	2899	2855	20	24	2397	2899	94	44	45%	55%
20:00 to 21:00	1384	1361	50%	50%	1110	1070	31	9	996	989	3	4	1110	996	40	7	53%	47%
21:00 to 22:00	1301	1345	49%	51%														
22:00 to 23:00	1015	1055	49%	51%														
23:00 to 00:00	676	753	47%	53%														
Total	28733	26479	52%	48%									34184	29624	2381	1640	54%	46%
Day Split	89%																	
Night Split	11%																	
Count Date	02-May-07																	

Central Parkway East South of Highway 403

Indicator	From Peel Region Burnhamthorpe to King Andrew		From DMG ⁵ North of Hwy 403
	Current	Projected 2017	2006
ROW Width	37m	37m	37m
No. of Lanes	4	4	4
Roadway Gradient	2.80%	2.80%	2.80%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	5.2% ⁴
Posted Speed Limit	50 km/h	50 km/h	50 km/h
Day Split (07:00 to 23:00)	94% ¹	94% ²	NA
Night Split (23:00 to 07:00)	6% ¹	6% ²	NA
NB Split	51% ³	51% ²	50% ⁴
SB Split	49% ³	49% ²	50% ⁴

Notes

1. Data for single day - Wednesday 02-May-07
2. Assumed to remain the same as current conditions
3. 24-hour average for Wednesday 02-May-07
4. Average for single day cordon count between 5:00 am and 9:00 pm
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Central Parkway East South of Highway 403

From Peel Region					From UoT Joint Program in Transportation - Data Management Group (2006)													
Hour	Burnhamthorpe to King Andrew				North of Hwy 403													
	Wednesday		Dir. Split		NB				SB				Total Vehicles		Trucks/Transit		Dir. Split	
	NB	SB	NB	SB	Total	Auto	Truck	Transit	Total	Auto	Truck	Transit	NB	SB	NB	SB	NB	SB
00:00 to 01:00	72	96	43%	57%														
01:00 to 02:00	37	37	50%	50%														
02:00 to 03:00	19	18	51%	49%														
03:00 to 04:00	14	13	52%	48%														
04:00 to 05:00	19	23	45%	55%														
05:00 to 06:00	76	82	48%	52%	95	91	2	2	67	63	3	1	95	67	4	4	59%	41%
06:00 to 07:00	301	245	55%	45%	481	465	6	10	323	297	21	5	481	323	16	26	60%	40%
07:00 to 08:00	686	585	54%	46%	927	891	17	19	886	826	31	29	927	886	36	60	51%	49%
08:00 to 09:00	946	726	57%	43%	1241	1184	39	18	1074	1016	36	22	1241	1074	57	58	54%	46%
09:00 to 10:00	452	452	50%	50%	450	421	25	4	567	535	21	11	450	567	29	32	44%	56%
10:00 to 11:00	414	391	51%	49%	390	376	11	3	444	426	11	7	390	444	14	18	47%	53%
11:00 to 12:00	563	496	53%	47%	447	415	28	4	516	487	19	10	447	516	32	29	46%	54%
12:00 to 13:00	580	565	51%	49%	404	370	28	6	494	472	20	2	404	494	34	22	45%	55%
13:00 to 14:00	526	473	53%	47%	433	408	21	4	434	406	23	5	433	434	25	28	50%	50%
14:00 to 15:00	580	588	50%	50%	549	509	23	17	516	478	26	12	549	516	40	38	52%	48%
15:00 to 16:00	698	711	50%	50%	644	597	26	21	767	718	23	26	644	767	47	49	46%	54%
16:00 to 17:00	864	969	47%	53%	878	837	31	10	946	893	42	11	878	946	41	53	48%	52%
17:00 to 18:00	1047	1208	46%	54%	1158	1112	43	3	889	848	35	6	1158	889	46	41	57%	43%
18:00 to 19:00	857	853	50%	50%	1005	982	16	7	1002	947	51	4	1005	1002	23	55	50%	50%
19:00 to 20:00	612	559	52%	48%	584	561	19	4	688	659	25	4	584	688	23	29	46%	54%
20:00 to 21:00	460	534	46%	54%	287	275	10	2	287	275	10	2	287	287	12	12	50%	50%
21:00 to 22:00	392	374	51%	49%														
22:00 to 23:00	252	216	54%	46%														
23:00 to 00:00	129	168	43%	57%														
Total	10596	10382	51%	49%									9973	9900	479	554	50%	50%
Day Split	94%																	
Night Split	6%																	
Count Date	02-May-07																	

Eastgate Parkway East of Cawthra Road

Indicator	From City of Mississauga Cawthra to Tomken		From DMG ⁵ East of Cawthra
	Current	Projected 2017	2006
ROW Width	Varies	Varies	Varies
No. of Lanes	4	NA	4
Roadway Gradient	1.50%	1.50%	1.50%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	7.7% ⁴
Posted Speed Limit	70 km/h	70 km/h	70 km/h
Day Split (07:00 to 23:00)	90% ¹	90% ²	NA
Night Split (23:00 to 07:00)	10% ¹	10% ²	NA
EB Split	53% ³	53% ²	58% ⁴
WB Split	47% ³	47% ²	42% ⁴

Notes

1. Average for Wednesday 02-May-07 to Thursday 03-May-07
2. Assumed to remain the same as current conditions
3. 24-hour average for Wednesday 02-May-07 to Thursday 03-May-07
4. Average for single day cordon count between 5:00 am and 9:00 pm
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Eastgate Parkway East of Cawthra Road

Hour	From City of Mississauga Cawthra to Tomken						From UoFT Joint Program in Transportation - Data Management Group (2006) East of Cawthra															
	Wednesday		Thursday		Sum		Dir. Split		EB				WB				Total Vehicles		Trucks/Transit		Dir. Split	
	EB	WB	EB	WB	EB	WB	EB	WB	Total	Auto	Truck	Transit	Total	Auto	Truck	Transit	EB	WB	EB	WB	EB	WB
00:00 to 01:00	105	182	113	199	218	381	36%	64%														
01:00 to 02:00	61	104	70	105	131	209	39%	61%														
02:00 to 03:00	63	82	67	65	130	147	47%	53%														
03:00 to 04:00	48	37	35	52	83	89	48%	52%														
04:00 to 05:00	78	48	79	40	157	88	64%	36%														
05:00 to 06:00	343	111	356	114	699	225	76%	24%	713	689	24	0	183	169	14	0	713	183	24	14	80%	20%
06:00 to 07:00	1206	385	1164	316	2370	701	77%	23%	1463	1394	66	3	401	363	36	2	1463	401	69	38	78%	22%
07:00 to 08:00	1805	718	1732	679	3537	1397	72%	28%	1862	1765	86	11	656	600	47	9	1862	656	97	56	74%	26%
08:00 to 09:00	1911	823	1860	836	3771	1659	69%	31%	1991	1899	89	3	790	742	38	10	1991	790	92	48	72%	28%
09:00 to 10:00	1506	586	1511	617	3017	1203	71%	29%	1536	1416	112	8	607	527	71	9	1536	607	120	80	72%	28%
10:00 to 11:00	952	610	952	560	1904	1170	62%	38%	940	829	108	3	573	501	70	2	940	573	111	72	62%	38%
11:00 to 12:00	877	704	931	720	1808	1424	56%	44%	818	711	106	1	593	530	61	2	818	593	107	63	58%	42%
12:00 to 13:00	812	806	902	846	1714	1652	51%	49%	845	747	94	4	737	689	46	2	845	737	98	48	53%	47%
13:00 to 14:00	915	799	973	867	1888	1666	53%	47%	916	825	89	2	796	690	101	5	916	796	91	106	54%	46%
14:00 to 15:00	968	1019	1038	1034	2006	2053	49%	51%	852	751	88	13	887	774	108	5	852	887	101	113	49%	51%
15:00 to 16:00	900	1383	998	1363	1898	2746	41%	59%	909	797	105	7	1323	1228	90	5	909	1323	112	95	41%	59%
16:00 to 17:00	1006	1444	1078	1501	2084	2945	41%	59%	999	899	94	6	1298	1247	46	5	999	1298	100	51	43%	57%
17:00 to 18:00	1074	1390	1047	1355	2121	2745	44%	56%	1087	996	89	2	1209	1161	45	3	1087	1209	91	48	47%	53%
18:00 to 19:00	860	1211	912	1305	1772	2516	41%	59%	876	812	62	2	1166	1126	38	2	876	1166	64	40	43%	57%
19:00 to 20:00	669	905	712	928	1381	1833	43%	57%	710	665	45	0	663	638	23	2	710	663	45	25	52%	48%
20:00 to 21:00	553	722	570	763	1123	1485	43%	57%	314	300	14	0	292	288	4	0	314	292	14	4	52%	48%
21:00 to 22:00	462	719	461	734	923	1453	39%	61%														
22:00 to 23:00	409	409	415	477	824	886	48%	52%														
23:00 to 00:00	249	366	285	399	534	765	41%	59%														
Total	17832	15563	18261	15875	36093	31438	53%	47%									16831	12174	1336	901	58%	42%
Day Split	90%		90%		90%																	
Night Split	10%		10%		10%																	
Count Date	02-May-07		03-May-07																			

Eastgate Parkway East of Tomken Road

Indicator	From City of Mississauga Tomken to Dixie		
	Current	Projected 2017	
ROW Width	Varies - 76m typical	Varies - 76m typical	Note: from Centreline to S. Property Line
No. of Lanes	4	NA	
Roadway Gradient	1.00%	1.00%	
SADT	NA	NA	
Medium Truck %	NA	NA	
Heavy Truck %	NA	NA	
Total Truck %	NA	NA	
Posted Speed Limit	70 km/h	70 km/h	
Day Split (07:00 to 23:00)	94% ¹	94% ²	
Night Split (23:00 to 07:00)	6% ¹	6% ²	
EB Split	43% ³	43% ²	
WB Split	57% ³	57% ²	

Notes

1. Data for single day - Wednesday 02-May-07
2. Assumed to remain the same as current conditions
3. 24-hour average for Wednesday 02-May-07
4. Average for single day cordon count between 5:00 am and 9:00 pm
5. Data Management Group (University of Toronto Joint Program in Transportation) data fo

Eastgate Parkway East of Tomken Road

From City of Mississauga Tomken to Dixie

Hour	Wednesday		Dir. Split	
	EB	WB	EB	WB
00:00 to 01:00	39	121	24%	76%
01:00 to 02:00	25	82	23%	77%
02:00 to 03:00	25	64	28%	72%
03:00 to 04:00	8	25	24%	76%
04:00 to 05:00	12	30	29%	71%
05:00 to 06:00	54	92	37%	63%
06:00 to 07:00	213	273	44%	56%
07:00 to 08:00	530	575	48%	52%
08:00 to 09:00	791	684	54%	46%
09:00 to 10:00	857	467	65%	35%
10:00 to 11:00	745	515	59%	41%
11:00 to 12:00	681	610	53%	47%
12:00 to 13:00	668	693	49%	51%
13:00 to 14:00	738	764	49%	51%
14:00 to 15:00	811	1078	43%	57%
15:00 to 16:00	708	1368	34%	66%
16:00 to 17:00	934	1884	33%	67%
17:00 to 18:00	893	1864	32%	68%
18:00 to 19:00	667	1163	36%	64%
19:00 to 20:00	501	735	41%	59%
20:00 to 21:00	422	543	44%	56%
21:00 to 22:00	331	531	38%	62%
22:00 to 23:00	285	306	48%	52%
23:00 to 00:00	191	238	45%	55%
Total	11129	14705	43%	57%
Day Split	94%			
Night Split	6%			
Count Date	02-May-07			

Eastgate Parkway East of Dixie Road

Indicator	From City of Mississauga Dixie to Fieldgate		Note: from Centreline to S. Property Line
	Current	Projected 2017	
ROW Width	69m	69m	
No. of Lanes	4	NA	
Roadway Gradient	0.30%	0.30%	
SADT	NA	NA	
Medium Truck %	NA	NA	
Heavy Truck %	NA	NA	
Total Truck %	NA	NA	
Posted Speed Limit	70 km/h	70 km/h	
Day Split (07:00 to 23:00)	NA	NA	
Night Split (23:00 to 07:00)	NA	NA	
EB Split	NA	NA	
WB Split	NA	NA	

Eastgate Parkway East of Dixie Road

From City of Mississauga (No Data Available)
Dixie to Fieldgate

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Sum		Dir. Split	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
00:00 to 01:00																		
01:00 to 02:00																		
02:00 to 03:00																		
03:00 to 04:00																		
04:00 to 05:00																		
05:00 to 06:00																		
06:00 to 07:00																		
07:00 to 08:00																		
08:00 to 09:00																		
09:00 to 10:00																		
10:00 to 11:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
11:00 to 12:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
12:00 to 13:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
13:00 to 14:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
14:00 to 15:00	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
15:00 to 16:00																		
16:00 to 17:00																		
17:00 to 18:00																		
18:00 to 19:00																		
19:00 to 20:00																		
20:00 to 21:00																		
21:00 to 22:00																		
22:00 to 23:00																		
23:00 to 00:00																		
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Day Split	NA		NA		NA		NA		NA		NA		NA		NA		NA	
Night Split	NA		NA		NA		NA		NA		NA		NA		NA			
Count Date	NA		NA		NA		NA		NA		NA		NA					

Eastgate Parkway North of Fieldgate Drive

Indicator	From City of Mississauga Tahoe to Eglinton		From DMG ⁵ South of Eglinton
	Current	Projected 2017	2006
ROW Width	65m	65m	65m
No. of Lanes	4	NA	4
Roadway Gradient	1.20%	1.20%	1.20%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	5.4% ⁴
Posted Speed Limit	70 km/h	70 km/h	70 km/h
Day Split (07:00 to 23:00)	93% ¹	93% ²	NA
Night Split (23:00 to 07:00)	7% ¹	7% ²	NA
NB Split	52% ³	52% ²	52% ⁴
SB Split	48% ³	48% ²	48% ⁴

Notes

1. Average for Wednesday 09-May-07 to Thursday 10-May-07
2. Assumed to remain the same as current conditions
3. 24-hour average for Wednesday 02-May-07 to Thursday 10-May-07
4. Average for single day cordon count between 5:00 am and 9:00 pm
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Eastgate Parkway North of Fieldgate Drive

Hour	From City of Mississauga Tahoe to Eglinton						From UoFT Joint Program in Transportation - Data Management Group (2006)																	
	Wednesday		Thursday		Sum		Dir. Split		NB				SB				Total Vehicles		Trucks/Transit		Dir. Split			
	NB	SB	NB	SB	NB	SB	NB	SB	Total	Auto	Truck	Transit	Total	Auto	Truck	Transit	NB	SB	NB	SB	NB	SB		
00:00 to 01:00	26	51	31	39	57	90	39%	61%																
01:00 to 02:00	15	28	16	31	31	59	34%	66%																
02:00 to 03:00	9	13	17	11	26	24	52%	48%																
03:00 to 04:00	11	15	11	12	22	27	45%	55%																
04:00 to 05:00	37	6	35	13	72	19	79%	21%																
05:00 to 06:00	159	29	159	17	318	46	87%	13%	118	106	11	1	18	14	4	0	118	18	12	4	87%	13%		
06:00 to 07:00	470	109	453	110	923	219	81%	19%	501	469	26	6	107	94	10	3	501	107	32	13	82%	18%		
07:00 to 08:00	1153	310	1187	313	2340	623	79%	21%	1126	1045	74	7	341	298	36	7	1126	341	81	43	77%	23%		
08:00 to 09:00	1582	362	1604	370	3186	732	81%	19%	1550	1481	64	5	338	298	33	7	1550	338	69	40	82%	18%		
09:00 to 10:00	810	272	812	292	1622	564	74%	26%	857	819	33	5	250	215	30	5	857	250	38	35	77%	23%		
10:00 to 11:00	443	241	419	239	862	480	64%	36%	388	355	33	0	235	198	36	1	388	235	33	37	62%	38%		
11:00 to 12:00	403	332	440	359	843	691	55%	45%	381	335	45	1	317	281	36	0	381	317	46	36	55%	45%		
12:00 to 13:00	528	534	538	593	1066	1127	49%	51%	542	486	56	0	602	559	43	0	542	602	56	43	47%	53%		
13:00 to 14:00	571	455	571	424	1142	879	57%	43%	546	525	21	0	382	362	16	4	546	382	21	20	59%	41%		
14:00 to 15:00	398	410	403	432	801	842	49%	51%	388	363	22	3	372	357	13	2	388	372	25	15	51%	49%		
15:00 to 16:00	404	681	419	708	823	1389	37%	63%	359	340	15	4	639	622	13	4	359	639	19	17	36%	64%		
16:00 to 17:00	449	1196	426	1169	875	2365	27%	73%	411	392	15	4	1372	1347	17	8	411	1372	19	25	23%	77%		
17:00 to 18:00	381	1424	412	1476	793	2900	21%	79%	304	291	7	6	1486	1476	7	3	304	1486	13	10	17%	83%		
18:00 to 19:00	301	604	312	603	613	1207	34%	66%	309	294	11	4	650	642	5	3	309	650	15	8	32%	68%		
19:00 to 20:00	221	342	237	327	458	669	41%	59%	225	221	4	0	308	297	10	1	225	308	4	11	42%	58%		
20:00 to 21:00	142	266	164	262	306	528	37%	63%	75	74	1	0	109	109	0	0	75	109	1	0	41%	59%		
21:00 to 22:00	130	182	162	203	292	385	43%	57%																
22:00 to 23:00	86	143	95	148	181	291	38%	62%																
23:00 to 00:00	50	102	65	134	115	236	33%	67%																
Total	8779	8107	8988	8285	17767	16392	52%	48%									8080	7526	484	357	52%	48%		
Day Split	93%		93%		93%																			
Night Split	7%		7%		7%																			
Count Date	09-May-07		10-May-07																					

Cawthra Road South of Eastgate Parkway

Indicator	From City of Mississauga Meadows to Eastgate		From DMG ⁵ South of Eastgate
	Current	Projected 2017	2006
ROW Width	Varies	Varies	Varies
No. of Lanes	4	4	4
Roadway Gradient	0.60%	0.60%	0.60%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	12.2% ⁴
Posted Speed Limit	50 km/h	50 km/h	50 km/h
Day Split (07:00 to 23:00)	89% ¹	89% ²	NA
Night Split (23:00 to 07:00)	11% ¹	11% ²	NA
NB Split	48% ³	48% ²	50% ⁴
SB Split	52% ³	52% ²	50% ⁴

Notes

1. Data for single day - Monday 04-Dec-06
2. Assumed to remain the same as current conditions
3. 24-hour average for Monday 04-Dec-06
4. Average for single day cordon count between 5:00 am and 9:00 pm (specific location unidentified)
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Cawthra Road South of Eastgate Parkway

[illegible]

Tomken Rd South of Eastgate Parkway

Indicator	From City of Mississauga Hickory to Eastgate		From DMG ⁵ South of Eastgate
	Current	Projected 2017	2006
ROW Width	Varies	Varies	Varies
No. of Lanes	4	4	4
Roadway Gradient	0.30%	0.30%	0.30%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	6.3% ⁴
Posted Speed Limit	50 km/h	50 km/h	50 km/h
Day Split (07:00 to 23:00)	93% ¹	93% ²	NA
Night Split (23:00 to 07:00)	7% ¹	7% ²	NA
NB Split	48% ³	48% ²	45% ⁴
SB Split	52% ³	52% ²	55% ⁴

Notes

1. Data for single day - Thursday 03-May-07
2. Assumed to remain the same as current conditions
3. 24-hour average for Thursday 03-May-07
4. Average for single day cordon count between 5:00 am and 9:00 pm (specific location unidentified)
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Tomken Rd South of Eastgate Parkway

[illegible]

Dixie Road South of Eastgate Parkway

Indicator	From City of Mississauga Hickory to Eastgate		From DMG ⁵ South of Eastgate
	Current	Projected 2017	2006
ROW Width	46m (typical)	46m (typical)	46m (typical)
No. of Lanes	6	6	6
Roadway Gradient	0.60%	0.60%	0.60%
SADT	NA	NA	NA
Medium Truck %	NA	NA	NA
Heavy Truck %	NA	NA	NA
Total Truck %	NA	NA	10.3% ⁴
Posted Speed Limit	60 km/h	60 km/h	60 km/h
Day Split (07:00 to 23:00)	90% ¹	90% ²	NA
Night Split (23:00 to 07:00)	10% ¹	10% ²	NA
NB Split	49% ³	49% ²	50% ⁴
SB Split	51% ³	51% ²	50% ⁴

Notes

1. Data for single day - Monday 04-Dec-06
2. Assumed to remain the same as current conditions
3. 24-hour average for Monday 04-Dec-06
4. Average for single day cordon count between 5:00 am and 9:00 pm (specific location unidentified)
5. Data Management Group (University of Toronto Joint Program in Transportation) data for 5:00 am to 9:00 pm

Dixie Road South of Eastgate Parkway

[illegible]

Eglinton Avenue between Commerce Boulevard and Renforth Drive

Indicator	From City of Toronto Commerce to Renforth		
	Current	Projected 2017	
ROW Width	38m	38m	Assumed based on aerial photography
No. of Lanes	4	NA	
Roadway Gradient	0.80%	0.80%	
SADT	NA	NA	
Medium Truck %	NA	NA	
Heavy Truck %	NA	NA	
Total Truck %	NA	NA	
Posted Speed Limit	50 km/h	50 km/h	
Day Split (07:00 to 23:00)	93% ¹	93% ²	
Night Split (23:00 to 07:00)	7% ¹	7% ²	
EB Split	55% ³	55% ²	
WB Split	45% ³	45% ²	

Notes

1. Average for Tuesday 15-Nov-05 to Thursday 17-Nov-05
2. Assumed to remain the same as current conditions
3. 24-hour average for Tuesday 15-Nov-05 to Thursday 17-Nov-05
4. Average for single day cordon count between 5:00 am and 9:00 pm
5. Data Management Group (University of Toronto Joint Program in Transportation) data for

Eglinton Avenue between Commerce Boulevard and Renforth Drive

Hour	From City of Toronto Commerce to Renforth									
	Tuesday		Wednesday		Thursday		Sum		Dir. Split	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
00:00 to 01:00	135	97	155	115	154	107	444	319	58%	42%
01:00 to 02:00	64	54	78	61	75	53	217	168	56%	44%
02:00 to 03:00	46	23	49	29	36	37	131	89	60%	40%
03:00 to 04:00	22	28	42	30	49	24	113	82	58%	42%
04:00 to 05:00	60	29	72	24	52	36	184	89	67%	33%
05:00 to 06:00	116	128	115	119	130	113	361	360	50%	50%
06:00 to 07:00	389	437	420	469	398	468	1207	1374	47%	53%
07:00 to 08:00	784	1006	834	973	828	1060	2446	3039	45%	55%
08:00 to 09:00	1054	1478	1017	1617	1086	1733	3157	4828	40%	60%
09:00 to 10:00	870	1585	828	1501	922	1396	2620	4482	37%	63%
10:00 to 11:00	703	765	690	664	790	700	2183	2129	51%	49%
11:00 to 12:00	738	639	766	625	772	634	2276	1898	55%	45%
12:00 to 13:00	945	722	954	703	1085	736	2984	2161	58%	42%
13:00 to 14:00	942	749	886	796	969	859	2797	2404	54%	46%
14:00 to 15:00	924	786	922	756	970	803	2816	2345	55%	45%
15:00 to 16:00	1196	820	1103	809	1172	861	3471	2490	58%	42%
16:00 to 17:00	1776	943	1745	830	1742	948	5263	2721	66%	34%
17:00 to 18:00	2109	1016	2130	924	2191	1001	6430	2941	69%	31%
18:00 to 19:00	1502	1019	1294	771	1393	884	4189	2674	61%	39%
19:00 to 20:00	830	549	785	440	787	533	2402	1522	61%	39%
20:00 to 21:00	485	344	521	328	586	353	1592	1025	61%	39%
21:00 to 22:00	426	322	399	308	453	349	1278	979	57%	43%
22:00 to 23:00	295	245	328	253	382	263	1005	761	57%	43%
23:00 to 00:00	300	226	286	195	313	222	899	643	58%	42%
Total	16711	14010	16419	13340	17335	14173	50465	41523	55%	45%
Day Split	93%		92%		93%		93%			
Night Split	7%		8%		7%		7%			
Count Date	15-Nov-05		16-Nov-05		17-Nov-05					

Eglinton Avenue between Renforth Drive and Matheson Boulevard East

Indicator	From City of Toronto Renforth to Matheson		
	Current	Projected 2017	
ROW Width	44m (typical)	44m (typical)	Assumed based on aerial photography
No. of Lanes	4	NA	
Roadway Gradient	No Data	No Data	
SADT	NA	NA	
Medium Truck %	NA	NA	
Heavy Truck %	NA	NA	
Total Truck %	NA	NA	
Posted Speed Limit	50 km/h	50 km/h	
Day Split (07:00 to 23:00)	93% ¹	93% ²	
Night Split (23:00 to 07:00)	7% ¹	7% ²	
EB Split	39% ³	39% ²	
WB Split	61% ³	61% ²	

Notes

1. Average for Tuesday 15-Nov-05 to Thursday 17-Nov-05
2. Assumed to remain the same as current conditions
3. 24-hour average for Tuesday 15-Nov-05 to Thursday 17-Nov-05
4. Average for single day cordon count between 5:00 am and 9:00 pm
5. Data Management Group (University of Toronto Joint Program in Transportation) data for

Eglinton Avenue between Renforth Drive and Matheson Boulevard

From City of Toronto Renforth to Matheson

Hour	Tuesday		Wednesday		Thursday		Sum		Dir. Split	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
00:00 to 01:00	89	92	110	117	103	100	302	309	49%	51%
01:00 to 02:00	59	40	53	53	56	58	168	151	53%	47%
02:00 to 03:00	54	29	45	33	46	37	145	99	59%	41%
03:00 to 04:00	43	23	37	23	39	19	119	65	65%	35%
04:00 to 05:00	37	34	41	31	32	37	110	102	52%	48%
05:00 to 06:00	99	136	80	128	47	133	226	397	36%	64%
06:00 to 07:00	317	445	366	458	322	436	1005	1339	43%	57%
07:00 to 08:00	654	835	624	847	634	872	1912	2554	43%	57%
08:00 to 09:00	672	1197	708	1266	716	1378	2096	3841	35%	65%
09:00 to 10:00	723	1172	584	1129	652	1115	1959	3416	36%	64%
10:00 to 11:00	589	783	537	725	643	806	1769	2314	43%	57%
11:00 to 12:00	557	835	551	773	596	782	1704	2390	42%	58%
12:00 to 13:00	662	946	561	980	603	1024	1826	2950	38%	62%
13:00 to 14:00	497	905	558	887	616	982	1671	2774	38%	62%
14:00 to 15:00	545	950	557	963	599	913	1701	2826	38%	62%
15:00 to 16:00	903	1103	599	1098	691	1152	2193	3353	40%	60%
16:00 to 17:00	976	1563	979	1501	829	1585	2784	4649	37%	63%
17:00 to 18:00	997	1784	999	1691	836	1719	2832	5194	35%	65%
18:00 to 19:00	790	1628	864	1294	683	1497	2337	4419	35%	65%
19:00 to 20:00	627	826	540	697	583	791	1750	2314	43%	57%
20:00 to 21:00	408	493	410	462	382	473	1200	1428	46%	54%
21:00 to 22:00	271	319	253	329	289	321	813	969	46%	54%
22:00 to 23:00	199	240	199	266	209	246	607	752	45%	55%
23:00 to 00:00	168	204	126	176	219	223	513	603	46%	54%
Total	10936	16582	10381	15927	10425	16699	31742	49208	39%	61%
Day Split	93%		93%		93%		93%			
Night Split	7%		7%		7%		7%			
Count Date	15-Nov-05		16-Nov-05		17-Nov-05					

Renforth Drive South of Eglinton Avenue

Indicator	From City of Toronto South of Eglinton	
	Current	Projected 2017
ROW Width	No Data	No Data
No. of Lanes	4	NA
Roadway Gradient	No Data	No Data
SADT	NA	NA
Medium Truck %	NA	NA
Heavy Truck %	NA	NA
Total Truck %	NA	NA
Posted Speed Limit	No Data	No Data
Day Split (07:00 to 23:00)	91% ¹	91% ²
Night Split (23:00 to 07:00)	9% ¹	9% ²
NB Split	54% ³	54% ²
SB Split	46% ³	46% ²

Notes

1. Average for Tuesday 21-Jun-05 to Thursday 23-Jun-05 (SB demand measured north of Eglinton)
2. Assumed to remain the same as current conditions
3. 24-hour average for Tuesday 21-Jun-05 to Thursday 23-Jun-05 (SB demand measured north of Eglinton)

Renforth Drive South of Eglinton Avenue

Hour	From City of Toronto									
	South of Eglinton (SB demand measured North of Eglinton)								Dir. Split	
	Tuesday	Wednesday		Thursday		Sum				
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
00:00 to 01:00	79	49	112	51	125	48	316	148	68%	32%
01:00 to 02:00	34	29	53	39	52	48	139	116	55%	45%
02:00 to 03:00	21	18	25	21	24	19	70	58	55%	45%
03:00 to 04:00	23	18	14	9	15	11	52	38	58%	42%
04:00 to 05:00	45	18	55	30	57	27	157	75	68%	32%
05:00 to 06:00	136	38	140	56	133	31	409	125	77%	23%
06:00 to 07:00	432	121	409	143	451	100	1292	364	78%	22%
07:00 to 08:00	709	229	717	254	714	230	2140	713	75%	25%
08:00 to 09:00	1027	360	1071	400	890	341	2988	1101	73%	27%
09:00 to 10:00	813	367	668	361	569	400	2050	1128	65%	35%
10:00 to 11:00	451	358	406	324	394	367	1251	1049	54%	46%
11:00 to 12:00	462	461	499	321	388	357	1349	1139	54%	46%
12:00 to 13:00	487	424	519	358	530	423	1536	1205	56%	44%
13:00 to 14:00	550	418	549	415	558	406	1657	1239	57%	43%
14:00 to 15:00	584	357	545	359	530	316	1659	1032	62%	38%
15:00 to 16:00	439	541	413	421	448	511	1300	1473	47%	53%
16:00 to 17:00	421	608	435	665	438	754	1294	2027	39%	61%
17:00 to 18:00	389	1110	441	1250	419	1164	1249	3524	26%	74%
18:00 to 19:00	459	885	445	1001	466	854	1370	2740	33%	67%
19:00 to 20:00	467	419	546	436	472	432	1485	1287	54%	46%
20:00 to 21:00	477	325	522	340	477	271	1476	936	61%	39%
21:00 to 22:00	361	230	399	303	364	193	1124	726	61%	39%
22:00 to 23:00	252	168	312	256	287	195	851	619	58%	42%
23:00 to 00:00	188	126	238	193	211	161	637	480	57%	43%
Total	9306	7677	9533	8006	9012	7659	27851	23342	54%	46%
Day Split	92%		91%		91%		91%			
Night Split	8%		9%		9%		9%			
Count Date	21-Jun-05		22-Jun-05		23-Jun-05					

Technical Memorandum: Noise Impact Analysis – Projected Bus Volumes

Introduction

*This memorandum provides a preliminary basis for the estimating the noise impacts of the increased bus traffic within the BRT Corridor. The basis for the estimates was the projected passenger volumes summarized in **Figure 6; page 15 – Infrastructure Funding Submission February 2007**. The estimates are provided below expanded to an estimate of the average daily weekday volumes on the facility.*

2011 Passenger Volumes

<i>Location</i>	<i>AM Peak Hour Peak Direction</i>	<i>Daily 2-Way Volume</i>
<i>W. of Erin Mills</i>	<i>3,800</i>	<i>38,000</i>
<i>W. of Hurontario</i>	<i>9,900</i>	<i>99,000</i>
<i>W. of Dixie</i>	<i>10,300</i>	<i>103,000</i>
<i>W. of Renforth</i>	<i>9,700</i>	<i>97,000</i>

The expansion factor was developed on the assumption that the phpd volumes represented 80% of the ph two-way volume which then represented 13% of the daily volumes. These relationships were derived from the 1996 TTS data.

These forecasts will be refined once the details of the BRT Operations Plan are available. The intent of these estimates is to provide a basis for sensitivity testing of the relationship between daily bus volumes and associated the noise levels within the development adjacent to the corridor.

The bus volumes were then estimated using average capacities of 40 during the peak period and 20 passengers on a daily basis.

2011 Bus Volumes

<i>Location</i>	<i>AM Peak Hour Peak Direction</i>	<i>Daily 2-Way Volume</i>
<i>W. of Erin Mills</i>	<i>90</i>	<i>1900</i>
<i>W. of Hurontario</i>	<i>250</i>	<i>5000</i>
<i>W. of Dixie</i>	<i>260</i>	<i>5200</i>
<i>W. of Renforth</i>	<i>240</i>	<i>4800</i>

Bus Activity at BRT Stations

STATION	Total Bus Volumes 2014 EB + WB (Pk hr)			Total Bus Volumes 2021 EB + WB (Pk hr)			24 hr Bus Volumes			Day Time			Evening			Night		
	Stopping	Through	Terminating	Stopping	Through	Terminating	Stopping	Through	Terminating	Stopping	Through	Terminating	Stopping	Through	Terminating	Stopping	Through	Terminating
Winston Church	29	0	16	49	0	27	490	0	270	387	0	213	73	0	41	29	0	16
Erin Mills	59	0	12	100	0	20	996	0	203	787	0	160	149	0	30	60	0	12
City Centre	61	0	N/A	103	0	N/A	1030	0	N/A	814	0	N/A	154	0	N/A	62	0	N/A
Central Parkway	46	17	0	78	29	0	777	287	0	614	227	0	117	43	0	47	17	0
Cawthra	46	17	0	78	29	0	777	287	0	614	227	0	117	43	0	47	17	0
Tomken	46	17	0	78	29	0	777	287	0	614	227	0	117	43	0	47	17	0
Dixie	69	0	12	117	0	20	1165	0	203	920	0	160	175	0	30	70	0	12
Tahoe	54	15	0	91	25	0	912	253	0	720	200	0	137	38	0	55	15	0
Robicoke Creek	54	15	0	91	25	0	912	253	0	720	200	0	137	38	0	55	15	0
Spectrum	54	15	0	91	25	0	912	253	0	720	200	0	137	38	0	55	15	0
Orbitor	54	15	0	91	25	0	912	253	0	720	200	0	137	38	0	55	15	0
Renforth	69	0	14	117	0	24	1165	0	236	920	0	187	175	0	35	70	0	14

Daytime 7AM to 7PM
 Evening 7PM to 11PM
 Night 11PM to 7AM

Assumptions

Daily Volumes= 10*peak hr volumes
 Day Time = 79% of Daily Volumes
 Evening Volumes = 15% of Daily Volumes
 Night Time = 6% of Daily Volumes
 Growth from 2014 to 2021 5% per year
 Contingency of 20% added

23-Apr-08

Bus Volumes on BRT Links (2021)

Link	2014 Daily hr volumes	2021 Daily hr volumes	Daytime	Evening	Night
Winston Churchill - Erin Mills	290	490	387	73	29
Erin Mills - City Centre	590	996	787	149	60
City Centre - Central Parkway	610	1030	814	154	62
Central Parkway- Cawthra	610	1030	814	154	62
Cawthra- Tomken	610	1030	814	154	62
Tomken - Dixie	610	1030	814	154	62
Dixie - Tahoe	690	1165	920	175	70
Tahoe - Etobicoke Creek	690	1165	920	175	70
Etobicoke Creek - Spectrum	690	1165	920	175	70
Spectrum - Orbitor	690	1165	920	175	70
Orbitor - Renforth	690	1165	920	175	70

APPENDIX B

MEASUREMENTS

SSWA RION NL-22 UNIT A
SEP 22-26, 2008
Re6 (#38 Sagamore Crescent)
Mississauga

Day	from	Period	Period	MOE Descriptor	dBA
1	00:00:00 AM- 7:00:00 AM	Night	#NUM!	Leq day 16 Hrs	61
	7:00:00 AM-11:00:00 PM	Day	60.6		
	11:00:00 PM-00:00:00 AM	Night	59.7	Leq night 8Hrs	N/A
2	00:00:00 AM- 7:00:00 AM	Night	59.4	Leq day 16 Hrs	62
	7:00:00 AM-11:00:00 PM	Day	61.8		
	11:00:00 PM-00:00:00 AM	Night	60.2	Leq night 8Hrs	59
3	00:00:00 AM- 7:00:00 AM	Night	59.4	Leq day 16 Hrs	61
	7:00:00 AM-11:00:00 PM	Day	61.2		
	11:00:00 PM-00:00:00 AM	Night	58.9	Leq night 8Hrs	59
4	00:00:00 AM- 7:00:00 AM	Night	59.8	Leq day 16 Hrs	62
	7:00:00 AM-11:00:00 PM	Day	61.7		
	11:00:00 PM-00:00:00 AM	Night	59.4	Leq night 8Hrs	60
5	00:00:00 AM- 7:00:00 AM	Night	58.7	Leq day 16 Hrs	62
	7:00:00 AM-11:00:00 PM	Day	61.9		
	11:00:00 PM-00:00:00 AM	Night	#NUM!	Leq night 8Hrs	N/A

SSWA RION NL-22 UNIT C
SEP 22-26, 2008
Re11 (#4380 Hova Crescent)
Mississauga

Day	from	Period	Period	MOE Descriptor	dBA
1	00:00:00 AM- 7:00:00 AM	Night	#NUM!	Leq day 16 Hrs	56
	7:00:00 AM-11:00:00 PM	Day	55.7		
	11:00:00 PM-00:00:00 AM	Night	55.0	Leq night 8Hrs	N/A
2	00:00:00 AM- 7:00:00 AM	Night	53.6	Leq day 16 Hrs	56
	7:00:00 AM-11:00:00 PM	Day	56.2		
	11:00:00 PM-00:00:00 AM	Night	55.8	Leq night 8Hrs	54
3	00:00:00 AM- 7:00:00 AM	Night	54.3	Leq day 16 Hrs	57
	7:00:00 AM-11:00:00 PM	Day	57.4		
	11:00:00 PM-00:00:00 AM	Night	56.4	Leq night 8Hrs	55
4	00:00:00 AM- 7:00:00 AM	Night	55.1	Leq day 16 Hrs	57
	7:00:00 AM-11:00:00 PM	Day	56.6		
	11:00:00 PM-00:00:00 AM	Night	56.0	Leq night 8Hrs	55
5	00:00:00 AM- 7:00:00 AM	Night	54.0	Leq day 16 Hrs	57
	7:00:00 AM-11:00:00 PM	Day	57.0		
	11:00:00 PM-00:00:00 AM	Night	#NUM!	Leq night 8Hrs	N/A

SSWA RION NL-22 UNIT D
SEP 22-26, 2008
Re11 (#4336 Forestfire Lane)
Mississauga

Day	from	Period	Period	MOE Descriptor	dBA
1	00:00:00 AM- 7:00:00 AM	Night	#NUM!	Leq day 16 Hrs	50
	7:00:00 AM-11:00:00 PM	Day	50.2		
	11:00:00 PM-00:00:00 AM	Night	49.5	Leq night 8Hrs	N/A
2	00:00:00 AM- 7:00:00 AM	Night	51.1	Leq day 16 Hrs	49
	7:00:00 AM-11:00:00 PM	Day	48.7		
	11:00:00 PM-00:00:00 AM	Night	47.7	Leq night 8Hrs	51
3	00:00:00 AM- 7:00:00 AM	Night	52.1	Leq day 16 Hrs	52
	7:00:00 AM-11:00:00 PM	Day	52.0		
	11:00:00 PM-00:00:00 AM	Night	50.7	Leq night 8Hrs	52
4	00:00:00 AM- 7:00:00 AM	Night	52.6	Leq day 16 Hrs	54
	7:00:00 AM-11:00:00 PM	Day	53.6		
	11:00:00 PM-00:00:00 AM	Night	49.2	Leq night 8Hrs	52
5	00:00:00 AM- 7:00:00 AM	Night	50.2	Leq day 16 Hrs	50
	7:00:00 AM-11:00:00 PM	Day	50.0		
	11:00:00 PM-00:00:00 AM	Night	#NUM!	Leq night 8Hrs	N/A

APPENDIX C

CALCULATIONS

Transportation Noise

Filename: re3o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re3, Existing Sound Levels at OLA

Road data, segment # 1: Hwy 403 EB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 1: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 65.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 220.00 / 220.00 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 65.00 deg
Barrier height : 2.00 m
Elevation : 4.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 151.00 m
Receiver elevation : 155.00 m
Barrier elevation : 155.00 m
Reference angle : 0.00

Road data, segment # 2: Hwy 403 WB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 2: Hwy 403 WB (day/night)

```

-----
Angle1   Angle2       : -90.00 deg   65.00 deg
Wood depth      :      0      (No woods.)
No of house rows :      0 / 0
Surface         :      1      (Absorptive ground surface)
Receiver source distance : 190.00 / 190.00 m
Receiver height  :    1.50 / 1.50 m
Topography      :      4      (Elevated; with barrier)
Barrier angle1   : -90.00 deg   Angle2 : 65.00 deg
Barrier height   :    2.00 m
Elevation        :    4.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation :   151.00 m
Receiver elevation :   155.00 m
Barrier elevation :   155.00 m
Reference angle  :    0.00
  
```

Result summary (day)

```

-----
! source ! Road ! Total
! height ! Leq  ! Leq
! (m)    ! (dBA) ! (dBA)
-----+-----+-----+
1.Hwy 403 EB ! 1.83 ! 59.55 ! 59.55
2.Hwy 403 WB ! 1.83 ! 60.38 ! 60.38
-----+-----+-----+
Total                                     63.00 dBA
  
```

Result summary (night)

```

-----
! source ! Road ! Total
! height ! Leq  ! Leq
! (m)    ! (dBA) ! (dBA)
-----+-----+-----+
1.Hwy 403 EB ! 1.83 ! 55.97 ! 55.97
2.Hwy 403 WB ! 1.83 ! 56.81 ! 56.81
-----+-----+-----+
Total                                     59.42 dBA
  
```

TOTAL Leq FROM ALL SOURCES (DAY): 63.00
(NIGHT): 59.42

Filename: re7o.te Time Period: Day/Night 16/8 hours

Description: Re7, Existing Sound Levels at OLA

Road data, segment # 1: Eglinton Ave (day/night)

Car traffic volume : 25665/1932 veh/TimePeriod *
Medium truck volume : 1568/118 veh/TimePeriod *
Heavy truck volume : 1283/97 veh/TimePeriod *
Posted speed limit : 50 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): 30663
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eglinton Ave (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 205.00 / 200.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Renforth Dr (day/night)

Car traffic volume : 13975/1382 veh/TimePeriod *
Medium truck volume : 854/84 veh/TimePeriod *
Heavy truck volume : 699/69 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 17064
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 91.00

Data for Segment # 2: Renforth Dr (day/night)

Angle1 Angle2 : -60.00 deg 30.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 240.00 / 240.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Eglinton Ave (day)

Source height = 1.46 m

ROAD (0.00 + 48.33 + 0.00) = 48.33 dBA

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

-90	90	0.66	71.16	0.00	-18.85	-1.46	0.00	-2.53	0.00
48.33									

Segment Leq : 48.33 dBA

Results segment # 2: Renforth Dr (day)

Source height = 1.46 m

ROAD (0.00 + 45.11 + 0.00) = 45.11 dBA

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

-60	30	0.66	68.53	0.00	-19.99	-3.42	0.00	0.00	0.00
45.11									

Segment Leq : 45.11 dBA

Total Leq All Segments: 50.02 dBA

Results segment # 1: Eglinton Ave (night)

Source height = 1.46 m

ROAD (0.00 + 42.82 + 0.00) = 42.82 dBA

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

-90	90	0.66	62.95	0.00	-18.67	-1.46	0.00	0.00	0.00
42.82									

Segment Leq : 42.82 dBA

Results segment # 2: Renforth Dr (night)

Source height = 1.46 m

ROAD (0.00 + 38.07 + 0.00) = 38.07 dBA

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

-60	30	0.66	61.48	0.00	-19.99	-3.42	0.00	0.00	0.00
38.07									

Segment Leq : 38.07 dBA

Total Leq All Segments: 44.07 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.02
(NIGHT): 44.07

Filename: re9o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re9, Existing Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

```

-----
Car traffic volume : 20926/2325 veh/TimePeriod *
Medium truck volume : 1279/142 veh/TimePeriod *
Heavy truck volume : 1046/116 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
  
```

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

```

24 hr Traffic Volume (AADT or SADT): 25834
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00
  
```

Data for Segment # 1: Eastgate Pkw (day/night)

```

-----
Angle1 Angle2 : -90.00 deg 40.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 95.00 / 95.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 30.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 70.00 / 70.00 m
Source elevation : 152.00 m
Receiver elevation : 149.50 m
Barrier elevation : 150.00 m
Reference angle : 0.00
  
```

Result summary (day)

```

-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----
1.Eastgate Pkw ! 1.46 ! 53.87 ! 53.87
-----
Total 53.87 dBA
  
```

Result summary (night)

```

-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----
1.Eastgate Pkw ! 1.46 ! 47.34 ! 47.34
-----
Total 47.34 dBA
  
```

TOTAL Leq FROM ALL SOURCES (DAY) : 53.87
(NIGHT) : 47.34

Filename: rel0o.te Time Period: Day/Night 16/8 hours
 Description: **Re 10, Existing Sound Levels at OLA**

Road data, segment # 1: Eastgate Pkw (day/night)

```
-----
Car traffic volume   : 21856/1395   veh/TimePeriod  *
Medium truck volume  :  1336/85     veh/TimePeriod  *
Heavy truck volume   :  1093/70     veh/TimePeriod  *
Posted speed limit   :    70 km/h
Road gradient        :    0 %
Road pavement        :    1 (Typical asphalt or concrete)
```

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

```
24 hr Traffic Volume (AADT or SADT): 25834
Percentage of Annual Growth         :  0.00
Number of Years of Growth           :  0.00
Medium Truck % of Total Volume      :  5.50
Heavy Truck % of Total Volume       :  4.50
Day (16 hrs) % of Total Volume      : 94.00
```

Data for Segment # 1: Eastgate Pkw (day/night)

```
-----
Angle1  Angle2      : -90.00 deg   75.00 deg
Wood depth          :    0         (No woods.)
No of house rows    :    0 / 0
Surface             :    1         (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height      :    1.50 / 1.50 m
Topography          :    2         (Flat/gentle slope; with
barrier)
Barrier angle1      : -90.00 deg   Angle2 : 75.00 deg
Barrier height       :    3.00 m
Barrier receiver distance : 53.00 / 53.00 m
Source elevation     : 152.00 m
Receiver elevation    : 152.00 m
Barrier elevation     : 152.00 m
Reference angle      :    0.00
```

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

Barrier height for grazing incidence

```
-----
Source      ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.46 ! 1.50 ! 1.47 ! 153.47
```

ROAD (0.00 + 54.35 + 0.00) = 54.35 dBA

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

```
-----
----
-90      75    0.48  73.32    0.00 -10.77  -1.31    0.00    0.00  -6.89
54.35
-----
----
```

Segment Leq : 54.35 dBA

Total Leq All Segments: 54.35 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.46	!	1.50	!
		1.47	!
			153.47

ROAD (0.00 + 45.42 + 0.00) = 45.42 dBA

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

-90	75	0.48	64.39	0.00	-10.77	-1.31	0.00	0.00	-6.89
45.42									

Segment Leq : 45.42 dBA

Total Leq All Segments: 45.42 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.35
(NIGHT): 45.42

Filename: rello.te Time Period: Day/Night 16/8 hours

Description: Re 11, Existing Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 21856/1395 veh/TimePeriod *
Medium truck volume : 1336/85 veh/TimePeriod *
Heavy truck volume : 1093/70 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 25834
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -80.00 deg 80.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 53.00 / 53.00 m
Source elevation : 152.00 m
Receiver elevation : 151.00 m
Barrier elevation : 152.00 m
Reference angle : 0.00

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

Car traffic volume : 36065/4007 veh/TimePeriod *
Medium truck volume : 2204/245 veh/TimePeriod *
Heavy truck volume : 1803/200 veh/TimePeriod *
Posted speed limit : 60 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): 44525
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Dixie Rd NB (day/night)

Angle1 Angle2 : 0.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 118.00 / 118.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 0.00 deg Angle2 : 70.00 deg
 Barrier height : 4.00 m
 Barrier receiver distance : 53.00 / 53.00 m
 Source elevation : 152.00 m
 Receiver elevation : 151.00 m
 Barrier elevation : 152.00 m
 Reference angle : 0.00

Road data, segment # 3: Dixie Rd SB (day/night)

 Car traffic volume : 36065/4007 veh/TimePeriod *
 Medium truck volume : 2204/245 veh/TimePeriod *
 Heavy truck volume : 1803/200 veh/TimePeriod *
 Posted speed limit : 60 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): 44525
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Dixie Rd SB (day/night)

 Angle1 Angle2 : 0.00 deg 70.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 132.00 / 132.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 0.00 deg Angle2 : 70.00 deg
 Barrier height : 4.00 m
 Barrier receiver distance : 53.00 / 53.00 m
 Source elevation : 152.00 m
 Receiver elevation : 151.00 m
 Barrier elevation : 152.00 m
 Reference angle : 0.00

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	1.13	153.13

ROAD (0.00 + 51.87 + 0.00) = 51.87 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```

-----
----
-80      80    0.42  73.32    0.00 -10.33   -1.24    0.00    0.00   -9.89
51.87
-----

```

Segment Leq : 51.87 dBA

Results segment # 2: Dixie Rd NB (day)

Source height = 1.46 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          0.93 !          152.93
-----

```

ROAD (0.00 + 47.54 + 0.00) = 47.54 dBA

```

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

```

```

----
0      70    0.42  74.17    0.00 -12.73   -4.62    0.00    0.00   -9.27
47.54
-----

```

Segment Leq : 47.54 dBA

Results segment # 3: Dixie Rd SB (day)

Source height = 1.46 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          0.88 !          152.88
-----

```

ROAD (0.00 + 47.00 + 0.00) = 47.00 dBA

```

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

```

```

----
0      70    0.42  74.17    0.00 -13.42   -4.62    0.00    0.00   -9.12
47.00
-----

```

Segment Leq : 47.00 dBA

Total Leq All Segments: 54.16 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          1.13 !          153.13

ROAD (0.00 + 42.93 + 0.00) = 42.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----
----
   -80      80    0.42  64.39    0.00 -10.33   -1.24    0.00    0.00   -9.89
42.93
-----
----

Segment Leq : 42.93 dBA

Results segment # 2: Dixie Rd NB (night)
-----

Source height = 1.46 m

Barrier height for grazing incidence
-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          0.93 !          152.93

ROAD (0.00 + 41.01 + 0.00) = 41.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----
----
    0       70    0.42  67.63    0.00 -12.73   -4.62    0.00    0.00   -9.27
41.01
-----
----

Segment Leq : 41.01 dBA

Results segment # 3: Dixie Rd SB (night)
-----

Source height = 1.46 m

Barrier height for grazing incidence
-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          0.88 !          152.88

ROAD (0.00 + 40.47 + 0.00) = 40.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----
----
    0       70    0.42  67.63    0.00 -13.42   -4.62    0.00    0.00   -9.12
40.47
-----
----

Segment Leq : 40.47 dBA

```

Total Leq All Segments: 46.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.16
(NIGHT): 46.37

Filename: rel2o.te Time Period: Day/Night 16/8 hours

Description: Receptor Rel2, Existing Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 21856/1395 veh/TimePeriod *
Medium truck volume : 1336/85 veh/TimePeriod *
Heavy truck volume : 1093/70 veh/TimePeriod *
Posted speed limit : 70 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): 25834
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 60.00 / 10.00 m
Source elevation : 150.00 m
Receiver elevation : 147.00 m
Barrier elevation : 150.00 m
Reference angle : 0.00

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

Car traffic volume : 36065/4007 veh/TimePeriod *
Medium truck volume : 2204/245 veh/TimePeriod *
Heavy truck volume : 1803/200 veh/TimePeriod *
Posted speed limit : 60 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): 44525
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Dixie Rd NB (day/night)

Angle1 Angle2 : -50.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 240.00 / 240.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 3: Dixie Rd SB (day/night)

 Car traffic volume : 36065/4007 veh/TimePeriod *
 Medium truck volume : 2204/245 veh/TimePeriod *
 Heavy truck volume : 1803/200 veh/TimePeriod *
 Posted speed limit : 60 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): 44525
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Dixie Rd SB (day/night)

 Angle1 Angle2 : -50.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 225.00 / 225.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.Eastgate Pkw	!	1.46	!	51.55	!	51.55
2.Dixie Rd NB	!	1.46	!	48.23	!	48.23
3.Dixie Rd SB	!	1.46	!	48.70	!	48.70
Total						54.53 dBA

Result summary (night)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.Eastgate Pkw	!	1.46	!	38.27	!	38.27
2.Dixie Rd NB	!	1.46	!	41.70	!	41.70
3.Dixie Rd SB	!	1.46	!	42.16	!	42.16
Total						45.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.53
 (NIGHT): 45.79

Filename: rel60.te Time Period: Day/Night 16/8 hours

Description: Re 16, Existing Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 27350/3039 veh/TimePeriod *
Medium truck volume : 1671/186 veh/TimePeriod *
Heavy truck volume : 1367/152 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 33765
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 145.00 / 10.00 m
Source elevation : 151.00 m
Receiver elevation : 146.00 m
Barrier elevation : 151.00 m
Reference angle : 0.00

Road data, segment # 2: Cawthra Rd (day/night)

Car traffic volume : 29120/3599 veh/TimePeriod *
Medium truck volume : 1780/220 veh/TimePeriod *
Heavy truck volume : 1456/180 veh/TimePeriod *
Posted speed limit : 50 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): 36354
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 89.00

Data for Segment # 2: Cawthra Rd (day/night)

Angle1 Angle2 : -30.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 165.00 / 165.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	0.99	151.99

ROAD (0.00 + 48.46 + 0.00) = 48.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.42	74.29	0.00	-14.61	-1.02	0.00	0.00	-10.19

SubLeq 48.46

Segment Leq : 48.46 dBA

Results segment # 2: Cawthra Rd (day)

Source height = 1.46 m

ROAD (0.00 + 51.58 + 0.00) = 51.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-30	90	0.66	71.71	0.00	-17.29	-2.85	0.00	0.00	0.00

SubLeq 51.58

Segment Leq : 51.58 dBA

Total Leq All Segments: 53.30 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	-3.19	147.81

ROAD (0.00 + 35.77 + 0.00) = 35.77 dBA

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

SubLeq

```

-----
----
-90      90    0.42  67.76    0.00 -14.61   -1.02    0.00    0.00 -16.36
35.77
-----

```

Segment Leq : 35.77 dBA

Results segment # 2: Cawthra Rd (night)

Source height = 1.46 m

ROAD (0.00 + 45.51 + 0.00) = 45.51 dBA

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

```

-----
----
-30      90    0.66  65.65    0.00 -17.29   -2.85    0.00    0.00    0.00
45.51
-----

```

Segment Leq : 45.51 dBA

Total Leq All Segments: 45.95 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.30
(NIGHT): 45.95

Filename: rel8o.te Time Period: Day/Night 16/8 hours

Description: Receptor Rel8, Existing Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 28565/1823 veh/TimePeriod *
Medium truck volume : 1746/111 veh/TimePeriod *
Heavy truck volume : 1428/91 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 33765
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -70.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -70.00 deg Angle2 : 0.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 90.00 / 90.00 m
Source elevation : 148.00 m
Receiver elevation : 148.00 m
Barrier elevation : 148.00 m
Reference angle : 0.00

Road data, segment # 2: Eastgate Pkw (day/night)

Car traffic volume : 28565/1823 veh/TimePeriod *
Medium truck volume : 1746/111 veh/TimePeriod *
Heavy truck volume : 1428/91 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 33765
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 2: Eastgate Pkw (day/night)

Angle1 Angle2 : 0.00 deg 40.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)

No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Hwy 403 EB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 3: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 90.00 / 90.00 m
Source elevation : 148.00 m
Receiver elevation : 148.00 m
Barrier elevation : 148.00 m
Reference angle : 0.00

Road data, segment # 4: Hwy 403 EB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 4: Hwy 403 EB (day/night)

Angle1 Angle2 : 0.00 deg 55.00 deg

Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 5: Hwy 403 WB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 5: Hwy 403 WB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 185.00 / 185.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 90.00 / 90.00 m
Source elevation : 148.00 m
Receiver elevation : 148.00 m
Barrier elevation : 148.00 m
Reference angle : 0.00

Road data, segment # 6: Hwy 403 WB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 6: Hwy 403 WB (day/night)

Angle1 Angle2 : 0.00 deg 30.00 deg
 Wood depth : 1 (Wood depth 30 to less than 60 metres)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 185.00 / 185.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Eastgate Pkw	! 1.46 !	49.64 !	49.64
2.Eastgate Pkw	! 1.46 !	51.04 !	51.04
3.Hwy 403 EB	! 1.83 !	58.27 !	58.27
4.Hwy 403 EB	! 1.83 !	58.91 !	58.91
5.Hwy 403 WB	! 1.83 !	57.41 !	57.41
6.Hwy 403 WB	! 1.83 !	55.61 !	55.61
	-----+-----+-----+-----		
Total			64.12 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Eastgate Pkw	! 1.46 !	40.69 !	40.69
2.Eastgate Pkw	! 1.46 !	42.09 !	42.09
3.Hwy 403 EB	! 1.83 !	54.69 !	54.69
4.Hwy 403 EB	! 1.83 !	55.33 !	55.33
5.Hwy 403 WB	! 1.83 !	53.84 !	53.84
6.Hwy 403 WB	! 1.83 !	52.03 !	52.03
	-----+-----+-----+-----		
Total			60.27 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.12
 (NIGHT): 60.27

Filename: re20o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re20, Existing Sound Levels at OLA

Road data, segment # 1: Hwy 403 EB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 1: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg -60.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Hwy 403 EB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 2: Hwy 403 EB (day/night)

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -60.00 deg Angle2 : 90.00 deg

Barrier height : 4.00 m
Barrier receiver distance : 85.00 / 85.00 m
Source elevation : 145.00 m
Receiver elevation : 145.00 m
Barrier elevation : 145.00 m
Reference angle : 0.00

Road data, segment # 3: Hwy 403 WB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 3: Hwy 403 WB (day/night)

Angle1 Angle2 : -90.00 deg -60.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 140.00 / 140.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: Hwy 403 WB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 4: Hwy 403 WB (day/night)

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 140.00 / 140.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)

Barrier angle1 : -60.00 deg Angle2 : 90.00 deg
 Barrier height : 4.00 m
 Barrier receiver distance : 85.00 / 85.00 m
 Source elevation : 145.00 m
 Receiver elevation : 145.00 m
 Barrier elevation : 145.00 m
 Reference angle : 0.00

Road data, segment # 5: Cntrl Pkway (day/night)

 Car traffic volume : 17747/1133 veh/TimePeriod *
 Medium truck volume : 1085/69 veh/TimePeriod *
 Heavy truck volume : 887/57 veh/TimePeriod *
 Posted speed limit : 50 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): 20978
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 5: Cntrl Pkway (day/night)

 Angle1 Angle2 : -40.00 deg 5.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 120.00 / 120.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Hwy 403 EB	! 1.83 !	56.41 !	56.41
2.Hwy 403 EB	! 1.83 !	61.16 !	61.16
3.Hwy 403 WB	! 1.83 !	55.00 !	55.00
4.Hwy 403 WB	! 1.83 !	60.70 !	60.70
5.Cntrl Pkway	! 1.46 !	48.97 !	48.97
	Total		65.20 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Hwy 403 EB	! 1.83 !	52.84 !	52.84
2.Hwy 403 EB	! 1.83 !	57.58 !	57.58
3.Hwy 403 WB	! 1.83 !	51.42 !	51.42
4.Hwy 403 WB	! 1.83 !	57.12 !	57.12
5.Cntrl Pkway	! 1.46 !	40.04 !	40.04

Total

61.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.20
(NIGHT): 61.55

Filename: re22.te Time Period: Day/Night 16/8 hours

Description: Re 22, Existing Sound Levels at OLA

Road data, segment # 1: Hwy 403 EB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 1: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 230.00 / 230.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Hwy 403 WB (day/night)

Car traffic volume : 61928/13594 veh/TimePeriod *
Medium truck volume : 2732/600 veh/TimePeriod *
Heavy truck volume : 8196/1799 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 88850
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 2: Hwy 403 WB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 260.00 / 260.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Hurontar NB (day/night)

```

-----
Car traffic volume : 23015/2845 veh/TimePeriod *
Medium truck volume : 1406/174 veh/TimePeriod *
Heavy truck volume : 1151/142 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

```

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

```

24 hr Traffic Volume (AADT or SADT): 28733
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 89.00

```

Data for Segment # 3: Hurontar NB (day/night)

```

-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 30.00 / 200.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```

Road data, segment # 4: Hurontar SB (day/night)

```

-----
Car traffic volume : 21210/2621 veh/TimePeriod *
Medium truck volume : 1296/160 veh/TimePeriod *
Heavy truck volume : 1060/131 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

```

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

```

24 hr Traffic Volume (AADT or SADT): 26479
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 89.00

```

Data for Segment # 4: Hurontar SB (day/night)

```

-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 50.00 / 215.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```

Results segment # 1: Hwy 403 EB (day)

Source height = 1.83 m

ROAD (0.00 + 59.18 + 0.00) = 59.18 dBA

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

```

-----
----
-90      0    0.65  83.19    0.00 -19.56  -4.45    0.00    0.00    0.00
59.18
-----

```

Segment Leq : 59.18 dBA

Results segment # 2: Hwy 403 WB (day)

Source height = 1.83 m

ROAD (0.00 + 58.30 + 0.00) = 58.30 dBA

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

```

-----
----
-90      0    0.65  83.19    0.00 -20.44  -4.45    0.00    0.00    0.00
58.30
-----

```

Segment Leq : 58.30 dBA

Results segment # 3: Hurontar NB (day)

Source height = 1.46 m

ROAD (0.00 + 69.79 + 0.00) = 69.79 dBA

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

```

-----
----
-90     90    0.00  72.80    0.00  -3.01    0.00    0.00    0.00    0.00
69.79
-----

```

Segment Leq : 69.79 dBA

Results segment # 4: Hurontar SB (day)

Source height = 1.46 m

ROAD (0.00 + 67.21 + 0.00) = 67.21 dBA

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

```

-----
----
-90     90    0.00  72.44    0.00  -5.23    0.00    0.00    0.00    0.00
67.21
-----

```

Segment Leq : 67.21 dBA

Total Leq All Segments: 72.12 dBA

Results segment # 1: Hwy 403 EB (night)

Source height = 1.83 m

ROAD (0.00 + 55.60 + 0.00) = 55.60 dBA

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

SubLeq

-90	0	0.65	79.61	0.00	-19.56	-4.45	0.00	0.00	0.00
55.60									

Segment Leq : 55.60 dBA

Results segment # 2: Hwy 403 WB (night)

Source height = 1.83 m

ROAD (0.00 + 54.72 + 0.00) = 54.72 dBA

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

SubLeq

-90	0	0.65	79.61	0.00	-20.44	-4.45	0.00	0.00	0.00
54.72									

Segment Leq : 54.72 dBA

Results segment # 3: Hurontar NB (night)

Source height = 1.46 m

ROAD (0.00 + 55.47 + 0.00) = 55.47 dBA

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

SubLeq

-90	90	0.00	66.72	0.00	-11.25	0.00	0.00	0.00	0.00
55.47									

Segment Leq : 55.47 dBA

Results segment # 4: Hurontar SB (night)

Source height = 1.46 m

ROAD (0.00 + 54.81 + 0.00) = 54.81 dBA

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

SubLeq

-90	90	0.00	66.37	0.00	-11.56	0.00	0.00	0.00	0.00
54.81									

Segment Leq : 54.81 dBA

Total Leq All Segments: 61.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 72.12
(NIGHT): 61.19

Filename: re23.te Time Period: Day/Night 16/8 hours

Description: Re 23, Existing Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 14296/1076 veh/TimePeriod *
Medium truck volume : 874/66 veh/TimePeriod *
Heavy truck volume : 715/54 veh/TimePeriod *
Posted speed limit : 70 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): 17080
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 85.00 / 85.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

ROAD (0.00 + 63.94 + 0.00) = 63.94 dBA

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

SubLeq

-90 90 0.00 71.48 0.00 -7.53 0.00 0.00 0.00 0.00
63.94

Segment Leq : 63.94 dBA

Total Leq All Segments: 63.94 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

ROAD (0.00 + 55.73 + 0.00) = 55.73 dBA

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

SubLeq

-90	90	0.00	63.26	0.00	-7.53	0.00	0.00	0.00	0.00
55.73									

Segment Leq : 55.73 dBA

Total Leq All Segments: 55.73 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.94
(NIGHT): 55.73

Filename: re24.te Time Period: Day/Night 16/8 hours
Description: Receptor Re24, Existing Sound Levels at Building Façade

Road data, segment # 1: Eglinton Ave (day/night)

 Car traffic volume : 22585/1700 veh/TimePeriod *
 Medium truck volume : 1380/104 veh/TimePeriod *
 Heavy truck volume : 1129/85 veh/TimePeriod *
 Posted speed limit : 50 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): 26983
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eglinton Ave (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 65.00 / 65.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
-----	+	-----	+	-----	+	-----
1.Eglinton Ave	!	1.46	!	64.24	!	64.24
-----	+	-----	+	-----	+	-----
		Total				64.24 dBA

Result summary (night)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
-----	+	-----	+	-----	+	-----
1.Eglinton Ave	!	1.46	!	56.02	!	56.02
-----	+	-----	+	-----	+	-----
		Total				56.02 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.24
 (NIGHT): 56.02

Filename: re25.te Time Period: Day/Night 16/8 hours
Description: Re 25, Existing Sound Levels at OLA

Road data, segment # 1: Eglinton Ave (day/night)

 Car traffic volume : 22585/1700 veh/TimePeriod *
 Medium truck volume : 1380/104 veh/TimePeriod *
 Heavy truck volume : 1129/85 veh/TimePeriod *
 Posted speed limit : 50 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): 26983
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eglinton Ave (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 60.00 / 60.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Eglinton Ave (day)

 Source height = 1.46 m

ROAD (0.00 + 64.59 + 0.00) = 64.59 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.00 70.61 0.00 -6.02 0.00 0.00 0.00 0.00
 64.59

 Segment Leq : 64.59 dBA

Total Leq All Segments: 64.59 dBA

Results segment # 1: Eglinton Ave (night)

 Source height = 1.46 m

ROAD (0.00 + 56.37 + 0.00) = 56.37 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

-90	90	0.00	62.39	0.00	-6.02	0.00	0.00	0.00	0.00
-----	----	------	-------	------	-------	------	------	------	------

56.37

Segment Leq : 56.37 dBA

Total Leq All Segments: 56.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.59
(NIGHT): 56.37

Filename: re26.te Time Period: Day/Night 16/8 hours

Description: Re 26, Existing Sound Levels at OLA

Road data, segment # 1: Eglinton Ave (day/night)

Car traffic volume : 25665/1932 veh/TimePeriod *
Medium truck volume : 1568/118 veh/TimePeriod *
Heavy truck volume : 1283/97 veh/TimePeriod *
Posted speed limit : 50 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): 30663
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eglinton Ave (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 45.00 / 45.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Eglinton Ave (day)

Source height = 1.46 m

ROAD (0.00 + 66.39 + 0.00) = 66.39 dBA

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

SubLeq

-90 90 0.00 71.16 0.00 -4.77 0.00 0.00 0.00 0.00
66.39

Segment Leq : 66.39 dBA

Total Leq All Segments: 66.39 dBA

Results segment # 1: Eglinton Ave (night)

Source height = 1.46 m

ROAD (0.00 + 58.18 + 0.00) = 58.18 dBA

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

SubLeq

-90	90	0.00	62.95	0.00	-4.77	0.00	0.00	0.00	0.00
58.18									

Segment Leq : 58.18 dBA

Total Leq All Segments: 58.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.39
(NIGHT): 58.18

Filename: re3o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re3, Future Sound Levels at OLA

Road data, segment # 1: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 1: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 65.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 220.00 / 220.00 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 65.00 deg
Barrier height : 2.00 m
Elevation : 4.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 151.00 m
Receiver elevation : 155.00 m
Barrier elevation : 155.00 m
Reference angle : 0.00

Road data, segment # 2: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 2: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 65.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 220.00 / 220.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : -90.00 deg Angle2 : 65.00 deg
 Barrier height : 2.00 m
 Elevation : 4.00 m
 Barrier receiver distance : 10.00 / 10.00 m
 Source elevation : 151.00 m
 Receiver elevation : 155.00 m
 Barrier elevation : 155.00 m
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Hwy 403 EB	! 1.83 !	61.22 !	61.22
2.Hwy 403 EB	! 1.83 !	61.22 !	61.22
Total			64.23 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Hwy 403 EB	! 1.83 !	57.64 !	57.64
2.Hwy 403 EB	! 1.83 !	57.64 !	57.64
Total			60.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.23
 (NIGHT): 60.65

Filename: re7o.te Time Period: Day/Night 16/8 hours

Description: Re7, Future Sound Levels at OLA

Road data, segment # 1: Eglinton Ave (day/night)

Car traffic volume : 32853/2473 veh/TimePeriod *
Medium truck volume : 2008/151 veh/TimePeriod *
Heavy truck volume : 1643/124 veh/TimePeriod *
Posted speed limit : 50 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): 30663
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eglinton Ave (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 205.00 / 200.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Renforth Dr (day/night)

Car traffic volume : 17890/1769 veh/TimePeriod *
Medium truck volume : 1093/108 veh/TimePeriod *
Heavy truck volume : 894/88 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 17064
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 91.00

Data for Segment # 2: Renforth Dr (day/night)

Angle1 Angle2 : -60.00 deg 30.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 240.00 / 240.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Eglinton Ave (day)

Source height = 1.46 m

ROAD (0.00 + 49.40 + 0.00) = 49.40 dBA

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

-90	90	0.66	72.24	0.00	-18.85	-1.46	0.00	-2.53	0.00
49.40									

Segment Leq : 49.40 dBA

Results segment # 2: Renforth Dr (day)

Source height = 1.46 m

ROAD (0.00 + 46.18 + 0.00) = 46.18 dBA

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

-60	30	0.66	69.60	0.00	-19.99	-3.42	0.00	0.00	0.00
46.18									

Segment Leq : 46.18 dBA

Total Leq All Segments: 51.09 dBA

Results segment # 1: Eglinton Ave (night)

Source height = 1.46 m

ROAD (0.00 + 43.89 + 0.00) = 43.89 dBA

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

-90	90	0.66	64.02	0.00	-18.67	-1.46	0.00	0.00	0.00
43.89									

Segment Leq : 43.89 dBA

Results segment # 2: Renforth Dr (night)

Source height = 1.45 m

ROAD (0.00 + 39.13 + 0.00) = 39.13 dBA

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

-60	30	0.66	62.55	0.00	-19.99	-3.42	0.00	0.00	0.00
39.13									

Segment Leq : 39.13 dBA

Total Leq All Segments: 45.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.09
(NIGHT): 45.14

Filename: re9o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re9, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

```
-----
Car traffic volume : 27977/1786 veh/TimePeriod *
Medium truck volume : 1710/109 veh/TimePeriod *
Heavy truck volume : 1399/89 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

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

```
24 hr Traffic Volume (AADT or SADT): 25834
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00
```

Data for Segment # 1: Eastgate Pkw (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 40.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 95.00 / 95.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 30.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 70.00 / 70.00 m
Source elevation : 152.00 m
Receiver elevation : 149.50 m
Barrier elevation : 150.00 m
Reference angle : 0.00
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.Eastgate Pkw ! 1.46 ! 55.14 ! 55.14
-----+-----+-----+
Total 55.14 dBA
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.Eastgate Pkw ! 1.46 ! 46.19 ! 46.19
-----+-----+-----+
Total 46.19 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY) : 55.14
(NIGHT) : 46.19

Filename: rel10o.te Time Period: Day/Night 16/8 hours

Description: Rel10, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

```
-----
Car traffic volume   : 27977/1786   veh/TimePeriod  *
Medium truck volume : 1710/109     veh/TimePeriod  *
Heavy truck volume  : 1399/89      veh/TimePeriod  *
Posted speed limit  : 70 km/h
Road gradient       : 0 %
Road pavement      : 1 (Typical asphalt or concrete)
```

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

```
24 hr Traffic Volume (AADT or SADT): 25834
Percentage of Annual Growth       : 2.50
Number of Years of Growth         : 10.00
Medium Truck % of Total Volume    : 5.50
Heavy Truck % of Total Volume     : 4.50
Day (16 hrs) % of Total Volume    : 94.00
```

Data for Segment # 1: Eastgate Pkw (day/night)

```
-----
Angle1   Angle2           : -90.00 deg   75.00 deg
Wood depth           : 0 (No woods.)
No of house rows     : 0 / 0
Surface              : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height      : 1.50 / 1.50 m
Topography           : 2 (Flat/gentle slope; with
barrier)
Barrier angle1       : -90.00 deg   Angle2 : 75.00 deg
Barrier height       : 3.00 m
Barrier receiver distance : 50.00 / 50.00 m
Source elevation     : 152.80 m
Receiver elevation   : 153.60 m
Barrier elevation     : 153.00 m
Reference angle      : 0.00
```

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

Barrier height for grazing incidence

```
-----
Source      ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.46 ! 1.50 ! 1.57 ! 154.57
```

ROAD (0.00 + 55.69 + 0.00) = 55.69 dBA

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

```
-----
-90      75    0.48  74.39    0.00 -10.77  -1.31    0.00    0.00  -6.62
55.69
-----
```

Segment Leq : 55.69 dBA

Total Leq All Segments: 55.69 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.46	!	1.50	!
		1.57	!
			154.57

ROAD (0.00 + 46.74 + 0.00) = 46.74 dBA

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

-90	75	0.48	65.44	0.00	-10.77	-1.31	0.00	0.00	-6.62
46.74									

Segment Leq : 46.74 dBA

Total Leq All Segments: 46.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.69
(NIGHT): 46.74

Filename: rello.te Time Period: Day/Night 16/8 hours

Description: Rel1, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 27977/1786 veh/TimePeriod *
Medium truck volume : 1710/109 veh/TimePeriod *
Heavy truck volume : 1399/89 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 25834
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -80.00 deg 80.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 50.00 / 50.00 m
Source elevation : 152.00 m
Receiver elevation : 151.90 m
Barrier elevation : 152.00 m
Reference angle : 0.00

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

Car traffic volume : 36065/4007 veh/TimePeriod *
Medium truck volume : 2204/245 veh/TimePeriod *
Heavy truck volume : 1803/200 veh/TimePeriod *
Posted speed limit : 60 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): 44525
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Dixie Rd NB (day/night)

Angle1 Angle2 : 0.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 115.00 / 115.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 30.00 deg Angle2 : 70.00 deg
 Barrier height : 3.00 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 152.00 m
 Receiver elevation : 151.90 m
 Barrier elevation : 152.00 m
 Reference angle : 0.00

Road data, segment # 3: Dixie Rd SB (day/night)

 Car traffic volume : 36065/4007 veh/TimePeriod *
 Medium truck volume : 2204/245 veh/TimePeriod *
 Heavy truck volume : 1803/200 veh/TimePeriod *
 Posted speed limit : 60 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): 44525
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Dixie Rd SB (day/night)

 Angle1 Angle2 : -0.00 deg 70.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 130.00 / 130.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 30.00 deg Angle2 : 70.00 deg
 Barrier height : 3.00 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 152.00 m
 Receiver elevation : 151.90 m
 Barrier elevation : 152.00 m
 Reference angle : 0.00

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.46 !	1.50 !	1.44 !	153.44

ROAD (0.00 + 55.33 + 0.00) = 55.33 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```

-----
----
-80      80    0.48  74.39    0.00 -10.77   -1.33    0.00    0.00   -6.97
55.33
-----

```

Segment Leq : 55.33 dBA

Results segment # 2: Dixie Rd NB (day)

Source height = 1.46 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          1.42 !          153.42

```

ROAD (51.57 + 47.23 + 0.00) = 52.93 dBA

```

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

```

```

----
0      30    0.66  74.17    0.00 -14.68   -7.91    0.00    0.00    0.00
51.57
-----

```

```

----
30     70    0.48  74.17    0.00 -13.10   -7.53    0.00    0.00   -6.30
47.23
-----

```

Segment Leq : 52.93 dBA

Results segment # 3: Dixie Rd SB (day)

Source height = 1.46 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.46 !          1.50 !          1.42 !          153.42

```

ROAD (50.68 + 46.54 + 0.00) = 52.10 dBA

```

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

```

```

----
-0     30    0.66  74.17    0.00 -15.57   -7.91    0.00    0.00    0.00
50.68
-----

```

```

----
30     70    0.48  74.17    0.00 -13.89   -7.53    0.00    0.00   -6.21
46.54
-----

```

Segment Leq : 52.10 dBA

Total Leq All Segments: 58.45 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	1.43	153.43

ROAD (0.00 + 46.38 + 0.00) = 46.38 dBA

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

-80	80	0.48	65.44	0.00	-10.77	-1.33	0.00	0.00	-6.97
46.38									

Segment Leq : 46.38 dBA

Results segment # 2: Dixie Rd NB (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	1.42	153.42

ROAD (45.03 + 40.70 + 0.00) = 46.39 dBA

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

0	30	0.66	67.63	0.00	-14.68	-7.91	0.00	0.00	0.00
45.03									

30	70	0.48	67.63	0.00	-13.10	-7.53	0.00	0.00	-6.30
40.70									

Segment Leq : 46.39 dBA

Results segment # 3: Dixie Rd SB (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	1.42	153.42

ROAD (44.15 + 40.00 + 0.00) = 45.56 dBA

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

-0	30	0.66	67.63	0.00	-15.57	-7.91	0.00	0.00	0.00
44.15									

30	70	0.48	67.63	0.00	-13.89	-7.53	0.00	0.00	-6.21
40.00									

Segment Leq : 45.56 dBA

Total Leq All Segments: 50.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.45
(NIGHT): 50.90

Filename: rel2o.te Time Period: Day/Night 16/8 hours

Description: Receptor Rel2, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 27977/1786 veh/TimePeriod *
Medium truck volume : 1710/109 veh/TimePeriod *
Heavy truck volume : 1399/89 veh/TimePeriod *
Posted speed limit : 70 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): 25834
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 60.00 / 10.00 m
Source elevation : 150.00 m
Receiver elevation : 147.00 m
Barrier elevation : 150.00 m
Reference angle : 0.00

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

Car traffic volume : 46167/5130 veh/TimePeriod *
Medium truck volume : 2821/313 veh/TimePeriod *
Heavy truck volume : 2308/256 veh/TimePeriod *
Posted speed limit : 60 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): 44525
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Dixie Rd NB (day/night)

Angle1 Angle2 : -50.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 240.00 / 240.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 3: Dixie Rd SB (day/night)

 Car traffic volume : 46167/5130 veh/TimePeriod *
 Medium truck volume : 2821/313 veh/TimePeriod *
 Heavy truck volume : 2308/256 veh/TimePeriod *
 Posted speed limit : 60 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): 44525
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 10.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Dixie Rd SB (day/night)

 Angle1 Angle2 : -50.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 225.00 / 225.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.Eastgate Pkw	!	1.46	!	52.63	!	52.63
2.Dixie Rd NB	!	1.46	!	49.31	!	49.31
3.Dixie Rd SB	!	1.46	!	49.77	!	49.77
Total						55.60 dBA

Result summary (night)

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.Eastgate Pkw	!	1.46	!	39.33	!	39.33
2.Dixie Rd NB	!	1.46	!	42.77	!	42.77
3.Dixie Rd SB	!	1.46	!	43.23	!	43.23
Total						46.86 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.60
 (NIGHT): 46.86

Filename: rel16o.te Time Period: Day/Night 16/8 hours

Description: Rel16, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 35010/3890 veh/TimePeriod *
Medium truck volume : 2139/238 veh/TimePeriod *
Heavy truck volume : 1750/194 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 33765
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.00 m
Barrier receiver distance : 70.00 / 10.00 m
Source elevation : 150.00 m
Receiver elevation : 146.00 m
Barrier elevation : 147.00 m
Reference angle : 0.00

Road data, segment # 2: Cawthra Rd (day/night)

Car traffic volume : 37275/4607 veh/TimePeriod *
Medium truck volume : 2278/282 veh/TimePeriod *
Heavy truck volume : 1864/230 veh/TimePeriod *
Posted speed limit : 50 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): 36354
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 89.00

Data for Segment # 2: Cawthra Rd (day/night)

Angle1 Angle2 : -30.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

Surface : 1 (Absorptive ground surface)
 Receiver source distance : 165.00 / 165.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 30.00 deg Angle2 : 90.00 deg
 Barrier height : 13.00 m
 Barrier receiver distance : 70.00 / 70.00 m
 Source elevation : 151.00 m
 Receiver elevation : 146.00 m
 Barrier elevation : 147.00 m
 Reference angle : 0.00

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	2.23	149.23

ROAD (0.00 + 50.18 + 0.00) = 50.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.00	75.37	0.00	-10.28	0.00	0.00	0.00	-14.90

SubLeq

Segment Leq : 50.18 dBA

Results segment # 2: Cawthra Rd (day)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	2.60	149.60

ROAD (50.60 + 44.27 + 0.00) = 51.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-30	30	0.66	72.79	0.00	-17.29	-4.90	0.00	0.00	0.00

SubLeq

30	90	0.00	72.79	0.00	-10.41	-4.77	0.00	0.00	-13.33
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Segment Leq : 51.51 dBA

Total Leq All Segments: 53.91 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	0.75	147.75

ROAD (0.00 + 40.34 + 0.00) = 40.34 dBA

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

-90	90	0.00	68.83	0.00	-10.28	0.00	0.00	0.00	-18.21
40.34									

Segment Leq : 40.34 dBA

Results segment # 2: Cawthra Rd (night)

Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	2.60	149.60

ROAD (44.52 + 38.20 + 0.00) = 45.43 dBA

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

-30	30	0.66	66.71	0.00	-17.29	-4.90	0.00	0.00	0.00
44.52									

30	90	0.00	66.71	0.00	-10.41	-4.77	0.00	0.00	-13.33
38.20									

Segment Leq : 45.43 dBA

Total Leq All Segments: 46.60 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.91
(NIGHT): 46.60

Filename: rel18o.te Time Period: Day/Night 16/8 hours

Description: Receptor Rel18, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 35010/3890 veh/TimePeriod *
Medium truck volume : 2139/238 veh/TimePeriod *
Heavy truck volume : 1750/194 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 33765
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -70.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -70.00 deg Angle2 : 0.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 90.00 / 90.00 m
Source elevation : 148.00 m
Receiver elevation : 148.00 m
Barrier elevation : 148.00 m
Reference angle : 0.00

Road data, segment # 2: Eastgate Pkw (day/night)

Car traffic volume : 35010/3890 veh/TimePeriod *
Medium truck volume : 2139/238 veh/TimePeriod *
Heavy truck volume : 1750/194 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 33765
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Eastgate Pkw (day/night)

Angle1 Angle2 : 0.00 deg 40.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)

No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 3: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 90.00 / 90.00 m
Source elevation : 148.00 m
Receiver elevation : 148.00 m
Barrier elevation : 148.00 m
Reference angle : 0.00

Road data, segment # 4: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 4: Hwy 403 EB (day/night)

Angle1 Angle2 : 0.00 deg 55.00 deg

Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 / 160.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 5: Hwy 403 WB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 5: Hwy 403 WB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 185.00 / 185.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 90.00 / 90.00 m
Source elevation : 148.00 m
Receiver elevation : 148.00 m
Barrier elevation : 148.00 m
Reference angle : 0.00

Road data, segment # 6: Hwy 403 WB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 6: Hwy 403 WB (day/night)

Angle1 Angle2 : 0.00 deg 30.00 deg
 Wood depth : 1 (Wood depth 30 to less than 60 metres)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 185.00 / 185.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Eastgate Pkw	! 1.46 !	50.52 !	50.52
2.Eastgate Pkw	! 1.46 !	51.92 !	51.92
3.Hwy 403 EB	! 1.83 !	59.94 !	59.94
4.Hwy 403 EB	! 1.83 !	60.58 !	60.58
5.Hwy 403 WB	! 1.83 !	59.08 !	59.08
6.Hwy 403 WB	! 1.83 !	57.27 !	57.27
Total			65.73 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Eastgate Pkw	! 1.46 !	43.98 !	43.98
2.Eastgate Pkw	! 1.46 !	45.39 !	45.39
3.Hwy 403 EB	! 1.83 !	56.36 !	56.36
4.Hwy 403 EB	! 1.83 !	57.00 !	57.00
5.Hwy 403 WB	! 1.83 !	55.51 !	55.51
6.Hwy 403 WB	! 1.83 !	53.70 !	53.70
Total			62.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.73
 (NIGHT): 62.00

Filename: re20o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re20, Future Sound Levels at OLA

Road data, segment # 1: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 1: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg -60.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 2: Hwy 403 EB (day/night)

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 110.00 / 110.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -60.00 deg Angle2 : 90.00 deg

Barrier height : 4.00 m
Barrier receiver distance : 85.00 / 85.00 m
Source elevation : 145.00 m
Receiver elevation : 145.00 m
Barrier elevation : 145.00 m
Reference angle : 0.00

Road data, segment # 3: Hwy 403 WB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 3: Hwy 403 WB (day/night)

Angle1 Angle2 : -90.00 deg -60.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 140.00 / 140.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: Hwy 403 WB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 4: Hwy 403 WB (day/night)

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 140.00 / 140.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)

Barrier angle1 : -60.00 deg Angle2 : 90.00 deg
 Barrier height : 4.00 m
 Barrier receiver distance : 85.00 / 85.00 m
 Source elevation : 145.00 m
 Receiver elevation : 145.00 m
 Barrier elevation : 145.00 m
 Reference angle : 0.00

Road data, segment # 5: Cntrl Pkway (day/night)

 Car traffic volume : 22718/1450 veh/TimePeriod *
 Medium truck volume : 1388/89 veh/TimePeriod *
 Heavy truck volume : 1136/73 veh/TimePeriod *
 Posted speed limit : 50 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): 20978
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 10.00
 Medium Truck % of Total Volume : 5.50
 Heavy Truck % of Total Volume : 4.50
 Day (16 hrs) % of Total Volume : 94.00

Data for Segment # 5: Cntrl Pkway (day/night)

 Angle1 Angle2 : -40.00 deg 5.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 120.00 / 120.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Hwy 403 EB	! 1.83 !	58.08 !	58.08
2.Hwy 403 EB	! 1.83 !	62.83 !	62.83
3.Hwy 403 WB	! 1.83 !	56.67 !	56.67
4.Hwy 403 WB	! 1.83 !	62.37 !	62.37
5.Cntrl Pkway	! 1.46 !	50.04 !	50.04
	-----	-----	-----
	Total		66.86 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Hwy 403 EB	! 1.83 !	54.50 !	54.50
2.Hwy 403 EB	! 1.83 !	59.25 !	59.25
3.Hwy 403 WB	! 1.83 !	53.09 !	53.09
4.Hwy 403 WB	! 1.83 !	58.79 !	58.79
5.Cntrl Pkway	! 1.46 !	41.12 !	41.12
	-----	-----	-----

Total

63.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.86
(NIGHT): 63.22

Filename: re22.te Time Period: Day/Night 16/8 hours

Description: Re22, Future Sound Levels at OLA

Road data, segment # 1: Hwy 403 EB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 1: Hwy 403 EB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 230.00 / 230.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Hwy 403 WB (day/night)

Car traffic volume : 90924/19959 veh/TimePeriod *
Medium truck volume : 4011/881 veh/TimePeriod *
Heavy truck volume : 12034/2642 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 130450
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.75
Heavy Truck % of Total Volume : 11.25
Day (16 hrs) % of Total Volume : 82.00

Data for Segment # 2: Hwy 403 WB (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 260.00 / 260.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Hurontar NB (day/night)

```

-----
Car traffic volume : 29461/3641 veh/TimePeriod *
Medium truck volume : 1800/223 veh/TimePeriod *
Heavy truck volume : 1473/182 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

```

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

```

24 hr Traffic Volume (AADT or SADT): 28733
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 89.00

```

Data for Segment # 3: Hurontar NB (day/night)

```

-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 30.00 / 200.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```

Road data, segment # 4: Hurontar SB (day/night)

```

-----
Car traffic volume : 27150/3356 veh/TimePeriod *
Medium truck volume : 1659/205 veh/TimePeriod *
Heavy truck volume : 1358/168 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

```

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

```

24 hr Traffic Volume (AADT or SADT): 26479
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 89.00

```

Data for Segment # 4: Hurontar SB (day/night)

```

-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 50.00 / 215.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```

Results segment # 1: Hwy 403 EB (day)

Source height = 1.83 m

ROAD (0.00 + 60.84 + 0.00) = 60.84 dBA

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

```

-----
-----
-90      0    0.65  84.86    0.00 -19.56  -4.45    0.00    0.00    0.00
60.84
-----
-----

```

Segment Leq : 60.84 dBA

Results segment # 2: Hwy 403 WB (day)

Source height = 1.83 m

ROAD (0.00 + 59.96 + 0.00) = 59.96 dBA

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

```

-----
-----
-90      0    0.65  84.86    0.00 -20.44  -4.45    0.00    0.00    0.00
59.96
-----
-----

```

Segment Leq : 59.96 dBA

Results segment # 3: Hurontar NB (day)

Source height = 1.46 m

ROAD (0.00 + 70.86 + 0.00) = 70.86 dBA

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

```

-----
-----
-90     90    0.00  73.87    0.00  -3.01    0.00    0.00    0.00    0.00
70.86
-----
-----

```

Segment Leq : 70.86 dBA

Results segment # 4: Hurontar SB (day)

Source height = 1.46 m

ROAD (0.00 + 68.29 + 0.00) = 68.29 dBA

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

```

-----
-----
-90     90    0.00  73.52    0.00  -5.23    0.00    0.00    0.00    0.00
68.29
-----
-----

```

Segment Leq : 68.29 dBA

Total Leq All Segments: 73.25 dBA

Results segment # 1: Hwy 403 EB (night)

Source height = 1.83 m

ROAD (0.00 + 57.27 + 0.00) = 57.27 dBA

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

-90	0	0.65	81.28	0.00	-19.56	-4.45	0.00	0.00	0.00
57.27									

Segment Leq : 57.27 dBA

Results segment # 2: Hwy 403 WB (night)

Source height = 1.83 m

ROAD (0.00 + 56.39 + 0.00) = 56.39 dBA

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

-90	0	0.65	81.28	0.00	-20.44	-4.45	0.00	0.00	0.00
56.39									

Segment Leq : 56.39 dBA

Results segment # 3: Hurontar NB (night)

Source height = 1.46 m

ROAD (0.00 + 56.55 + 0.00) = 56.55 dBA

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

-90	90	0.00	67.80	0.00	-11.25	0.00	0.00	0.00	0.00
56.55									

Segment Leq : 56.55 dBA

Results segment # 4: Hurontar SB (night)

Source height = 1.46 m

ROAD (0.00 + 55.89 + 0.00) = 55.89 dBA

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

-90	90	0.00	67.45	0.00	-11.56	0.00	0.00	0.00	0.00
55.89									

Segment Leq : 55.89 dBA

Total Leq All Segments: 62.57 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 73.25
(NIGHT): 62.57

Filename: re23.te Time Period: Day/Night 16/8 hours

Description: Re23, Future Sound Levels at OLA

Road data, segment # 1: Eastgate Pkw (day/night)

Car traffic volume : 18300/1377 veh/TimePeriod *
Medium truck volume : 1118/84 veh/TimePeriod *
Heavy truck volume : 915/69 veh/TimePeriod *
Posted speed limit : 70 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): 17080
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eastgate Pkw (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 75.00 / 85.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Eastgate Pkw (day)

Source height = 1.46 m

ROAD (0.00 + 65.56 + 0.00) = 65.56 dBA

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

SubLeq

-90 90 0.00 72.55 0.00 -6.99 0.00 0.00 0.00 0.00
65.56

Segment Leq : 65.56 dBA

Total Leq All Segments: 65.56 dBA

Results segment # 1: Eastgate Pkw (night)

Source height = 1.46 m

ROAD (0.00 + 56.79 + 0.00) = 56.79 dBA

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

SubLeq

-90	90	0.00	64.33	0.00	-7.53	0.00	0.00	0.00	0.00
-----	----	------	-------	------	-------	------	------	------	------

56.79

Segment Leq : 56.79 dBA

Total Leq All Segments: 56.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.56
(NIGHT): 56.79

Filename: re24.te Time Period: Day/Night 16/8 hours
Description: Receptor Re24, Future Sound Levels at Building Facade

Road data, segment # 1: Eglinton Ave (day/night)

```
-----
Car traffic volume : 28910/2176 veh/TimePeriod *
Medium truck volume : 1767/133 veh/TimePeriod *
Heavy truck volume : 1446/109 veh/TimePeriod *
Posted speed limit : 50 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): 26983
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00
```

Data for Segment # 1: Eglinton Ave (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 65.00 / 65.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----
1.Eglinton Ave ! 1.46 ! 65.32 ! 65.32
-----+-----+-----
Total 65.32 dBA
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----
1.Eglinton Ave ! 1.46 ! 57.10 ! 57.10
-----+-----+-----
Total 57.10 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 65.32
 (NIGHT): 57.10

Filename: re25.te Time Period: Day/Night 16/8 hours

Description: Re25, Future Sound Levels at OLA

Road data, segment # 1: Eglinton Ave (day/night)

Car traffic volume : 28910/2176 veh/TimePeriod *
Medium truck volume : 1767/133 veh/TimePeriod *
Heavy truck volume : 1446/109 veh/TimePeriod *
Posted speed limit : 50 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): 26983
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 5.50
Heavy Truck % of Total Volume : 4.50
Day (16 hrs) % of Total Volume : 93.00

Data for Segment # 1: Eglinton Ave (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 60.00 / 60.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Eglinton Ave (day)

Source height = 1.46 m

ROAD (0.00 + 65.66 + 0.00) = 65.66 dBA

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

SubLeq

-90 90 0.00 71.68 0.00 -6.02 0.00 0.00 0.00 0.00
65.66

Segment Leq : 65.66 dBA

Total Leq All Segments: 65.66 dBA

Results segment # 1: Eglinton Ave (night)

Source height = 1.46 m

ROAD (0.00 + 57.44 + 0.00) = 57.44 dBA

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

SubLeq

-90	90	0.00	63.46	0.00	-6.02	0.00	0.00	0.00	0.00
-----	----	------	-------	------	-------	------	------	------	------

57.44

Segment Leq : 57.44 dBA

Total Leq All Segments: 57.44 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.66
(NIGHT): 57.44

Filename: re26.te Time Period: Day/Night 16/8 hours

Description: Re26, Future Sound Levels at OLA

Road data, segment # 1: Eglinton Ave (day/night)

```
-----
Car traffic volume   : 32853/2473   veh/TimePeriod  *
Medium truck volume : 2008/151     veh/TimePeriod  *
Heavy truck volume  : 1643/124     veh/TimePeriod  *
Posted speed limit  : 50 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): 30663
Percentage of Annual Growth         : 2.50
Number of Years of Growth           : 10.00
Medium Truck % of Total Volume      : 5.50
Heavy Truck % of Total Volume       : 4.50
Day (16 hrs) % of Total Volume      : 93.00
```

Data for Segment # 1: Eglinton Ave (day/night)

```
-----
Angle1 Angle2      : -90.00 deg   90.00 deg
Wood depth          : 0           (No woods.)
No of house rows    : 0 / 0
Surface            : 2           (Reflective ground surface)
Receiver source distance : 45.00 / 45.00 m
Receiver height     : 1.50 / 1.50 m
Topography          : 1           (Flat/gentle slope; no barrier)
Reference angle     : 0.00
```

Results segment # 1: Eglinton Ave (day)

Source height = 1.46 m

ROAD (0.00 + 67.47 + 0.00) = 67.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.00	72.24	0.00	-4.77	0.00	0.00	0.00	0.00

SubLeq

```
-----
-90    90    0.00  72.24    0.00  -4.77    0.00    0.00    0.00    0.00
67.47
```

Segment Leq : 67.47 dBA

Total Leq All Segments: 67.47 dBA

Results segment # 1: Eglinton Ave (night)

Source height = 1.46 m

ROAD (0.00 + 59.25 + 0.00) = 59.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.00	59.25	0.00	-4.77	0.00	0.00	0.00	0.00

SubLeq

```
-----
-90    90    0.00  59.25    0.00  -4.77    0.00    0.00    0.00    0.00
59.25
```

-90	90	0.00	64.02	0.00	-4.77	0.00	0.00	0.00	0.00
-----	----	------	-------	------	-------	------	------	------	------

59.25

Segment Leq : 59.25 dBA

Total Leq All Segments: 59.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.47
(NIGHT): 59.25

Filename: re3o.te Time Period: Day/Night 16/8 hours
Description: Receptor Re3, Future BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -90.00 deg 65.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 250.00 / 250.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : -90.00 deg Angle2 : 65.00 deg
 Barrier height : 2.00 m
 Elevation : 4.00 m
 Barrier receiver distance : 10.00 / 10.00 m
 Source elevation : 151.00 m
 Receiver elevation : 155.00 m
 Barrier elevation : 155.00 m
 Reference angle : 0.00

Result summary (day)

	!	source	!	Gen	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.BRT	!	3.00	!	41.24	!	41.24
		Total				41.24 dBA

Result summary (night)

	!	source	!	Gen	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.BRT	!	3.00	!	32.31	!	32.31
		Total				32.31 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 41.24
 (NIGHT): 32.31

Filename: re7o.te Time Period: Day/Night 16/8 hours

Description: Re7, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -80.00 deg -55.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 240.00 / 240.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

RT/Custom data, segment # 2: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
Speed : 50 km/h

Data for Segment # 2: BRT (day/night)

Angle1 Angle2 : -55.00 deg -45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 245.00 / 245.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -55.00 deg Angle2 : -45.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 6.00 / 6.00 m
Source elevation : -6.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

RT/Custom data, segment # 3: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
Speed : 50 km/h

Data for Segment # 3: BRT (day/night)

Angle1 Angle2 : -45.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 245.00 / 245.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 3.00 m

RT/Custom (0.00 + 32.41 + 0.00) = 32.41 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	-55	0.62	65.57	-19.45	-11.21	0.00	-2.50	0.00	32.41

Segment Leq : 32.41 dBA

Results segment # 2: BRT (day)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
3.00	1.50	1.39	1.39

RT/Custom (0.00 + 32.30 + 0.00) = 32.30 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	-45	0.62	68.12	-19.59	-13.74	0.00	-2.50	0.00	32.30
-55	-45	0.62	68.12	-19.59	-13.74	0.00	0.00	0.00	34.79*
-55	-45	0.62	68.12	-19.59	-13.74	0.00	0.00	0.00	34.79

* Bright Zone !

Segment Leq : 32.30 dBA

Results segment # 3: BRT (day)

Source height = 3.00 m

RT/Custom (0.00 + 43.53 + 0.00) = 43.53 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	70	0.62	68.12	-19.59	-2.50	0.00	-2.50	0.00	43.53

Segment Leq : 43.53 dBA

Total Leq All Segments: 44.15 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

RT/Custom (0.00 + 23.48 + 0.00) = 23.48 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	-55	0.62	56.64	-19.45	-11.21	0.00	-2.50	0.00	23.48

Segment Leq : 23.48 dBA

Results segment # 2: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
3.00	!	1.50	!
		1.39	!
			1.39

RT/Custom (0.00 + 23.36 + 0.00) = 23.36 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	-45	0.62	59.19	-19.59	-13.74	0.00	-2.50	0.00	23.36
-55	-45	0.62	59.19	-19.59	-13.74	0.00	0.00	0.00	25.86*
-55	-45	0.62	59.19	-19.59	-13.74	0.00	0.00	0.00	25.86

* Bright Zone !

Segment Leq : 23.36 dBA

Results segment # 3: BRT (night)

Source height = 3.00 m

RT/Custom (0.00 + 34.60 + 0.00) = 34.60 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	70	0.62	59.19	-19.59	-2.50	0.00	-2.50	0.00	34.60

Segment Leq : 34.60 dBA

Total Leq All Segments: 35.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 44.15
(NIGHT): 35.22

Filename: re9o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re9, Future BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -60.00 deg -5.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 110.00 / 110.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : -60.00 deg Angle2 : -5.00 deg
 Barrier height : 6.00 m
 Elevation : 7.50 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 157.00 m
 Receiver elevation : 149.50 m
 Barrier elevation : 150.00 m
 Reference angle : 0.00

RT/Custom data, segment # 2: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 2: BRT (day/night)

 Angle1 Angle2 : -5.00 deg 55.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 70.00 / 70.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : -5.00 deg Angle2 : 55.00 deg
 Barrier height : 6.00 m
 Elevation : 7.50 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 157.00 m
 Receiver elevation : 149.50 m
 Barrier elevation : 150.00 m
 Reference angle : 0.00

Result summary (day)

	!	source	!	Gen	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.BRT	!	3.00	!	45.87	!	45.87
2.BRT	!	3.00	!	51.24	!	51.24 *
Total						52.35 dBA

* Bright Zone !

Result summary (night)

	!	source	!	Gen	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
1.BRT	!	3.00	!	36.94	!	36.94
2.BRT	!	3.00	!	42.31	!	42.31 *
Total						43.42 dBA

* Bright Zone !

TOTAL Leq FROM ALL SOURCES (DAY): 52.35
(NIGHT): 43.42

Filename: rel10o.te Time Period: Day/Night 16/8 hours

Description: Rel10, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -70.00 deg 60.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 110.00 / 110.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with
 barrier)
 Barrier angle1 : -70.00 deg Angle2 : 60.00 deg
 Barrier height : 3.00 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 153.00 m
 Receiver elevation : 153.60 m
 Barrier elevation : 153.00 m
 Reference angle : 0.00

RT/Custom data, segment # 2: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 2: BRT (day/night)

 Angle1 Angle2 : 60.00 deg 80.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 75.00 / 75.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : 60.00 deg Angle2 : 80.00 deg
 Barrier height : 6.00 m
 Elevation : 2.60 m
 Barrier receiver distance : 40.00 / 40.00 m
 Source elevation : 156.00 m
 Receiver elevation : 153.60 m
 Barrier elevation : 150.00 m
 Reference angle : 0.00

Results segment # 1: BRT (day)

 Source height = 3.00 m

Barrier height for grazing incidence

 Source ! Receiver ! Barrier ! Elevation of
 Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
 -----+-----+-----+-----
 3.00 ! 1.50 ! 2.51 ! 155.51

RT/Custom (0.00 + 46.09 + 0.00) = 46.09 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	60	0.44	65.57	-12.42	-1.88	0.00	0.00	-5.18	46.09

Segment Leq : 46.09 dBA

Results segment # 2: BRT (day)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height	(m)	! Receiver Height	(m)	! Barrier Height	(m)	! Elevation of Barrier Top	(m)
3.00	!	1.50	!	7.18	!	157.18	

RT/Custom (0.00 + 42.73 + 0.00) = 42.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
60	80	0.18	65.57	-8.23	-10.40	0.00	0.00	-4.28	42.66*
60	80	0.54	65.57	-10.74	-12.10	0.00	0.00	0.00	42.73

* Bright Zone !

Segment Leq : 42.73 dBA

Total Leq All Segments: 47.74 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height	(m)	! Receiver Height	(m)	! Barrier Height	(m)	! Elevation of Barrier Top	(m)
3.00	!	1.50	!	2.51	!	155.51	

RT/Custom (0.00 + 37.16 + 0.00) = 37.16 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	60	0.44	56.64	-12.42	-1.88	0.00	0.00	-5.18	37.16

Segment Leq : 37.16 dBA

Results segment # 2: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height	(m)	! Receiver Height	(m)	! Barrier Height	(m)	! Elevation of Barrier Top	(m)
3.00	!	1.50	!	7.18	!	157.18	

RT/Custom (0.00 + 33.80 + 0.00) = 33.80 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
60	80	0.18	56.64	-8.23	-10.40	0.00	0.00	-4.28	33.73*
60	80	0.54	56.64	-10.74	-12.10	0.00	0.00	0.00	33.80

* Bright Zone !

Segment Leq : 33.80 dBA

Total Leq All Segments: 38.81 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 47.74
(NIGHT): 38.81

Filename: rello.te Time Period: Day/Night 16/8 hours

Description: Rel1, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -40.00 deg 80.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 115.00 / 115.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : -40.00 deg Angle2 : 80.00 deg
 Barrier height : 3.00 m
 Elevation : 6.90 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 145.00 m
 Receiver elevation : 151.90 m
 Barrier elevation : 152.00 m
 Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
3.00 !	1.50 !	-0.95 !	151.05

RT/Custom (0.00 + 41.77 + 0.00) = 41.77 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-40	80	0.23	65.57	-10.86	-2.06	0.00	0.00	-10.88	41.77

Segment Leq : 41.77 dBA

Total Leq All Segments: 41.77 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
3.00 !	1.50 !	-0.95 !	151.05

RT/Custom (0.00 + 32.84 + 0.00) = 32.84 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-40	80	0.23	56.64	-10.86	-2.06	0.00	0.00	-10.88	32.84

Segment Leq : 32.84 dBA

Total Leq All Segments: 32.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 41.77
(NIGHT): 32.84

Filename: rel2o.te Time Period: Day/Night 16/8 hours

Description: Receptor Rel2, Future BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -70.00 deg 60.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 115.00 / 115.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 4 (Elevated; with barrier)
 Barrier angle1 : -70.00 deg Angle2 : 60.00 deg
 Barrier height : 3.00 m
 Elevation : 3.50 m
 Barrier receiver distance : 50.00 / 50.00 m
 Source elevation : 144.00 m
 Receiver elevation : 147.50 m
 Barrier elevation : 150.00 m
 Reference angle : 0.00

Result summary (day)

	! source ! height ! (m)	! Gen ! Leq ! (dBA)	! Total ! Leq ! (dBA)
1.BRT	! 3.00	! 38.75	! 38.75
Total			38.75 dBA

Result summary (night)

	! source ! height ! (m)	! Gen ! Leq ! (dBA)	! Total ! Leq ! (dBA)
1.BRT	! 3.00	! 29.83	! 29.83
Total			29.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 38.75
 (NIGHT): 29.83

Filename: rel6o.te Time Period: Day/Night 16/8 hours

Description: Rel16, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -90.00 deg -65.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 / 130.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -65.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 105.00 / 105.00 m
Source elevation : 151.00 m
Receiver elevation : 146.00 m
Barrier elevation : 146.00 m
Reference angle : 0.00

RT/Custom data, segment # 2: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 2: BRT (day/night)

Angle1 Angle2 : -65.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 230.00 / 230.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -65.00 deg Angle2 : 0.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 105.00 / 105.00 m
Source elevation : 145.00 m
Receiver elevation : 146.00 m
Barrier elevation : 146.00 m
Reference angle : 0.00

RT/Custom data, segment # 3: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 3: BRT (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 230.00 / 230.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
 Barrier height : 13.00 m
 Barrier receiver distance : 90.00 / 90.00 m
 Source elevation : 151.00 m
 Receiver elevation : 146.00 m
 Barrier elevation : 147.00 m
 Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
3.00 !	1.50 !	6.75 !	152.75

RT/Custom (0.00 + 36.98 + 0.00) = 36.98 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-65	0.38	65.04	-12.90	-11.33	0.00	0.00	-1.99	38.82*
-90	-65	0.62	65.04	-15.15	-12.91	0.00	0.00	0.00	36.98

* Bright Zone !

Segment Leq : 36.98 dBA

Results segment # 2: BRT (day)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
3.00 !	1.50 !	1.73 !	147.73

RT/Custom (0.00 + 37.27 + 0.00) = 37.27 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	0	0.38	65.04	-16.30	-4.82	0.00	0.00	-6.64	37.27

Segment Leq : 37.27 dBA

Results segment # 3: BRT (day)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
3.00	1.50	3.04	150.04

RT/Custom (0.00 + 36.95 + 0.00) = 36.95 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.04	-11.86	-3.01	0.00	0.00	-13.22	36.95

Segment Leq : 36.95 dBA

Total Leq All Segments: 41.84 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
3.00	1.50	6.75	152.75

RT/Custom (0.00 + 28.06 + 0.00) = 28.06 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-65	0.38	56.11	-12.90	-11.33	0.00	0.00	-1.99	29.89*
-90	-65	0.62	56.11	-15.15	-12.91	0.00	0.00	0.00	28.06

* Bright Zone !

Segment Leq : 28.06 dBA

Results segment # 2: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
3.00	1.50	1.73	147.73

RT/Custom (0.00 + 28.35 + 0.00) = 28.35 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	0	0.38	56.11	-16.30	-4.82	0.00	0.00	-6.64	28.35

Segment Leq : 28.35 dBA

Results segment # 3: BRT (night)

Source height = 3.00 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
3.00	!	1.50	!
		3.04	!
			150.04

RT/Custom (0.00 + 28.03 + 0.00) = 28.03 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	56.11	-11.86	-3.01	0.00	0.00	-13.22	28.03

Segment Leq : 28.03 dBA

Total Leq All Segments: 32.92 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 41.84
(NIGHT): 32.92

Filename: rel8o.te Time Period: Day/Night 16/8 hours

Description: Receptor Rel8, Future BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -90.00 deg 30.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 85.00 / 85.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

RT/Custom data, segment # 2: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 2: BRT (day/night)

Angle1 Angle2 : 30.00 deg 60.00 deg
 Wood depth : 1 (Wood depth 30 to less than 60 metres)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 100.00 / 100.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Gen	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.BRT	! 3.00 !	50.08	! 50.08
2.BRT	! 3.00 !	40.92	! 40.92
Total			50.58 dBA

Result summary (night)

	! source !	Gen	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)

1.BRT	!	3.00 !	41.15 !	41.15
2.BRT	!	3.00 !	31.99 !	31.99
-----+-----+-----+-----				
		Total		41.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.58
 (NIGHT): 41.65

Filename: re20o.te Time Period: Day/Night 16/8 hours

Description: Receptor Re20, Future BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -90.00 deg 30.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 75.00 / 75.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

RT/Custom data, segment # 2: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 2: BRT (day/night)

Angle1 Angle2 : 30.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 75.00 / 75.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

RT/Custom data, segment # 3: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
Speed : 90 km/h

Data for Segment # 3: BRT (day/night)

Angle1 Angle2 : 70.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 75.00 / 75.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	! source !	Gen	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.BRT	! 3.00 !	50.96	! 50.96
2.BRT	! 3.00 !	51.51	! 51.51
3.BRT	! 3.00 !	39.29	! 39.29
Total			54.39 dBA

Result summary (night)

	! source !	Gen	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.BRT	! 3.00 !	42.03	! 42.03
2.BRT	! 3.00 !	42.59	! 42.59
3.BRT	! 3.00 !	30.36	! 30.36
Total			45.47 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.39
(NIGHT): 45.47

Filename: re22.te Time Period: Day/Night 16/8 hours

Description: Re22, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

 1 - Custom (80.0 dBA):

Traffic volume : 968/62 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: BRT (day)

 Source height = 3.00 m

RT/Custom (0.00 + 65.04 + 0.00) = 65.04 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.04	0.00	0.00	0.00	0.00	0.00	65.04

 Segment Leq : 65.04 dBA

Total Leq All Segments: 65.04 dBA

Results segment # 1: BRT (night)

 Source height = 3.00 m

RT/Custom (0.00 + 56.11 + 0.00) = 56.11 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.11	0.00	0.00	0.00	0.00	0.00	56.11

 Segment Leq : 56.11 dBA

Total Leq All Segments: 56.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.04
 (NIGHT): 56.11

Filename: re23.te Time Period: Day/Night 16/8 hours

Description: Re23, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod

Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.00 / 40.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 3.00 m

RT/Custom (0.00 + 61.31 + 0.00) = 61.31 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.57	-4.26	0.00	0.00	0.00	0.00	61.31

Segment Leq : 61.31 dBA

Total Leq All Segments: 61.31 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

RT/Custom (0.00 + 52.38 + 0.00) = 52.38 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.64	-4.26	0.00	0.00	0.00	0.00	52.38

Segment Leq : 52.38 dBA

Total Leq All Segments: 52.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.31
(NIGHT): 52.38

Filename: re24.te Time Period: Day/Night 16/8 hours
Description: Receptor Re24, Future BRT Sound Levels at Building Facade

RT/Custom data, segment # 1: BRT (day/night)

 1 - Custom (80.0 dBA):
 Traffic volume : 1095/70 veh/TimePeriod
 Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 25.00 / 25.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Gen	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.BRT	! 3.00 !	63.35	! 63.35
Total			63.35 dBA

Result summary (night)

	! source !	Gen	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.BRT	! 3.00 !	54.42	! 54.42
Total			54.42 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.35
 (NIGHT): 54.42

Filename: re25.te Time Period: Day/Night 16/8 hours

Description: Re25, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod

Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 3.00 m

RT/Custom (0.00 + 64.32 + 0.00) = 64.32 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.57	-1.25	0.00	0.00	0.00	0.00	64.32

Segment Leq : 64.32 dBA

Total Leq All Segments: 64.32 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

RT/Custom (0.00 + 55.39 + 0.00) = 55.39 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.64	-1.25	0.00	0.00	0.00	0.00	55.39

Segment Leq : 55.39 dBA

Total Leq All Segments: 55.39 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.32
(NIGHT): 55.39

Filename: re26.te Time Period: Day/Night 16/8 hours

Description: Re26, BRT Sound Levels at OLA

RT/Custom data, segment # 1: BRT (day/night)

1 - Custom (80.0 dBA):

Traffic volume : 1095/70 veh/TimePeriod

Speed : 90 km/h

Data for Segment # 1: BRT (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 80.00 / 70.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: BRT (day)

Source height = 3.00 m

RT/Custom (0.00 + 58.30 + 0.00) = 58.30 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.57	-7.27	0.00	0.00	0.00	0.00	58.30

Segment Leq : 58.30 dBA

Total Leq All Segments: 58.30 dBA

Results segment # 1: BRT (night)

Source height = 3.00 m

RT/Custom (0.00 + 49.95 + 0.00) = 49.95 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.64	-6.69	0.00	0.00	0.00	0.00	49.95

Segment Leq : 49.95 dBA

Total Leq All Segments: 49.95 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.30
(NIGHT): 49.95

Ambient Noise

Filename: re7o.te Time Period: 24 hours
Description: Receptor Re7: Existing Ambient Sound Level, Leq(24h)

Road data, segment # 1: Eglinton Ave

 Car traffic volume : 27597 veh/TimePeriod *
 Medium truck volume : 1686 veh/TimePeriod *
 Heavy truck volume : 1380 veh/TimePeriod *
 Posted speed limit : 50 km/h
 Road gradient : 1 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Eglinton Ave

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1
 House density : 50 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 219.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no
 barrier)
 Reference angle : 0.00

Result summary

	!	source	!	Road	!	Total
	!	height	!	Leq	!	Leq
	!	(m)	!	(dBA)	!	(dBA)
-----+-----+-----+-----						
1.Eglinton Ave	!	1.46	!	47.60	!	47.60
-----+-----+-----+-----						
		Total				47.60 dBA

TOTAL Leq FROM ALL SOURCES: 47.60

Filename: rel2o.te

Time Period: 24 hours

Description: Receptor Rel2: Existing Ambient Sound Level, Leq(24h)

Road data, segment # 1: Eastgate Pkw

Car traffic volume : 23251 veh/TimePeriod *
Medium truck volume : 1421 veh/TimePeriod *
Heavy truck volume : 1163 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Eastgate Pkw

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 m
Receiver height : 4.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 4.00 m
Barrier receiver distance : 60.00 m
Source elevation : 150.00 m
Receiver elevation : 147.00 m
Barrier elevation : 150.00 m
Reference angle : 0.00

Road data, segment # 2: Dixie Rd NB

Car traffic volume : 40072 veh/TimePeriod
Medium truck volume : 2449 veh/TimePeriod
Heavy truck volume : 2003 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Dixie Rd NB

Angle1 Angle2 : -50.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 240.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Road data, segment # 3: Dixie Rd SB

 Car traffic volume : 40072 veh/TimePeriod
 Medium truck volume : 2449 veh/TimePeriod
 Heavy truck volume : 2003 veh/TimePeriod
 Posted speed limit : 60 km/h
 Road gradient : 1 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Dixie Rd SB

 Angle1 Angle2 : -50.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 225.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no
 barrier)
 Reference angle : 0.00

Result summary

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Eastgate Pkw	! 1.46 !	52.27 !	52.27
2.Dixie Rd NB	! 1.46 !	48.05 !	48.05
3.Dixie Rd SB	! 1.46 !	48.49 !	48.49
Total			54.82 dBA

TOTAL Leq FROM ALL SOURCES: 54.82

Filename: rel15o.te

Time Period: 24 hours

Description: Receptor Rel15: Existing Ambient Sound Level, Leq(24h)

Road data, segment # 1: Eastgate Pkw

Car traffic volume : 30388 veh/TimePeriod
Medium truck volume : 1857 veh/TimePeriod
Heavy truck volume : 1519 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Eastgate Pkw

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Road data, segment # 2: Tomkin Rd

Car traffic volume : 16468 veh/TimePeriod
Medium truck volume : 1006 veh/TimePeriod
Heavy truck volume : 824 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Tomkin Rd

Angle1 Angle2 : -90.00 deg -10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 195.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Result summary

!	source	!	Road	!	Total
!	height	!	Leq	!	Leq
!	(m)	!	(dBA)	!	(dBA)

1.Eastgate Pkw	!	1.46	!	56.95	!	56.95
2.Tomkin Rd	!	1.46	!	44.96	!	44.96
Total						57.22 dBA

TOTAL Leq FROM ALL SOURCES: 57.22

Filename: rel16o.te

Time Period: 24 hours

Description: Receptor Rel16: Existing Ambient Sound Level, Leq(24h)

Road data, segment # 1: Eastgate Pkw

Car traffic volume : 30389 veh/TimePeriod *
Medium truck volume : 1857 veh/TimePeriod *
Heavy truck volume : 1519 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Eastgate Pkw

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 160.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Road data, segment # 2: Cawthra Rd

Car traffic volume : 32719 veh/TimePeriod
Medium truck volume : 2000 veh/TimePeriod
Heavy truck volume : 1636 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Cawthra Rd

Angle1 Angle2 : -30.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 165.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Result summary

!	source	!	Road	!	Total
!	height	!	Leq	!	Leq
!	(m)	!	(dBA)	!	(dBA)

1.Eastgate Pkw	!	1.46	!	55.53	!	55.53
2.Cawthra Rd	!	1.46	!	51.36	!	51.36
Total						56.94 dBA

TOTAL Leq FROM ALL SOURCES: 56.94

Filename: rel9o.te

Time Period: 24 hours

Description: Receptor Rel19: Existing Ambient Sound Level, Leq(24h)

Road data, segment # 1: Hwy 403 EB

Car traffic volume : 79965 veh/TimePeriod
Medium truck volume : 4887 veh/TimePeriod
Heavy truck volume : 3999 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy 403 EB

Angle1 Angle2 : -90.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Road data, segment # 2: Hwy 403 WB

Car traffic volume : 79965 veh/TimePeriod
Medium truck volume : 4887 veh/TimePeriod
Heavy truck volume : 3999 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Hwy 403 WB

Angle1 Angle2 : -90.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no
barrier)
Reference angle : 0.00

Road data, segment # 3: Cntrl Pkway

Car traffic volume : 18880 veh/TimePeriod *
Medium truck volume : 1154 veh/TimePeriod *
Heavy truck volume : 944 veh/TimePeriod *
Posted speed limit : 50 km/h

Road gradient : 3 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Cntrl Pkway

 Angle1 Angle2 : -10.00 deg 20.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 170.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no
 barrier)
 Reference angle : 0.00

Result summary

	! source !	Road	! Total
	! height !	Leq	! Leq
	! (m) !	(dBA)	! (dBA)
1.Hwy 403 EB	! 1.46 !	65.92	! 65.92
2.Hwy 403 WB	! 1.46 !	64.13	! 64.13
3.Cntrl Pkway	! 1.46 !	44.31	! 44.31
	Total		68.14 dBA

TOTAL Leq FROM ALL SOURCES: 68.14

SS WILSON ASSOCIATES**Proceed****HOURLY TRAFFIC DATA AND RESULTING SOUND LEVEL ADJUSTMENTS**

TABLE

1/28/1999 9:56

File Number : WA07-090
 Project Name : BRT EAST
 Description : Cawthra Road
 Description :
 Description :
 Comments :

Daytime Volume **32,466** in 16 Hours
 Night Time Volume **3,888** in 8 Hours
 Average Day-Night Hours 2,029 & 486

If the actual traffic count is ZERO (0) enter as 0.001 , otherwise if there is no count leave as ZERO (0), i.e blank

Lane Direction (EB, NB,...) and Date	Mon, Dec 04, 06									No. of Hours Used	Total Hourly Volumes	Average 24 Hour Volumes	% OF Given Hours	Leq 1hr LESS Leq 24 hrs, dB
00:00-01:00	464									1	464	464	1.3	-5.1
01:00-02:00	242									1	242	242	0.7	-8.0
02:00-03:00	185									1	185	185	0.5	-9.1
03:00-04:00	154									1	154	154	0.4	-9.9
04:00-05:00	172									1	172	172	0.5	-9.4
05:00-06:00	456									1	456	456	1.3	-5.2
06:00-07:00	1,484									1	1,484	1,484	4.1	-0.1
07:00-08:00	2,178									1	2,178	2,178	6.0	1.6
08:00-09:00	2,675									1	2,675	2,675	7.4	2.5
09:00-10:00	2,270									1	2,270	2,270	6.2	1.8
10:00-11:00	2,124									1	2,124	2,124	5.8	1.5
11:00-12:00	2,013									1	2,013	2,013	5.5	1.2
12:00-13:00	1,871									1	1,871	1,871	5.1	0.9
13:00-14:00	2,010									1	2,010	2,010	5.5	1.2
14:00-15:00	2,037									1	2,037	2,037	5.6	1.3
15:00-16:00	2,268									1	2,268	2,268	6.2	1.8
16:00-17:00	2,839									1	2,839	2,839	7.8	2.7
17:00-18:00	2,771									1	2,771	2,771	7.6	2.6
18:00-19:00	2,380									1	2,380	2,380	6.5	2.0
19:00-20:00	1,647									1	1,647	1,647	4.5	0.4
20:00-21:00	1,289									1	1,289	1,289	3.5	-0.7
21:00-22:00	1,103									1	1,103	1,103	3.0	-1.4
22:00-23:00	991									1	991	991	2.7	-1.8
23:00-24:00	731									1	731	731	2.0	-3.2
TOTALS	36,354	0	0	0	0	0	0	0	0	24	36,354	36,354	100	
Number of Survey Hours/Day	24	0	0	0	0	0	0	0	0	Overall Average Hourly Volume 1,515				
Average Hourly Volume/Day	1,515	0	0	0	0	0	0	0	0					

SS WILSON ASSOCIATES**Proceed****HOURLY TRAFFIC DATA AND RESULTING SOUND LEVEL ADJUSTMENTS****TABLE**

1/28/1999 9:56

File Number : WA07-090

Project Name : BRT EAST

Description : Eastgate Parkway East of Cawthra Road

Description :

Description :

Comments :

Daytime Volume **30,304** in 16 HoursNight Time Volume **3,464** in 8 Hours

Average Day-Night Hours 1,894 & 433

If the actual traffic count is ZERO (0) enter as 0.001 , otherwise if there is no count leave as ZERO (0), i.e blank

Lane Direction (EB, NB,...) and Date	Wed, May 2, 07	Thu, May 3, 07								No. of Hours Used	Total Hourly Volumes	Average 24 Hour Volumes	% OF Given Hours	Leq 1hr LESS Leq 24 hrs, dB
00:00-01:00	287	312								2	599	300	0.9	-6.7
01:00-02:00	165	175								2	340	170	0.5	-9.2
02:00-03:00	145	132								2	277	139	0.4	-10.1
03:00-04:00	85	87								2	172	86	0.3	-12.1
04:00-05:00	126	119								2	245	123	0.4	-10.6
05:00-06:00	454	470								2	924	462	1.4	-4.8
06:00-07:00	1,591	1,480								2	3,071	1,536	4.5	0.4
07:00-08:00	2,523	2,411								2	4,934	2,467	7.3	2.4
08:00-09:00	2,734	2,696								2	5,430	2,715	8.0	2.9
09:00-10:00	2,092	2,128								2	4,220	2,110	6.2	1.8
10:00-11:00	1,562	1,512								2	3,074	1,537	4.6	0.4
11:00-12:00	1,581	1,651								2	3,232	1,616	4.8	0.6
12:00-13:00	1,618	1,747								2	3,365	1,683	5.0	0.8
13:00-14:00	1,714	1,840								2	3,554	1,777	5.3	1.0
14:00-15:00	1,987	2,072								2	4,059	2,030	6.0	1.6
15:00-16:00	2,283	2,366								2	4,649	2,325	6.9	2.2
16:00-17:00	2,450	2,579								2	5,029	2,515	7.4	2.5
17:00-18:00	2,464	2,402								2	4,866	2,433	7.2	2.4
18:00-19:00	2,071	2,217								2	4,288	2,144	6.3	1.8
19:00-20:00	1,574	1,640								2	3,214	1,607	4.8	0.6
20:00-21:00	1,275	1,333								2	2,608	1,304	3.9	-0.3
21:00-22:00	1,181	1,195								2	2,376	1,188	3.5	-0.7
22:00-23:00	818	892								2	1,710	855	2.5	-2.2
23:00-24:00	615	684								2	1,299	650	1.9	-3.4
TOTALS	33,395	34,140	0	0	0	0	0	0	0	48	67,535	33,768	100	
Number of Survey Hours/Day	24	24	0	0	0	0	0	0	0	Overall Average Hourly Volume 1,407				
Average Hourly Volume/Day	1,391	1,423	0	0	0	0	0	0	0					

SS WILSON ASSOCIATES**Proceed****HOURLY TRAFFIC DATA AND RESULTING SOUND LEVEL ADJUSTMENTS****TABLE**

1/28/1999 9:56

File Number : WA07-090

Project Name : BRT EAST

Description : Eastgate Parkway East of Tomken Road

Description :

Description :

Comments :

Daytime Volume **24,342** in 16 HoursNight Time Volume **1,492** in 8 Hours

Average Day-Night Hours 1,521 & 187

If the actual traffic count is ZERO (0) enter as 0.001 , otherwise if there is no count leave as ZERO (0), i.e blank

Lane Direction (EB, NB,...) and Date	Wed, May 2, 07									No. of Hours Used	Total Hourly Volumes	Average 24 Hour Volumes	% OF Given Hours	Leq 1hr LESS Leq 24 hrs, dB
00:00-01:00	160									1	160	160	0.6	-8.3
01:00-02:00	107									1	107	107	0.4	-10.0
02:00-03:00	89									1	89	89	0.3	-10.8
03:00-04:00	33									1	33	33	0.1	-15.1
04:00-05:00	42									1	42	42	0.2	-14.1
05:00-06:00	146									1	146	146	0.6	-8.7
06:00-07:00	486									1	486	486	1.9	-3.5
07:00-08:00	1,105									1	1,105	1,105	4.3	0.1
08:00-09:00	1,475									1	1,475	1,475	5.7	1.4
09:00-10:00	1,324									1	1,324	1,324	5.1	0.9
10:00-11:00	1,260									1	1,260	1,260	4.9	0.7
11:00-12:00	1,291									1	1,291	1,291	5.0	0.8
12:00-13:00	1,361									1	1,361	1,361	5.3	1.0
13:00-14:00	1,502									1	1,502	1,502	5.8	1.4
14:00-15:00	1,889									1	1,889	1,889	7.3	2.4
15:00-16:00	2,076									1	2,076	2,076	8.0	2.9
16:00-17:00	2,818									1	2,818	2,818	10.9	4.2
17:00-18:00	2,757									1	2,757	2,757	10.7	4.1
18:00-19:00	1,830									1	1,830	1,830	7.1	2.3
19:00-20:00	1,236									1	1,236	1,236	4.8	0.6
20:00-21:00	965									1	965	965	3.7	-0.5
21:00-22:00	862									1	862	862	3.3	-1.0
22:00-23:00	591									1	591	591	2.3	-2.6
23:00-24:00	429									1	429	429	1.7	-4.0
TOTALS	25,834	0	0	0	0	0	0	0	0	24	25,834	25,834	100	
Number of Survey Hours/Day	24	0	0	0	0	0	0	0	0	Overall Average Hourly Volume 1,076				
Average Hourly Volume/Day	1,076	0	0	0	0	0	0	0	0					

SS WILSON ASSOCIATES**Proceed****HOURLY TRAFFIC DATA AND RESULTING SOUND LEVEL ADJUSTMENTS**

TABLE

1/28/1999 9:56

File Number : WA07-090

Project Name : BRT EAST

Description : Dixie Road

Description :

Description :

Comments :

Daytime Volume **40,097** in 16 Hours
 Night Time Volume **4,428** in 8 Hours
 Average Day-Night Hours 2,506 & 554

If the actual traffic count is ZERO (0) enter as 0.001 , otherwise if there is no count leave as ZERO (0), i.e blank

Lane Direction (EB, NB,...) and Date	Mon, Dec 4, 06	.	.	.	.	.	.	.	No. of Hours Used	Total Hourly Volumes	Average 24 Hour Volumes	% OF Given Hours	Leq 1hr LESS Leq 24 hrs, dB
00:00-01:00	612								1	612	612	1.4	-4.8
01:00-02:00	255								1	255	255	0.6	-8.6
02:00-03:00	295								1	295	295	0.7	-8.0
03:00-04:00	181								1	181	181	0.4	-10.1
04:00-05:00	229								1	229	229	0.5	-9.1
05:00-06:00	438								1	438	438	1.0	-6.3
06:00-07:00	1,529								1	1,529	1,529	3.4	-0.8
07:00-08:00	2,505								1	2,505	2,505	5.6	1.3
08:00-09:00	3,316								1	3,316	3,316	7.4	2.5
09:00-10:00	2,771								1	2,771	2,771	6.2	1.7
10:00-11:00	2,302								1	2,302	2,302	5.2	0.9
11:00-12:00	2,071								1	2,071	2,071	4.7	0.5
12:00-13:00	2,671								1	2,671	2,671	6.0	1.6
13:00-14:00	2,698								1	2,698	2,698	6.1	1.6
14:00-15:00	2,713								1	2,713	2,713	6.1	1.7
15:00-16:00	2,971								1	2,971	2,971	6.7	2.0
16:00-17:00	3,229								1	3,229	3,229	7.3	2.4
17:00-18:00	3,540								1	3,540	3,540	8.0	2.8
18:00-19:00	3,025								1	3,025	3,025	6.8	2.1
19:00-20:00	2,084								1	2,084	2,084	4.7	0.5
20:00-21:00	1,589								1	1,589	1,589	3.6	-0.7
21:00-22:00	1,529								1	1,529	1,529	3.4	-0.8
22:00-23:00	1,083								1	1,083	1,083	2.4	-2.3
23:00-24:00	889								1	889	889	2.0	-3.2
TOTALS	44,525	0	0	0	0	0	0	0	24	44,525	44,525	100	
Number of Survey Hours/Day	24	0	0	0	0	0	0	0		Overall Average Hourly Volume 1,855			
Average Hourly Volume/Day	1,855	0	0	0	0	0	0	0					

SS WILSON ASSOCIATES**Proceed****HOURLY TRAFFIC DATA AND RESULTING SOUND LEVEL ADJUSTMENTS****TABLE**

1/28/1999 9:56

File Number : WA07-090
 Project Name : BRT EAST
 Description : Eglinton Avenue West
 Description :
 Description :
 Comments :

Daytime Volume **25,099** in 16 Hours
 Night Time Volume **1,884** in 8 Hours
 Average Day-Night Hours 1,569 & 236

If the actual traffic count is ZERO (0) enter as 0.001 , otherwise if there is no count leave as ZERO (0), i.e blank

Lane Direction (EB, NB,...) and Date	Tue, Nov 15, 05	Wed, Nov 16, 05	Thu, Nov 17, 05	.....	.....	.....	.....	.....	.....	No. of Hours Used	Total Hourly Volumes	Average 24 Hour Volumes	% OF Given Hours	Leq 1hr LESS Leq 24 hrs, dB
00:00-01:00	181	227	203							3	611	204	0.8	-7.4
01:00-02:00	99	106	114							3	319	106	0.4	-10.2
02:00-03:00	83	78	83							3	244	81	0.3	-11.4
03:00-04:00	66	60	58							3	184	61	0.2	-12.6
04:00-05:00	71	72	69							3	212	71	0.3	-12.0
05:00-06:00	235	208	180							3	623	208	0.8	-7.3
06:00-07:00	762	824	758							3	2,344	781	2.9	-1.6
07:00-08:00	1,489	1,471	1,506							3	4,466	1,489	5.5	1.2
08:00-09:00	1,869	1,974	2,094							3	5,937	1,979	7.3	2.5
09:00-10:00	1,895	1,713	1,767							3	5,375	1,792	6.6	2.0
10:00-11:00	1,372	1,262	1,449							3	4,083	1,361	5.0	0.8
11:00-12:00	1,392	1,324	1,378							3	4,094	1,365	5.1	0.8
12:00-13:00	1,608	1,541	1,627							3	4,776	1,592	5.9	1.5
13:00-14:00	1,402	1,445	1,598							3	4,445	1,482	5.5	1.2
14:00-15:00	1,495	1,520	1,512							3	4,527	1,509	5.6	1.3
15:00-16:00	2,006	1,697	1,843							3	5,546	1,849	6.9	2.2
16:00-17:00	2,539	2,480	2,414							3	7,433	2,478	9.2	3.4
17:00-18:00	2,781	2,690	2,555							3	8,026	2,675	9.9	3.8
18:00-19:00	2,418	2,158	2,180							3	6,756	2,252	8.3	3.0
19:00-20:00	1,453	1,237	1,374							3	4,064	1,355	5.0	0.8
20:00-21:00	901	872	855							3	2,628	876	3.2	-1.1
21:00-22:00	590	582	610							3	1,782	594	2.2	-2.8
22:00-23:00	439	465	455							3	1,359	453	1.7	-3.9
23:00-24:00	372	302	442							3	1,116	372	1.4	-4.8
TOTALS	27,518	26,308	27,124	0	0	0	0	0	0	72	80,950	26,983	100	
Number of Survey Hours/Day	24	24	24	0	0	0	0	0	0	Overall Average Hourly Volume 1,124				
Average Hourly Volume/Day	1,147	1,096	1,130	0	0	0	0	0	0					

SS WILSON ASSOCIATES

Proceed

HOURLY TRAFFIC DATA AND RESULTING SOUND LEVEL ADJUSTMENTS

TABLE

1/28/1999 9:56

File Number : WA07-090
 Project Name : BRT EAST
 Description : Renforth Drive
 Description :
 Description :
 Comments :

Daytime Volume **15,572** in 16 Hours
 Night Time Volume **1,493** in 8 Hours
 Average Day-Night Hours 973 & 187

If the actual traffic count is ZERO (0) enter as 0.001 , otherwise if there is no count leave as ZERO (0), i.e blank

Lane Direction (EB, NB,...) and Date	Tue, Jun 21, 05	Wed, Jun 22, 05	Thu, Jun 23, 05	.	.	.	.	.	.	No. of Hours Used	Total Hourly Volumes	Average 24 Hour Volumes	% OF Given Hours	Leq 1hr LESS Leq 24 hrs, dB
00:00-01:00	128	163	173							3	464	155	0.9	-6.6
01:00-02:00	63	92	100							3	255	85	0.5	-9.2
02:00-03:00	39	46	43							3	128	43	0.3	-12.2
03:00-04:00	41	23	26							3	90	30	0.2	-13.7
04:00-05:00	66	85	84							3	235	78	0.5	-9.6
05:00-06:00	174	196	164							3	534	178	1.0	-6.0
06:00-07:00	553	552	551							3	1,656	552	3.2	-1.1
07:00-08:00	938	971	944							3	2,853	951	5.6	1.3
08:00-09:00	1,387	1,471	1,231							3	4,089	1,363	8.0	2.8
09:00-10:00	1,180	1,029	969							3	3,178	1,059	6.2	1.7
10:00-11:00	809	730	761							3	2,300	767	4.5	0.3
11:00-12:00	923	820	745							3	2,488	829	4.9	0.7
12:00-13:00	911	877	953							3	2,741	914	5.4	1.1
13:00-14:00	968	964	964							3	2,896	965	5.7	1.3
14:00-15:00	941	904	846							3	2,691	897	5.3	1.0
15:00-16:00	980	834	959							3	2,773	924	5.4	1.1
16:00-17:00	1,029	1,100	1,192							3	3,321	1,107	6.5	1.9
17:00-18:00	1,499	1,691	1,583							3	4,773	1,591	9.3	3.5
18:00-19:00	1,344	1,446	1,320							3	4,110	1,370	8.0	2.8
19:00-20:00	886	982	904							3	2,772	924	5.4	1.1
20:00-21:00	802	862	748							3	2,412	804	4.7	0.5
21:00-22:00	591	702	557							3	1,850	617	3.6	-0.6
22:00-23:00	420	568	482							3	1,470	490	2.9	-1.6
23:00-24:00	314	431	372							3	1,117	372	2.2	-2.8
TOTALS	16,986	17,539	16,671	0	0	0	0	0	0	72	51,196	17,065	100	
Number of Survey Hours/Day	24	24	24	0	0	0	0	0	0	Overall Average Hourly Volume 711				
Average Hourly Volume/Day	708	731	695	0	0	0	0	0	0					

Stationary Noise

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
CENTRAL PARKWAY BRT STATION

3/1/2009 15:30

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re19: 2nd Storey Window on North Façade of Townhouses #385-405 Rathburn Road

Other data

Day Peak Hour (7am -10am)

Other data

No Noise Controls

Receptor Xr Co-Ordinates, m	360.0	360.0	360.0	360.0		360.0	360.0													
Receptor Yr Co-Ordinates, m	110.0	110.0	110.0	110.0		110.0	110.0													
Ground Elevation at Receptor, m	146.0	146.0	146.0	146.0		146.0	146.0													
Receptor Height above ground, m	5.0	5.0	5.0	5.0		5.0	5.0													
Receptor Zr Co-Ordinates, m	151.0	151.0	151.0	151.0	0.0	151.0	151.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BI1	BI2	BI3	BI4		BM1	BM2													
Source Name/Details	Bus Idle	Bus Idle	Bus Idle	Bus Idle		Bus Moving	Bus Moving													
Source Xs Co-Ordinates, m	195.0	245.0	195.0	245.0		215.0	215.0													
Source Ys Co-Ordinates, m	190.0	190.0	175.0	175.0		190.0	175.0													
Ground Elevation at source, m	150.0	150.0	150.0	150.0		150.0	150.0													
Source Height above ground, m	3.0	3.0	3.0	3.0		3.0	3.0													
Source Zs Co-Ordinates, m	153.0	153.0	153.0	153.0		153.0	153.0													
Point or Line Source (P or L) ?	P	P	P	P		L	L													
Reference Sound Level, dBA	71.0	71.0	71.0	71.0		73.0	73.0													
Reference Dist. for Lp, m	7.5	7.5	7.5	7.5		10.0	10.0													
Source-Receptor Distance, m	183	140	177	132		166	159													
Selected Ds-r, m	183	140	177	132		166	159													
Frequency	500	500	500	500		500	500													
Geometrical Spreading	-----	-----	-----	-----		-----	-----													
Consider Dist.atten.(Y or N) ?	Y	Y	Y	Y		Y	Y													
Reference Dist. for Lp, m	8	8	8	8		10	10													
Source-Receptor Distance, m	183	140	177	132		166	159													
Distance Reduction Factor	20	20	20	20		20	20													
Distance Error Flag	Ok	Ok	Ok	Ok		Ok	Ok													
Geometrical Spreading, dB	-27.8	-25.4	-27.5	-24.9		-24.4	-24.0													
ISO Ground Attenuation	-----	-----	-----	-----		-----	-----													
Model (1=none,2=CMHC,3=ISO)	3	3	3	3		3	3													
Distance used for calculation	183	140	177	132		166	159													
Source Height above ground, m	3.0	3.0	3.0	3.0		3.0	3.0													
Receptor Height above ground, m	5.0	5.0	5.0	5.0		5.0	5.0													
Barrier Height Factor(2xbh) (CMHC)	0	0	0	0		0	0													
P+T Factors (CMHC only)	0	0	0	0		0	0													
Is there a sound Barrier ?	N	N	N	N		N	N													
Ground Attenuation, dB	-3.9	-3.6	-3.9	-3.6		-3.8	-3.8													

WA07-090

Yes Atmospheric Attenuation	.....	.....	.....	.....		.....	.....												
Consider atm.atten.(Y or N) ?	Y	Y	Y	Y		Y	Y												
Atmospheric Attenuation, dB	-0.4	-0.3	-0.4	-0.3		-0.4	-0.3												
Barrier Attenuation	.....	.....	.....	.....		.....	.....												
Consider Barrier Attenuation (Y or N)	Y	Y	Y	Y		Y	Y												
Ground Elevation at source, m	150.0	150.0	150.0	150.0		150.0	150.0												
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0	15.0	15.0		15.0	15.0												
Ground Elevation at Receptor,m	146.0	146.0	146.0	146.0		146.0	146.0												
RECEIVER-BARRIER DIST.(rbd)	168.4	125.1	162.4	117.1		150.6	143.9												
BARRIER HEIGHT (bh)	0.0	0.0	0.0	0.0		0.0	0.0												
BARRIER GND. ELEV.(bge)	0.0	0.0	0.0	0.0		0.0	0.0												
BARRIER THICKNESS (bt)	0.0	0.0	0.0	0.0		0.0	0.0												
Barrier Attenuation, dB	0.0	0.0	0.0	0.0		0.0	0.0												
Barrier Acoustic Zone	bright	bright	bright	bright		bright	bright												
Barrier Top Elevation	150.0	150.0	150.0	150.0		150.0	150.0												
Sub-Total Attenuation, dBA	-32.1	-29.4	-31.8	-28.8		-28.6	-28.1												
Additional Adjustments	.....	.....	.....	.....		.....	.....												
Common Adjustment	0.0	0.0	0.0	0.0		0.0	0.0												
Line-to-Point Source Barrier Adjust.	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
Sub-Total Adjustments, dB	0.0	0.0	0.0	0.0		0.0	0.0												
Lp @ Receptor, dBA	38.9	41.6	39.2	42.2		44.4	44.9												
Leq Time Base , Minutes	60.0	60.0	60.0	60.0		60.0	60.0												
Line Source Data :	N/A	N/A	N/A	N/A		Yes	Yes												
- Length of Line Segment, m						100.0	100.0												
- Source Speed, Km/Hr						20.0	20.0												
- No. of Movements in Time Base						53.0	53.0												
-Segment integration time, min.																			
Point Source Data :	Yes	Yes	Yes	Yes		N/A	N/A												
- No. of Events in Time Base	27	27	27	27															
- Each Event Duration, min.	5	5	5	5															
- Duration Of All Events, min.	135.00	135.00	135.00	135.00															
Leq @ Receptor, dBA	42.4	45.2	42.7	45.8		38.7	39.1												
Other Adjustments	.....	.....	.....	.....		.....	.....												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
Net Source Leq ,dBA	42.4	45.2	42.7	45.8		38.7	39.1												
ALL SOURCES Leq	51																		

Overall Lp

50 dBA

Maximum Lp

45 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
CENTRAL PARKWAY BRT STATION

3/1/2009 15:30

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re19: 2nd Storey Window on North Façade of Townhouses #385-405 Rathburn Road

Other data Evening Peak Hour (7pm - 8pm)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	360.0	360.0	360.0	360.0		360.0	360.0												
Receptor Yr Co-Ordinates, m	110.0	110.0	110.0	110.0		110.0	110.0												
Ground Elevation at Receptor,m	146.0	146.0	146.0	146.0		146.0	146.0												
Receptor Height above ground, m	5.0	5.0	5.0	5.0		5.0	5.0												
Receptor Zr Co-Ordinates, m	151.0	151.0	151.0	151.0	0.0	151.0	151.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BI1	BI2	BI3	BI4		BM1	BM2												
Source Name/Details	Bus Idle	Bus Idle	Bus Idle	Bus Idle		Bus Moving	Bus Moving												
Source Xs Co-Ordinates, m	195.0	245.0	195.0	245.0		215.0	215.0												
Source Ys Co-Ordinates, m	190.0	190.0	175.0	175.0		190.0	175.0												
Ground Elevation at source, m	150.0	150.0	150.0	150.0		150.0	150.0												
Source Height above ground, m	3.0	3.0	3.0	3.0		3.0	3.0												
Source Zs Co-Ordinates, m	153.0	153.0	153.0	153.0		153.0	153.0												
Point or Line Source (P or L) ?	P	P	P	P		L	L												
Reference Sound Level, dBA	71.0	71.0	71.0	71.0		73.0	73.0												
Reference Dist. for Lp, m	7.5	7.5	7.5	7.5		10.0	10.0												
Source-Receptor Distance,m	183	140	177	132		166	159												
Selected Ds-r ,m	183	140	177	132		166	159												
Frequency	500	500	500	500		500	500												
Geometrical Spreading	*****	*****	*****	*****		*****	*****												
Consider Dist.atten.(Y or N) ?	Y	Y	Y	Y		Y	Y												
Reference Dist. for Lp, m	8	8	8	8		10	10												
Source-Receptor Distance,m	183	140	177	132		166	159												
Distance Reduction Factor	20	20	20	20		20	20												
Distance Error Flag	Ok	Ok	Ok	Ok		Ok	Ok												
Geometrical Spreading, dB	-27.8	-25.4	-27.5	-24.9		-24.4	-24.0												
ISO Ground Attenuation	*****	*****	*****	*****		*****	*****												
Model (1=none,2=CMHC,3=ISO)	3	3	3	3		3	3												
Distance used for calculation	183	140	177	132		166	159												
Source Height above ground, m	3.0	3.0	3.0	3.0		3.0	3.0												
Receptor Height above ground, m	5.0	5.0	5.0	5.0		5.0	5.0												
Barrier Height Factor(2xbh) (CMHC)	0	0	0	0		0	0												
P+T Factors (CMHC only)	0	0	0	0		0	0												
Is there a sound Barrier ?	N	N	N	N		N	N												
Ground Attenuation, dB	-3.9	-3.6	-3.9	-3.6		-3.8	-3.8												

WA07-090

Yes Atmospheric Attenuation	*****	*****	*****	*****	*****	*****	*****												
Consider atm.attn.(Y or N) ?	Y	Y	Y	Y		Y	Y												
Atmospheric Attenuation, dB	-0.4	-0.3	-0.4	-0.3		-0.4	-0.3												
Barrier Attenuation	*****	*****	*****	*****	*****	*****	*****												
Consider Barrier Attenuation (Y or N)	Y	Y	Y	Y		Y	Y												
Ground Elevation at source, m	150.0	150.0	150.0	150.0		150.0	150.0												
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0	15.0	15.0		15.0	15.0												
Ground Elevation at Receptor,m	146.0	146.0	146.0	146.0		146.0	146.0												
RECEIVER-BARRIER DIST.(rbd)	168.4	125.1	162.4	117.1		150.6	143.9												
BARRIER HEIGHT (bh)	0.0	0.0	0.0	0.0		0.0	0.0												
BARRIER GND. ELEV.(bge)	0.0	0.0	0.0	0.0		0.0	0.0												
BARRIER THICKNESS (bt)	0.0	0.0	0.0	0.0		0.0	0.0												
Barrier Attenuation, dB	0.0	0.0	0.0	0.0		0.0	0.0												
Barrier Acoustic Zone	bright	bright	bright	bright		bright	bright												
Barrier Top Elevation	150.0	150.0	150.0	150.0		150.0	150.0												
Sub-Total Attenuation, dBA	-32.1	-29.4	-31.8	-28.8		-28.6	-28.1												
Additional Adjustments	*****	*****	*****	*****	*****	*****	*****												
Common Adjustment	0.0	0.0	0.0	0.0		0.0	0.0												
Line-to-Point Source Barrier Adjust.	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
Sub-Total Adjustments, dB	0.0	0.0	0.0	0.0		0.0	0.0												
Lp @ Receptor, dBA	38.9	41.6	39.2	42.2		44.4	44.9												
Leq Time Base , Minutes	60.0	60.0	60.0	60.0		60.0	60.0												
Line Source Data :	N/A	N/A	N/A	N/A		Yes	Yes												
- Length of Line Segment, m						100.0	100.0												
- Source Speed, Km/Hr						20.0	20.0												
- No. of Movements in Time Base						28.0	28.0												
-Segment integration time, min.																			
Point Source Data :	Yes	Yes	Yes	Yes		N/A	N/A												
- No. of Events in Time Base	14	14	14	14															
- Each Event Duration, min.	5	5	5	5															
- Duration Of All Events, min.	70.00	70.00	70.00	70.00															
Leq @ Receptor, dBA	39.5	42.3	39.9	42.9		35.9	36.3												
Other Adjustments	*****	*****	*****	*****	*****	*****	*****												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
Net Source Leq ,dBA	39.5	42.3	39.9	42.9		35.9	36.3												
ALL SOURCES Leq	48																		
Overall Lp	50	dBA				Maximum Lp	45	dBA											

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
CENTRAL PARKWAY BRT STATION

3/1/2009 15:30

File Number :

WA07-090

Project Name :

Mississauga BRT EAST

Receptor Name :

Re19: 2nd Storey Window on North Façade of Townhouses #385-405 Rathburn Road

Other data

Night Peak Hour (6am -7am)

Other data

No Noise Controls

Receptor Xr Co-Ordinates, m	360.0	360.0	360.0	360.0		360.0	360.0												
Receptor Yr Co-Ordinates, m	110.0	110.0	110.0	110.0		110.0	110.0												
Ground Elevation at Receptor,m	146.0	146.0	146.0	146.0		146.0	146.0												
Receptor Height above ground, m	5.0	5.0	5.0	5.0		5.0	5.0												
Receptor Zr Co-Ordinates, m	151.0	151.0	151.0	151.0	0.0	151.0	151.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Consider Source ? (YorN)	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BI1	BI2	BI3	BI4		BM1	BM2												
Source Name/Details	Bus Idle	Bus Idle	Bus Idle	Bus Idle		Bus Moving	Bus Moving												
Source Xs Co-Ordinates, m	195.0	245.0	195.0	245.0		215.0	215.0												
Source Ys Co-Ordinates, m	190.0	190.0	175.0	175.0		190.0	175.0												
Ground Elevation at source, m	150.0	150.0	150.0	150.0		150.0	150.0												
Source Height above ground, m	3.0	3.0	3.0	3.0		3.0	3.0												
Source Zs Co-Ordinates, m	153.0	153.0	153.0	153.0		153.0	153.0												
Point or Line Source (P or L) ?	P	P	P	P		L	L												
Reference Sound Level, dBA	71.0	71.0	71.0	71.0		73.0	73.0												
Reference Dist. for Lp, m	7.5	7.5	7.5	7.5		10.0	10.0												
Source-Receptor Distance,m	183	140	177	132		166	159												
Selected Ds-r ,m	183	140	177	132		166	159												
Frequency	500	500	500	500		500	500												

Geometrical Spreading

Consider Dist.atten.(Y or N) ?	Y	Y	Y	Y		Y	Y											
Reference Dist. for Lp, m	8	8	8	8		10	10											
Source-Receptor Distance,m	183	140	177	132		166	159											
Distance Reduction Factor	20	20	20	20		20	20											
Distance Error Flag	Ok	Ok	Ok	Ok		Ok	Ok											
Geometrical Spreading, dB	-27.8	-25.4	-27.5	-24.9		-24.4	-24.0											

ISO Ground Attenuation

Model (1=none,2=CMHC,3=ISO)	3	3	3	3		3	3											
Distance used for calculation	183	140	177	132		166	159											
Source Height above ground, m	3.0	3.0	3.0	3.0		3.0	3.0											
Receptor Height above ground, m	5.0	5.0	5.0	5.0		5.0	5.0											
Barrier Height Factor(2xbh) (CMHC)	0	0	0	0		0	0											
P+T Factors (CMHC only)	0	0	0	0		0	0											
Is there a sound Barrier ?	N	N	N	N		N	N											
Ground Attenuation, dB	-3.9	-3.6	-3.9	-3.6		-3.8	-3.8											

WA07-090

Yes Atmospheric Attenuation	*****	*****	*****	*****	*****	*****	*****												
Consider atm.atten.(Y or N) ?	Y	Y	Y	Y		Y	Y												
Atmospheric Attenuation, dB	-0.4	-0.3	-0.4	-0.3		-0.4	-0.3												
Barrier Attenuation	*****	*****	*****	*****	*****	*****	*****												
Consider Barrier Attenuation (Y or N)	Y	Y	Y	Y		Y	Y												
Ground Elevation at source, m	150.0	150.0	150.0	150.0		150.0	150.0												
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0	15.0	15.0		15.0	15.0												
Ground Elevation at Receptor,m	146.0	146.0	146.0	146.0		146.0	146.0												
RECEIVER-BARRIER DIST.(rbd)	168.4	125.1	162.4	117.1		150.6	143.9												
BARRIER HEIGHT (bh)	0.0	0.0	0.0	0.0		0.0	0.0												
BARRIER GND. ELEV.(bge)	0.0	0.0	0.0	0.0		0.0	0.0												
BARRIER THICKNESS (bt)	0.0	0.0	0.0	0.0		0.0	0.0												
Barrier Attenuation, dB	0.0	0.0	0.0	0.0		0.0	0.0												
Barrier Acoustic Zone	bright	bright	bright	bright		bright	bright												
Barrier Top Elevation	150.0	150.0	150.0	150.0		150.0	150.0												
Sub-Total Attenuation, dBA	-32.1	-29.4	-31.8	-28.8		-28.6	-28.1												
Additional Adjustments	*****	*****	*****	*****	*****	*****	*****												
Common Adjustment	0.0	0.0	0.0	0.0		0.0	0.0												
Line-to-Point Source Barrier Adjust.	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
Sub-Total Adjustments, dB	0.0	0.0	0.0	0.0		0.0	0.0												
Lp @ Receptor, dBA	38.9	41.6	39.2	42.2		44.4	44.9												
Leq Time Base , Minutes	60.0	60.0	60.0	60.0		60.0	60.0												
Line Source Data :	N/A	N/A	N/A	N/A		Yes	Yes												
- Length of Line Segment, m						100.0	100.0												
- Source Speed, Km/Hr						20.0	20.0												
- No. of Movements in Time Base						10.0	10.0												
-Segment integration time, min.																			
Point Source Data :	Yes	Yes	Yes	Yes		N/A	N/A												
- No. of Events in Time Base	5	5	5	5															
- Each Event Duration, min.	5	5	5	5															
- Duration Of All Events, min.	25.00	25.00	25.00	25.00															
Leq @ Receptor, dBA	35.1	37.8	35.4	38.4		31.4	31.8												
Other Adjustments	*****	*****	*****	*****	*****	*****	*****												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
.....	0.0	0.0	0.0	0.0		0.0	0.0												
Net Source Leq ,dBA	35.1	37.8	35.4	38.4		31.4	31.8												
ALL SOURCES Leq	44																		

Overall Lp

50 dBA

Maximum Lp

45 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
CAWTHRA ROAD BRT STATION

3/1/2009 15:29

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re16: 2nd Storey Window on North Façade of House at 4336 Forest Fire Lane

Other data

Day Peak Hours (7am -10am)

Other data

No Noise Controls

Receptor Xr Co-Ordinates, m	170.0	170.0		170.0	170.0		170.0	170.0		170.0	170.0	170.0	170.0	170.0						
Receptor Yr Co-Ordinates, m	50.0	50.0		50.0	50.0		50.0	50.0		50.0	50.0	50.0	50.0	50.0						
Ground Elevation at Receptor, m	146.0	146.0		146.0	146.0		146.0	146.0		146.0	146.0	146.0	146.0	146.0						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0						
Receptor Zr Co-Ordinates, m	151.0	151.0	0.0	151.0	151.0	0.0	151.0	151.0	0.0	151.0	151.0	151.0	151.0	151.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI 1	BI 2		CM1	CM2		CI1	CI2	CI3	CI4	CI5						
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Car Moving	Car Moving		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle						
Source Xs Co-Ordinates, m	315.0	315.0		290.0	290.0		435.0	380.0		270.0	250.0	215.0	365.0	180.0						
Source Ys Co-Ordinates, m	315.0	310.0		320.0	305.0		305.0	295.0		280.0	260.0	290.0	300.0	270.0						
Ground Elevation at source, m	151.0	151.0		151.0	151.0		151.0	151.0		151.0	151.0	151.0	151.0	151.0						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8	0.8		0.8	0.8	0.8	0.8	0.8						
Source Zs Co-Ordinates, m	154.0	154.0		154.0	154.0		151.8	151.8		151.8	151.8	151.8	151.8	151.8						
Point or Line Source (P or L) ?	L	L		P	P		L	L		P	P	P	P	P						
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		60.0	60.0		56.0	56.0	56.0	56.0	56.0						
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		15.0	15.0		7.0	7.0	7.0	7.0	7.0						
Source-Receptor Distance, m	302	298		295	282		368	323		251	225	244	317	220						
Selected Ds-r, m	302	298		295	282		368	323		251	225	244	317	220						
Frequency	500	500		500	500		500	500		500	500	500	500	500						
Geometrical Spreading																				
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y						
Reference Dist. for Lp, m	10	10		8	8		15	15		7	7	7	7	7						
Source-Receptor Distance, m	302	298		295	282		368	323		251	225	244	317	220						
Distance Reduction Factor	20	20		20	20		20	20		20	20	20	20	20						
Distance Error Flag	Ok	Ok		Ok	Ok		Ok	Ok		Ok	Ok	Ok	Ok	Ok						
Geometrical Spreading, dB	-29.6	-29.5		-31.9	-31.5		-27.8	-26.7		-31.1	-30.1	-30.9	-33.1	-30.0						
No Ground Attenuation																				
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1	1		1	1	1	1	1						
Distance used for calculation	302	298		295	282		368	323		251	225	244	317	220						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8	0.8		0.8	0.8	0.8	0.8	0.8						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0						
Barrier Height Factor(2xbh) (CMHC)	26	26		26	26		26	26		26	26	26	26	26						
P+T Factors (CMHC only)	0	0		0	0		0	0		0	0	0	0	0						
Is there a sound Barrier ?	N	N		N	N		N	N		N	N	N	N	N						
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0						

WA07-090

Yes Atmospheric Attenuation	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Consider atm.atten.(Y or N) ?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Atmospheric Attenuation, dB	-0.7	-0.7	-0.7	-0.6	-0.7	-0.7	-0.8	-0.7	-0.6	-0.5	-0.5	-0.7	-0.5	-0.7	-0.5	-0.7	-0.5	-0.7	-0.5
Barrier Attenuation	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Consider Barrier Attenuation (Y or N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ground Elevation at source, m	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0	151.0
SOURCE-BARRIER DISTANCE(sbd)	120.0	110.0	120.0	105.0	130.0	110.0	80.0	65.0	95.0	110.0	85.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0
Ground Elevation at Receptor,m	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0
RECEIVER-BARRIER DIST.(rbd)	182.1	187.7	175.5	176.8	237.8	212.7	170.8	159.7	149.2	207.1	135.2	146.0	146.0	146.0	146.0	146.0	146.0	146.0	146.0
BARRIER HEIGHT (bh)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
BARRIER GND. ELEV.(bge)	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
BARRIER THICKNESS (bt)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barrier Attenuation, dB	-10.6	-10.6	-10.6	-10.8	-11.2	-11.7	-12.6	-13.1	-12.4	-11.7	-12.8	-12.6	-13.1	-12.4	-11.7	-12.8	-12.6	-13.1	-12.4
Barrier Acoustic Zone	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow
Barrier Top Elevation	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0	164.0
Sub-Total Attenuation, dBA	-40.8	-40.8	-43.2	-42.9	-39.8	-39.0	-44.3	-43.8	-43.8	-45.5	-43.2	-44.3	-43.8	-43.8	-45.5	-43.2	-44.3	-43.8	-43.8
Additional Adjustments	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Common Adjustment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Line-to-Point Source Barrier Adjust.	0.0	0.0	-1.5	-1.5	0.0	0.0	-1.5	-1.5	-1.5	-1.5	-1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub-Total Adjustments, dB	0.0	0.0	-1.5	-1.5	0.0	0.0	-1.5	-1.5	-1.5	-1.5	-1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lp @ Receptor, dBA	32.2	32.2	26.3	26.6	20.2	21.0	10.2	10.7	10.7	9.0	11.3	10.2	10.7	10.7	9.0	11.3	10.2	10.7	10.7
Leq Time Base , Minutes	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Line Source Data :	Yes	Yes	N/A	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
- Length of Line Segment, m	150	150	1	1	50.0	50	0	0	0	0	50	104	56	30	30	9	104	56	30
- Source Speed, Km/Hr	20	20	1	1	20.0	20	1	1	1	10	10	3	3	3	3	3	3	3	3
- No. of Movements in Time Base	53	53			229.0	229	1	1	1	1	1	1	1	1	1	1	1	1	1
-Segment integration time, min.	23.85	23.85	0.00	0.00	34.35	34.35	0.00	0.00	0.00	0.00	0.30	104	56	30	30	9	104	56	30
Point Source Data :	N/A	N/A	Yes	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
- No. of Events in Time Base			53	53			104	56	30	30	9	104	56	30	30	9	104	56	30
- Each Event Duration, min.			5	5			3	3	3	3	3	3	3	3	3	3	3	3	3
- Duration Of All Events, min.			265.00	265.00			312.00	168.00	90.00	90.00	27.00	312.00	168.00	90.00	90.00	27.00	312.00	168.00	90.00
Leq @ Receptor, dBA	28.2	28.2	32.7	33.0	17.8	18.5	17.4	15.2	12.4	10.7	7.8	17.4	15.2	12.4	10.7	7.8	17.4	15.2	12.4
Other Adjustments	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Source Leq ,dBA	28.2	28.2	32.7	33.0	17.8	18.5	17.4	15.2	12.4	10.7	7.8	17.4	15.2	12.4	10.7	7.8	17.4	15.2	12.4
ALL SOURCES Leq	37																		

Overall Lp

37 dBA

Maximum Lp

32 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
CAWTHRA ROAD BRT STATION

3/1/2009 15:29

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re16: 2nd Storey Window on North Façade of House at 4336 Forest Fire Lane

Other data Evening Peak Hours (7pm -8pm)**Other data** No Noise Controls

Receptor Xr Co-Ordinates, m	170.0	170.0		170.0	170.0		170.0	170.0		170.0	170.0	170.0	170.0	170.0						
Receptor Yr Co-Ordinates, m	50.0	50.0		50.0	50.0		50.0	50.0		50.0	50.0	50.0	50.0	50.0						
Ground Elevation at Receptor, m	146.0	146.0		146.0	146.0		146.0	146.0		146.0	146.0	146.0	146.0	146.0						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0						
Receptor Zr Co-Ordinates, m	151.0	151.0	0.0	151.0	151.0	0.0	151.0	151.0	0.0	151.0	151.0	151.0	151.0	151.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI 1	BI 2		CM1	CM2		CI1	CI2	CI3	CI4	CI5						
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Car Moving	Car Moving		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle						
Source Xs Co-Ordinates, m	315.0	315.0		290.0	290.0		435.0	380.0		270.0	250.0	215.0	365.0	180.0						
Source Ys Co-Ordinates, m	315.0	310.0		320.0	305.0		305.0	295.0		280.0	260.0	290.0	300.0	270.0						
Ground Elevation at source, m	151.0	151.0		151.0	151.0		151.0	151.0		151.0	151.0	151.0	151.0	151.0						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8	0.8		0.8	0.8	0.8	0.8	0.8						
Source Zs Co-Ordinates, m	154.0	154.0		154.0	154.0		151.8	151.8		151.8	151.8	151.8	151.8	151.8						
Point or Line Source (P or L) ?	L	L		P	P		L	L		P	P	P	P	P						
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		60.0	60.0		56.0	56.0	56.0	56.0	56.0						
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		15.0	15.0		7.0	7.0	7.0	7.0	7.0						
Source-Receptor Distance, m	302	298		295	282		368	323		251	225	244	317	220						
Selected Ds-r, m	302	298		295	282		368	323		251	225	244	317	220						
Frequency	500	500		500	500		500	500		500	500	500	500	500						
Geometrical Spreading																				
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y						
Reference Dist. for Lp, m	10	10		8	8		15	15		7	7	7	7	7						
Source-Receptor Distance, m	302	298		295	282		368	323		251	225	244	317	220						
Distance Reduction Factor	20	20		20	20		20	20		20	20	20	20	20						
Distance Error Flag	Ok	Ok		Ok	Ok		Ok	Ok		Ok	Ok	Ok	Ok	Ok						
Geometrical Spreading, dB	-29.6	-29.5		-31.9	-31.5		-27.8	-26.7		-31.1	-30.1	-30.9	-33.1	-30.0						
No Ground Attenuation																				
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1	1		1	1	1	1	1						
Distance used for calculation	302	298		295	282		368	323		251	225	244	317	220						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8	0.8		0.8	0.8	0.8	0.8	0.8						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0						
Barrier Height Factor(2xbh) (CMHC)	26	26		26	26		26	26		26	26	26	26	26						
P+T Factors (CMHC only)	0	0		0	0		0	0		0	0	0	0	0						
Is there a sound Barrier ?	N	N		N	N		N	N		N	N	N	N	N						
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0						

WA07-090

Yes Atmospheric Attenuation																			
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y					
Atmospheric Attenuation, dB	-0.7	-0.7		-0.7	-0.6		-0.8	-0.7		-0.6	-0.5	-0.5	-0.7	-0.5					
Barrier Attenuation																			
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y					
Ground Elevation at source, m	151.0	151.0		151.0	151.0		151.0	151.0		151.0	151.0	151.0	151.0	151.0					
SOURCE-BARRIER DISTANCE(sbd)	120.0	110.0		120.0	105.0		130.0	110.0		80.0	65.0	95.0	110.0	85.0					
Ground Elevation at Receptor,m	146.0	146.0		146.0	146.0		146.0	146.0		146.0	146.0	146.0	146.0	146.0					
RECEIVER-BARRIER DIST.(rbd)	182.1	187.7		175.5	176.8		237.8	212.7		170.8	159.7	149.2	207.1	135.2					
BARRIER HEIGHT (bh)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0	13.0	13.0	13.0					
BARRIER GND. ELEV.(bge)	147.0	147.0		147.0	147.0		147.0	147.0		147.0	147.0	147.0	147.0	147.0					
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Barrier Attenuation, dB	-10.6	-10.6		-10.6	-10.8		-11.2	-11.7		-12.6	-13.1	-12.4	-11.7	-12.8					
Barrier Acoustic Zone	shadow	shadow		shadow	shadow		shadow	shadow		shadow	shadow	shadow	shadow	shadow					
Barrier Top Elevation	164.0	164.0		164.0	164.0		164.0	164.0		164.0	164.0	164.0	164.0	164.0					
Sub-Total Attenuation, dBA	-40.8	-40.8		-43.2	-42.9		-39.8	-39.0		-44.3	-43.8	-43.8	-45.5	-43.2					
Additional Adjustments																			
Common Adjustment	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Line-to-Point Source Barrier Adjust.	0.0	0.0		-1.5	-1.5		0.0	0.0		-1.5	-1.5	-1.5	-1.5	-1.5					
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Sub-Total Adjustments, dB	0.0	0.0		-1.5	-1.5		0.0	0.0		-1.5	-1.5	-1.5	-1.5	-1.5					
Lp @ Receptor, dBA	32.2	32.2		26.3	26.6		20.2	21.0		10.2	10.7	10.7	9.0	11.3					
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0	60.0		60.0	60.0	60.0	60.0	60.0					
Line Source Data :	Yes	Yes		N/A	N/A		Yes	Yes		N/A	N/A	N/A	N/A	N/A					
- Length of Line Segment, m	150	150		1	1		50.0	50		0	0	0	0	50					
- Source Speed, Km/Hr	20	20		1	1		20.0	20		1	1	1	10	10					
- No. of Movements in Time Base	28	28					173.0	173		1	1	1	1	1					
-Segment integration time, min.	12.60	12.60		0.00	0.00		25.95	25.95		0.00	0.00	0.00	0.00	0.30					
Point Source Data :	N/A	N/A		Yes	Yes		N/A	N/A		Yes	Yes	Yes	Yes	Yes					
- No. of Events in Time Base				28	28					78	42	23	23	7					
- Each Event Duration, min.				5	5					3	3	3	3	3					
- Duration Of All Events, min.				140.00	140.00					234.00	126.00	69.00	69.00	21.00					
Leq @ Receptor, dBA	25.4	25.5		30.0	30.2		16.6	17.3		16.2	13.9	11.3	9.6	6.7					
Other Adjustments																			
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Net Source Leq ,dBA	25.4	25.5		30.0	30.2		16.6	17.3		16.2	13.9	11.3	9.6	6.7					
ALL SOURCES Leq	35																		

Overall Lp

37 dBA

Maximum Lp

32 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
CAWTHRA ROAD BRT STATION

3/1/2009 15:29

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re16: 2nd Storey Window on North Façade of House at 4336 Forest Fire Lane

Other data Night Peak Hours (6am -7am)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	170.0	170.0		170.0	170.0		170.0	170.0		170.0	170.0	170.0	170.0	170.0					
Receptor Yr Co-Ordinates, m	50.0	50.0		50.0	50.0		50.0	50.0		50.0	50.0	50.0	50.0	50.0					
Ground Elevation at Receptor,m	146.0	146.0		146.0	146.0		146.0	146.0		146.0	146.0	146.0	146.0	146.0					
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0					
Receptor Zr Co-Ordinates, m	151.0	151.0	0.0	151.0	151.0	0.0	151.0	151.0	0.0	151.0	151.0	151.0	151.0	151.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BM1	BM2		BI 1	BI 2		CM1	CM2		CI1	CI2	CI3	CI4	CI5					
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Car Moving	Car Moving		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle					
Source Xs Co-Ordinates, m	315.0	315.0		290.0	290.0		435.0	380.0		270.0	250.0	215.0	365.0	180.0					
Source Ys Co-Ordinates, m	315.0	310.0		320.0	305.0		305.0	295.0		280.0	260.0	290.0	300.0	270.0					
Ground Elevation at source, m	151.0	151.0		151.0	151.0		151.0	151.0		151.0	151.0	151.0	151.0	151.0					
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8	0.8		0.8	0.8	0.8	0.8	0.8					
Source Zs Co-Ordinates, m	154.0	154.0		154.0	154.0		151.8	151.8		151.8	151.8	151.8	151.8	151.8					
Point or Line Source (P or L) ?	L	L		P	P		L	L		P	P	P	P	P					
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		60.0	60.0		56.0	56.0	56.0	56.0	56.0					
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		15.0	15.0		7.0	7.0	7.0	7.0	7.0					
Source-Receptor Distance,m	302	298		295	282		368	323		251	225	244	317	220					
Selected Ds-r,m	302	298		295	282		368	323		251	225	244	317	220					
Frequency	500	500		500	500		500	500		500	500	500	500	500					
Geometrical Spreading																			
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y					
Reference Dist. for Lp, m	10	10		8	8		15	15		7	7	7	7	7					
Source-Receptor Distance,m	302	298		295	282		368	323		251	225	244	317	220					
Distance Reduction Factor	20	20		20	20		20	20		20	20	20	20	20					
Distance Error Flag	Ok	Ok		Ok	Ok		Ok	Ok		Ok	Ok	Ok	Ok	Ok					
Geometrical Spreading, dB	-29.6	-29.5		-31.9	-31.5		-27.8	-26.7		-31.1	-30.1	-30.9	-33.1	-30.0					
No Ground Attenuation																			
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1	1		1	1	1	1	1					
Distance used for calculation	302	298		295	282		368	323		251	225	244	317	220					
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8	0.8		0.8	0.8	0.8	0.8	0.8					
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0					
Barrier Height Factor(2xbh) (CMHC)	26	26		26	26		26	26		26	26	26	26	26					
P+T Factors (CMHC only)	0	0		0	0		0	0		0	0	0	0	0					
Is there a sound Barrier ?	N	N		N	N		N	N		N	N	N	N	N					
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					

WA07-090

Yes Atmospheric Attenuation	*****	*****		*****	*****		*****	*****		*****	*****	*****	*****	*****					
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y					
Atmospheric Attenuation, dB	-0.7	-0.7		-0.7	-0.6		-0.8	-0.7		-0.6	-0.5	-0.5	-0.7	-0.5					
Barrier Attenuation	*****	*****		*****	*****		*****	*****		*****	*****	*****	*****	*****					
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y	Y		Y	Y	Y	Y	Y					
Ground Elevation at source, m	151.0	151.0		151.0	151.0		151.0	151.0		151.0	151.0	151.0	151.0	151.0					
SOURCE-BARRIER DISTANCE(sbd)	120.0	110.0		120.0	105.0		130.0	110.0		80.0	65.0	95.0	110.0	85.0					
Ground Elevation at Receptor,m	146.0	146.0		146.0	146.0		146.0	146.0		146.0	146.0	146.0	146.0	146.0					
RECEIVER-BARRIER DIST.(rbd)	182.1	187.7		175.5	176.8		237.8	212.7		170.8	159.7	149.2	207.1	135.2					
BARRIER HEIGHT (bh)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0	13.0	13.0	13.0					
BARRIER GND. ELEV.(bge)	147.0	147.0		147.0	147.0		147.0	147.0		147.0	147.0	147.0	147.0	147.0					
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Barrier Attenuation, dB	-10.6	-10.6		-10.6	-10.8		-11.2	-11.7		-12.6	-13.1	-12.4	-11.7	-12.8					
Barrier Acoustic Zone	shadow	shadow		shadow	shadow		shadow	shadow		shadow	shadow	shadow	shadow	shadow					
Barrier Top Elevation	164.0	164.0		164.0	164.0		164.0	164.0		164.0	164.0	164.0	164.0	164.0					
Sub-Total Attenuation, dBA	-40.8	-40.8		-43.2	-42.9		-39.8	-39.0		-44.3	-43.8	-43.8	-45.5	-43.2					
Additional Adjustments	*****	*****		*****	*****		*****	*****		*****	*****	*****	*****	*****					
Common Adjustment	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Line-to-Point Source Barrier Adjust.	0.0	0.0		-1.5	-1.5		0.0	0.0		-1.5	-1.5	-1.5	-1.5	-1.5					
*****	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Sub-Total Adjustments, dB	0.0	0.0		-1.5	-1.5		0.0	0.0		-1.5	-1.5	-1.5	-1.5	-1.5					
Lp @ Receptor, dBA	32.2	32.2		26.3	26.6		20.2	21.0		10.2	10.7	10.7	9.0	11.3					
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0	60.0		60.0	60.0	60.0	60.0	60.0					
Line Source Data :	Yes	Yes		N/A	N/A		Yes	Yes		N/A	N/A	N/A	N/A	N/A					
- Length of Line Segment, m	150	150		1	1		50.0	50		0	0	0	0	50					
- Source Speed, Km/Hr	20	20		1	1		20.0	20		1	1	1	10	10					
- No. of Movements in Time Base	10	10					115.0	115.0		1	1	1	1	1					
-Segment integration time, min.	4.50	4.50		0.00	0.00		17.25	17.25		0.00	0.00	0.00	0.00	0.30					
Point Source Data :	N/A	N/A		Yes	Yes		N/A	N/A		Yes	Yes	Yes	Yes	Yes					
- No. of Events in Time Base				10	10					52	28	15	15	5					
- Each Event Duration, min.				5	5					3	3	3	3	3					
- Duration Of All Events, min.				50.00	50.00					156.00	84.00	45.00	45.00	15.00					
Leq @ Receptor, dBA	20.9	21.0		25.5	25.8		14.8	15.6		14.4	12.2	9.4	7.7	5.3					
Other Adjustments	*****	*****		*****	*****		*****	*****		*****	*****	*****	*****	*****					
*****	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
*****	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
*****	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0					
Net Source Leq ,dBA	20.9	21.0		25.5	25.8		14.8	15.6		14.4	12.2	9.4	7.7	5.3					
ALL SOURCES Leq	30																		

Overall Lp

37 dBA

Maximum Lp

32 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
TOMKEN ROAD BRT STATION

3/1/2009 15:28

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re15: 2nd Storey Window on North Façade of House at 4404 Shelby Crescent

Other data

Day Peak Hours (7am -10am)

Other data

No Noise Controls

Receptor Xr Co-Ordinates, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Receptor Yr Co-Ordinates, m	50.0	50.0		50.0	50.0	50.0	50.0		50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0				
Ground Elevation at Receptor, m	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0				
Receptor Height above ground, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Receptor Zr Co-Ordinates, m	147.0	147.0	0.0	147.0	147.0	147.0	147.0	0.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI1	BI2	BI3	BI4		CI1	CI2	CI3	CI4	CI5	CI6	CI7	CI8				
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle	Bus Idle	Bus Idle		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle				
Source Xs Co-Ordinates, m	185.0	185.0		65.0	215.0	165.0	215.0		265.0	280.0	310.0	330.0	320.0	330.0	285.0	255.0				
Source Ys Co-Ordinates, m	235.0	225.0		235.0	235.0	225.0	225.0		295.0	275.0	295.0	310.0	290.0	280.0	270.0	290.0				
Ground Elevation at source, m	144.6	144.6		144.6	144.6	144.6	144.6		138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0				
Source Height above ground, m	3.0	3.0		3.0	3.0	3.0	3.0		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Source Zs Co-Ordinates, m	147.6	147.6		147.6	147.6	147.6	147.6		138.8	138.8	138.8	138.8	138.8	138.8	138.8	138.8				
Point or Line Source (P or L) ?	L	L		P	P	P	P		P	P	P	P	P	P	P	P				
Reference Sound Level, dBA	73.0	73.0		71.0	71.0	71.0	71.0		56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0				
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5	7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0				
Source-Receptor Distance, m	258	251		194	280	237	273		357	355	391	416	396	398	356	347				
Selected Ds-r, m	258	251		194	280	237	273		357	355	391	416	396	398	356	347				
Frequency	500	500		500	500	500	500		500	500	500	500	500	500	500	500				
Geometrical Spreading																				
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				
Reference Dist. for Lp, m	10	10		8	8	8	8		7	7	7	7	7	7	7	7				
Source-Receptor Distance, m	258	251		194	280	237	273		357	355	391	416	396	398	356	347				
Distance Reduction Factor	20	20		20	20	20	20		20	20	20	20	20	20	20	20				
Distance Error Flag	Ok	Ok		Ok	Ok	Ok	Ok		Ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok				
Geometrical Spreading, dB	-28.2	-28.0		-28.3	-31.4	-30.0	-31.2		-34.2	-34.1	-34.9	-35.5	-35.1	-35.1	-34.1	-33.9				
No Ground Attenuation																				
Model (1=none,2=CMHC,3=ISO)	1	1		1	1	1	1		1	1	1	1	1	1	1	1				
Distance used for calculation	258	251		194	280	237	273		357	355	391	416	396	398	356	347				
Source Height above ground, m	3.0	3.0		3.0	3.0	3.0	3.0		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8				
Receptor Height above ground, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Barrier Height Factor(2xbh) (CMHC)	14	14		14	14	14	14		14	14	14	14	14	14	14	14				
P+T Factors (CMHC only)	0	0		0	0	0	0		0	0	0	0	0	0	0	0				
Is there a sound Barrier ?	N	N		N	N	N	N		N	N	N	N	N	N	N	N				
Ground Attenuation, dB	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

WA07-090

Yes Atmospheric Attenuation	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....				
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				
Atmospheric Attenuation, dB	-0.6	-0.6		-0.4	-0.6	-0.5	-0.6		-0.8	-0.8	-0.9	-0.9	-0.9	-0.9	-0.8	-0.8				
Barrier Attenuation	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....				
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				
Ground Elevation at source, m	144.6	144.6		144.6	144.6	144.6	144.6		138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0				
SOURCE-BARRIER DISTANCE(sbd)	115.0	110.0		110.0	130.0	95.0	120.0		210.0	200.0	235.0	260.0	235.0	235.0	195.0	200.0				
Ground Elevation at Receptor,m	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0				
RECEIVER-BARRIER DIST.(rbd)	143.1	141.0		84.5	149.9	142.1	153.4		147.3	155.4	156.3	156.3	161.1	163.2	161.2	146.7				
BARRIER HEIGHT (bh)	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0				
BARRIER GND. ELEV.(bge)	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0				
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Barrier Attenuation, dB	-5.7	-5.7		-5.9	-5.6	-5.7	-5.6		-8.5	-8.7	-8.3	-8.0	-8.3	-8.3	-8.8	-8.6				
Barrier Acoustic Zone	shadow	shadow		shadow	shadow	shadow	shadow		shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow				
Barrier Top Elevation	151.6	151.6		151.6	151.6	151.6	151.6		145.0	145.0	145.0	145.0	145.0	145.0	145.0	145.0				
Sub-Total Attenuation, dBA	-34.5	-34.2		-34.7	-37.7	-36.2	-37.5		-43.5	-43.6	-44.1	-44.4	-44.2	-44.3	-43.7	-43.3				
Additional Adjustments	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....				
Common Adjustment	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Line-to-Point Source Barrier Adjust.	0.0	0.0		-1.5	-1.5	-1.5	-1.5		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5				
	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Sub-Total Adjustments, dB	0.0	0.0		-1.5	-1.5	-1.5	-1.5		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5				
Lp @ Receptor, dBA	38.5	38.8		34.8	31.8	33.3	32.0		11.0	10.9	10.4	10.1	10.3	10.2	10.8	11.2				
Leq Time Base , Minutes	60.0	60.0		60.0	60.0	60.0	60.0		60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0				
Line Source Data :	Yes	Yes		N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
- Length of Line Segment, m	150	150		0	0	0	0		50	50	50	50	50	50	50	50				
- Source Speed, Km/Hr	20	20		10	10	20.0	20.0		10	10	10	10	10	10	10	10				
- No. of Movements in Time Base	53	53		1	1	54.0	54.0		1	1	1	1	1	1	1	1				
-Segment integration time, min.	23.85	23.85		0.00	0.00	0.00	0.00		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30				
Point Source Data :	N/A	N/A		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
- No. of Events in Time Base				27	27	27	27		16	10	15	8	20	14	27	19				
- Each Event Duration, min.				5	5	5	5		3	3	3	3	3	3	3	3				
- Duration Of All Events, min.				135.00	135.00	135.00	135.00		48.00	30.00	45.00	24.00	60.00	42.00	81.00	57.00				
Leq @ Receptor, dBA	34.5	34.8		38.4	35.3	36.8	35.5		10.0	7.9	9.2	6.1	10.3	8.7	12.1	11.0				
Other Adjustments	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....				
	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Net Source Leq ,dBA	34.5	34.8		38.4	35.3	36.8	35.5		10.0	7.9	9.2	6.1	10.3	8.7	12.1	11.0				
ALL SOURCES Leq	44																			

Overall Lp

44 dBA

Maximum Lp

39 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
TOMKEN ROAD BRT STATION

3/1/2009 15:28

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re15: 2nd Storey Window on North Façade of House at 4404 Shelby Crescent

Other data Evening Peak Hours (7pm -8pm)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Receptor Yr Co-Ordinates, m	50.0	50.0		50.0	50.0	50.0	50.0		50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0			
Ground Elevation at Receptor,m	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0			
Receptor Height above ground, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Receptor Zr Co-Ordinates, m	147.0	147.0	0.0	147.0	147.0	147.0	147.0	0.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BM1	BM2		BI1	BI2	BI3	BI4		CI1	CI2	CI3	CI4	CI5	CI6	CI7	CI8			
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle	Bus Idle	Bus Idle		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle			
Source Xs Co-Ordinates, m	185.0	185.0		65.0	215.0	165.0	215.0		265.0	280.0	310.0	330.0	320.0	330.0	285.0	255.0			
Source Ys Co-Ordinates, m	235.0	225.0		235.0	235.0	225.0	225.0		295.0	275.0	295.0	310.0	290.0	280.0	270.0	290.0			
Ground Elevation at source, m	144.6	144.6		144.6	144.6	144.6	144.6		138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0			
Source Height above ground, m	3.0	3.0		3.0	3.0	3.0	3.0		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8			
Source Zs Co-Ordinates, m	147.6	147.6		147.6	147.6	147.6	147.6		138.8	138.8	138.8	138.8	138.8	138.8	138.8	138.8			
Point or Line Source (P or L) ?	L	L		P	P	P	P		P	P	P	P	P	P	P	P			
Reference Sound Level, dBA	73.0	73.0		71.0	71.0	71.0	71.0		56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0			
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5	7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			
Source-Receptor Distance,m	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Selected Ds-r,m	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Frequency	500	500		500	500	500	500		500	500	500	500	500	500	500	500			
Geometrical Spreading	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....			
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			
Reference Dist. for Lp, m	10	10		8	8	8	8		7	7	7	7	7	7	7	7			
Source-Receptor Distance,m	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Distance Reduction Factor	20	20		20	20	20	20		20	20	20	20	20	20	20	20			
Distance Error Flag	Ok	Ok		Ok	Ok	Ok	Ok		Ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok			
Geometrical Spreading, dB	-28.2	-28.0		-28.3	-31.4	-30.0	-31.2		-34.2	-34.1	-34.9	-35.5	-35.1	-35.1	-34.1	-33.9			
No Ground Attenuation	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....			
Model (1=none,2=CMHC,3=ISO)	1	1		1	1	1	1		1	1	1	1	1	1	1	1			
Distance used for calculation	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Source Height above ground, m	3.0	3.0		3.0	3.0	3.0	3.0		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8			
Receptor Height above ground, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Barrier Height Factor(2xbh) (CMHC)	14	14		14	14	14	14		14	14	14	14	14	14	14	14			
P+T Factors (CMHC only)	0	0		0	0	0	0		0	0	0	0	0	0	0	0			
Is there a sound Barrier ?	N	N		N	N	N	N		N	N	N	N	N	N	N	N			
Ground Attenuation, dB	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

WA07-090

Yes Atmospheric Attenuation	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
Consider atm.attn.(Y or N) ?	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			
Atmospheric Attenuation, dB	-0.6	-0.6		-0.4	-0.6	-0.5	-0.6		-0.8	-0.8	-0.9	-0.9	-0.9	-0.9	-0.8	-0.8			
Barrier Attenuation	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			
Ground Elevation at source, m	144.6	144.6		144.6	144.6	144.6	144.6		138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0			
SOURCE-BARRIER DISTANCE(sbd)	115.0	110.0		110.0	130.0	95.0	120.0		210.0	200.0	235.0	260.0	235.0	235.0	195.0	200.0			
Ground Elevation at Receptor,m	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0			
RECEIVER-BARRIER DIST.(rbd)	143.1	141.0		84.5	149.9	142.1	153.4		147.3	155.4	156.3	156.3	161.1	163.2	161.2	146.7			
BARRIER HEIGHT (bh)	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			
BARRIER GND. ELEV.(bge)	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0			
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Barrier Attenuation, dB	-5.7	-5.7		-5.9	-5.6	-5.7	-5.6		-8.5	-8.7	-8.3	-8.0	-8.3	-8.3	-8.8	-8.6			
Barrier Acoustic Zone	shadow	shadow		shadow	shadow	shadow	shadow		shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow			
Barrier Top Elevation	151.6	151.6		151.6	151.6	151.6	151.6		145.0	145.0	145.0	145.0	145.0	145.0	145.0	145.0			
Sub-Total Attenuation, dBA	-34.5	-34.2		-34.7	-37.7	-36.2	-37.5		-43.5	-43.6	-44.1	-44.4	-44.2	-44.3	-43.7	-43.3			
Additional Adjustments	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
Common Adjustment	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Line-to-Point Source Barrier Adjust.	0.0	0.0		-1.5	-1.5	-1.5	-1.5		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Sub-Total Adjustments, dB	0.0	0.0		-1.5	-1.5	-1.5	-1.5		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5			
Lp @ Receptor, dBA	38.5	38.8		34.8	31.8	33.3	32.0		11.0	10.9	10.4	10.1	10.3	10.2	10.8	11.2			
Leq Time Base , Minutes	60.0	60.0		60.0	60.0	60.0	60.0		60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0			
Line Source Data :	Yes	Yes		N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
- Length of Line Segment, m	150	150		0	0	0	0		50	50	50	50	50	50	50	50			
- Source Speed, Km/Hr	20	20		10	10	20.0	20.0		10	10	10	10	10	10	10	10			
- No. of Movements in Time Base	28	28		1	1	54.0	54.0		1	1	1	1	1	1	1	1			
-Segment integration time, min.	12.60	12.60		0.00	0.00	0.00	0.00		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30			
Point Source Data :	N/A	N/A		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
- No. of Events in Time Base				14	14	14	14		12	8	12	6	15	11	21	15			
- Each Event Duration, min.				5	5	5	5		3	3	3	3	3	3	3	3			
- Duration Of All Events, min.				70.00	70.00	70.00	70.00		36.00	24.00	36.00	18.00	45.00	33.00	63.00	45.00			
Leq @ Receptor, dBA	31.7	32.0		35.5	32.5	33.9	32.7		8.8	6.9	8.2	4.8	9.0	7.6	11.0	9.9			
Other Adjustments	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Net Source Leq ,dBA	31.7	32.0		35.5	32.5	33.9	32.7		8.8	6.9	8.2	4.8	9.0	7.6	11.0	9.9			

ALL SOURCES Leq**41**

Overall Lp

44 dBA

Maximum Lp

39 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
TOMKEN ROAD BRT STATION

3/1/2009 15:28

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re15: 2nd Storey Window on North Façade of House at 4404 Shelby Crescent

Other data Night Peak Hours (6am -7am)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Receptor Yr Co-Ordinates, m	50.0	50.0		50.0	50.0	50.0	50.0		50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0			
Ground Elevation at Receptor,m	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0			
Receptor Height above ground, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Receptor Zr Co-Ordinates, m	147.0	147.0	0.0	147.0	147.0	147.0	147.0	0.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BM1	BM2		BI1	BI2	BI3	BI4		CI1	CI2	CI3	CI4	CI5	CI6	CI7	CI8			
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle	Bus Idle	Bus Idle		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle			
Source Xs Co-Ordinates, m	185.0	185.0		65.0	215.0	165.0	215.0		265.0	280.0	310.0	330.0	320.0	330.0	285.0	255.0			
Source Ys Co-Ordinates, m	235.0	225.0		235.0	235.0	225.0	225.0		295.0	275.0	295.0	310.0	290.0	280.0	270.0	290.0			
Ground Elevation at source, m	144.6	144.6		144.6	144.6	144.6	144.6		138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0			
Source Height above ground, m	3.0	3.0		3.0	3.0	3.0	3.0		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8			
Source Zs Co-Ordinates, m	147.6	147.6		147.6	147.6	147.6	147.6		138.8	138.8	138.8	138.8	138.8	138.8	138.8	138.8			
Point or Line Source (P or L) ?	L	L		P	P	P	P		P	P	P	P	P	P	P	P			
Reference Sound Level, dBA	73.0	73.0		71.0	71.0	71.0	71.0		56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0			
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5	7.5	7.5		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			
Source-Receptor Distance,m	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Selected Ds-r,m	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Frequency	500	500		500	500	500	500		500	500	500	500	500	500	500	500			
Geometrical Spreading	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....			
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			
Reference Dist. for Lp, m	10	10		8	8	8	8		7	7	7	7	7	7	7	7			
Source-Receptor Distance,m	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Distance Reduction Factor	20	20		20	20	20	20		20	20	20	20	20	20	20	20			
Distance Error Flag	Ok	Ok		Ok	Ok	Ok	Ok		Ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok			
Geometrical Spreading, dB	-28.2	-28.0		-28.3	-31.4	-30.0	-31.2		-34.2	-34.1	-34.9	-35.5	-35.1	-35.1	-34.1	-33.9			
No Ground Attenuation	.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....			
Model (1=none,2=CMHC,3=ISO)	1	1		1	1	1	1		1	1	1	1	1	1	1	1			
Distance used for calculation	258	251		194	280	237	273		357	355	391	416	396	398	356	347			
Source Height above ground, m	3.0	3.0		3.0	3.0	3.0	3.0		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8			
Receptor Height above ground, m	5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0			
Barrier Height Factor(2xbh) (CMHC)	14	14		14	14	14	14		14	14	14	14	14	14	14	14			
P+T Factors (CMHC only)	0	0		0	0	0	0		0	0	0	0	0	0	0	0			
Is there a sound Barrier ?	N	N		N	N	N	N		N	N	N	N	N	N	N	N			
Ground Attenuation, dB	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

WA07-090

Yes Atmospheric Attenuation	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			
Atmospheric Attenuation, dB	-0.6	-0.6		-0.4	-0.6	-0.5	-0.6		-0.8	-0.8	-0.9	-0.9	-0.9	-0.9	-0.8	-0.8			
Barrier Attenuation	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			
Ground Elevation at source, m	144.6	144.6		144.6	144.6	144.6	144.6		138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0			
SOURCE-BARRIER DISTANCE(sbd)	115.0	110.0		110.0	130.0	95.0	120.0		210.0	200.0	235.0	260.0	235.0	235.0	195.0	200.0			
Ground Elevation at Receptor,m	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0			
RECEIVER-BARRIER DIST.(rbd)	143.1	141.0		84.5	149.9	142.1	153.4		147.3	155.4	156.3	156.3	161.1	163.2	161.2	146.7			
BARRIER HEIGHT (bh)	7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0			
BARRIER GND. ELEV.(bge)	142.0	142.0		142.0	142.0	142.0	142.0		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0			
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Barrier Attenuation, dB	-5.7	-5.7		-5.9	-5.6	-5.7	-5.6		-8.5	-8.7	-8.3	-8.0	-8.3	-8.3	-8.8	-8.6			
Barrier Acoustic Zone	shadow	shadow		shadow	shadow	shadow	shadow		shadow	shadow	shadow	shadow	shadow	shadow	shadow	shadow			
Barrier Top Elevation	151.6	151.6		151.6	151.6	151.6	151.6		145.0	145.0	145.0	145.0	145.0	145.0	145.0	145.0			
Sub-Total Attenuation, dBA	-34.5	-34.2		-34.7	-37.7	-36.2	-37.5		-43.5	-43.6	-44.1	-44.4	-44.2	-44.3	-43.7	-43.3			
Additional Adjustments	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
Common Adjustment	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Line-to-Point Source Barrier Adjust.	0.0	0.0		-1.5	-1.5	-1.5	-1.5		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Sub-Total Adjustments, dB	0.0	0.0		-1.5	-1.5	-1.5	-1.5		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5			
Lp @ Receptor, dBA	38.5	38.8		34.8	31.8	33.3	32.0		11.0	10.9	10.4	10.1	10.3	10.2	10.8	11.2			
Leq Time Base , Minutes	60.0	60.0		60.0	60.0	60.0	60.0		60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0			
Line Source Data :	Yes	Yes		N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
- Length of Line Segment, m	150	150		0	0	0	0		50	50	50	50	50	50	50	50			
- Source Speed, Km/Hr	20	20		10	10	20.0	20.0		10	10	10	10	10	10	10	10			
- No. of Movements in Time Base	10	10		1	1	54.0	54.0		1	1	1	1	1	1	1	1			
-Segment integration time, min.	4.50	4.50		0.00	0.00	0.00	0.00		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30			
Point Source Data :	N/A	N/A		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
- No. of Events in Time Base				5	5	5	5		8	5	8	4	10	7	13	10			
- Each Event Duration, min.				5	5	5	5		3	3	3	3	3	3	3	3			
- Duration Of All Events, min.				25.00	25.00	25.00	25.00		24.00	15.00	24.00	12.00	30.00	21.00	39.00	30.00			
Leq @ Receptor, dBA	27.3	27.5		31.0	28.0	29.4	28.2		7.0	4.9	6.4	3.1	7.3	5.7	8.9	8.2			
Other Adjustments	*****	*****		*****	*****	*****	*****		*****	*****	*****	*****	*****	*****	*****	*****			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
*****	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Net Source Leq ,dBA	27.3	27.5		31.0	28.0	29.4	28.2		7.0	4.9	6.4	3.1	7.3	5.7	8.9	8.2			
ALL SOURCES Leq	37																		

Overall Lp

44 dBA

Maximum Lp

39 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
DIXIE ROAD BRT STATION

3/1/2009 15:27

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re12: 2nd Storey Window on North Façade of House at 1311 Underwood Drive

Other data

Day Peak Hours (7am -10am)

Other data

No Noise Controls

Receptor Xr Co-Ordinates, m	240.0	240.0		240.0	240.0		240.0		240.0	240.0	240.0	240.0	240.0	240.0						
Receptor Yr Co-Ordinates, m	105.0	105.0		105.0	105.0		105.0		105.0	105.0	105.0	105.0	105.0	105.0						
Ground Elevation at Receptor, m	147.0	147.0		147.0	147.0		147.0		147.0	147.0	147.0	147.0	147.0	147.0						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0						
Receptor Zr Co-Ordinates, m	152.0	152.0	0.0	152.0	152.0	0.0	152.0	0.0	152.0	152.0	152.0	152.0	152.0	152.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI 1	BI 2		CM1		CI1	CI2	CI3	CI4	CI5	CI6						
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Car Moving		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle						
Source Xs Co-Ordinates, m	385.0	385.0		400.0	400.0		220.0		355.0	415.0	355.0	415.0	450.0	385.0						
Source Ys Co-Ordinates, m	225.0	215.0		230.0	215.0		290.0		295.0	290.0	275.0	275.0	280.0	260.0						
Ground Elevation at source, m	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8		0.8	0.8	0.8	0.8	0.8	0.8						
Source Zs Co-Ordinates, m	153.0	153.0		153.0	153.0		150.8		150.8	150.8	150.8	150.8	150.8	150.8						
Point or Line Source (P or L) ?	L	L		P	P		L		P	P	P	P	P	P						
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		60.0		56.0	56.0	56.0	56.0	56.0	56.0						
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		15.0		7.0	7.0	7.0	7.0	7.0	7.0						
Source-Receptor Distance, m	188	182		203	194		186		222	255	205	244	273	212						
Selected Ds-r, m	188	182		203	194		186		222	255	205	244	273	212						
Frequency	500	500		500	500		500		500	500	500	500	500	500						
Geometrical Spreading																				
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Reference Dist. for Lp, m	10	10		8	8		15		7	7	7	7	7	7						
Source-Receptor Distance, m	188	182		203	194		186		222	255	205	244	273	212						
Distance Reduction Factor	20	20		20	20		20		20	20	20	20	20	20						
Distance Error Flag	Ok	Ok		Ok	Ok		Ok		Ok	Ok	Ok	Ok	Ok	Ok						
Geometrical Spreading, dB	-25.5	-25.2		-28.7	-28.3		-21.9		-30.0	-31.2	-29.3	-30.8	-31.8	-29.6						
No Ground Attenuation																				
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1		1	1	1	1	1	1						
Distance used for calculation	188	182		203	194		186		222	255	205	244	273	212						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8		0.8	0.8	0.8	0.8	0.8	0.8						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0						
Barrier Height Factor(2xbh) (CMHC)	0	0		0	0		0		0	0	0	0	0	0						
P+T Factors (CMHC only)	0	0		0	0		0		0	0	0	0	0	0						
Is there a sound Barrier ?	N	N		N	N		N		N	N	N	N	N	N						
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						

WA07-090

Yes Atmospheric Attenuation	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Atmospheric Attenuation, dB	-0.4	-0.4		-0.4	-0.4		-0.4		-0.5	-0.6	-0.5	-0.5	-0.6	-0.5						
Barrier Attenuation	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Ground Elevation at source, m	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0		15.0	15.0		15.0		15.0	15.0	15.0	15.0	15.0	15.0						
Ground Elevation at Receptor,m	147.0	147.0		147.0	147.0		147.0		147.0	147.0	147.0	147.0	147.0	147.0						
RECEIVER-BARRIER DIST.(rbd)	173.2	167.0		188.0	179.2		171.1		207.1	239.7	190.2	229.0	258.4	197.3						
BARRIER HEIGHT (bh)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
BARRIER GND. ELEV.(bge)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Barrier Attenuation, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Barrier Acoustic Zone	bright	bright		bright	bright		bright		bright	bright	bright	bright	bright	bright						
Barrier Top Elevation	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
Sub-Total Attenuation, dBA	-25.9	-25.6		-29.1	-28.7		-22.3		-30.5	-31.8	-29.8	-31.4	-32.4	-30.1						
Additional Adjustments	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
Common Adjustment	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Line-to-Point Source Barrier Adjust.	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Sub-Total Adjustments, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Lp @ Receptor, dBA	47.1	47.4		41.9	42.3		37.7		25.5	24.2	26.2	24.6	23.6	25.9						
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0		60.0	60.0	60.0	60.0	60.0	60.0						
Line Source Data :	Yes	Yes		N/A	N/A		Yes		N/A	N/A	N/A	N/A	N/A	N/A						
- Length of Line Segment, m	120	120					200.0		50	50	50	50	50	50						
- Source Speed, Km/Hr	20	20					20.0		10	10	10	10	10	10						
- No. of Movements in Time Base	58	58					204.0		1	1	1	1	1	1						
-Segment integration time, min.	20.88	20.88		#DIV/0!	#DIV/0!		122.40		0.30	0.30	0.30	0.30	0.30	0.30						
Point Source Data :	N/A	N/A		Yes	Yes		N/A		Yes	Yes	Yes	Yes	Yes	Yes						
- No. of Events in Time Base				58	58				32	40	32	40	16	44						
- Each Event Duration, min.				5	5				3	3	3	3	3	3						
- Duration Of All Events, min.				290.00	290.00				96.00	120.00	96.00	120.00	48.00	132.00						
Leq @ Receptor, dBA	42.5	42.8		48.7	49.2		40.8		27.5	27.2	28.2	27.6	22.6	29.3						
Other Adjustments	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Net Source Leq ,dBA	42.5	42.8		48.7	49.2		40.8		27.5	27.2	28.2	27.6	22.6	29.3						
ALL SOURCES Leq	53																			

Overall Lp

52 dBA

Maximum Lp

47 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
DIXIE ROAD BRT STATION

3/1/2009 15:27

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re12: 2nd Storey Window on North Faade of House at 1311 Underwood Drive

Other data Evening Peak Hours (7pm -8pm)**Other data** No Noise Controls

Receptor Xr Co-Ordinates, m	240.0	240.0		240.0	240.0		240.0		240.0	240.0	240.0	240.0	240.0	240.0						
Receptor Yr Co-Ordinates, m	105.0	105.0		105.0	105.0		105.0		105.0	105.0	105.0	105.0	105.0	105.0						
Ground Elevation at Receptor,m	147.0	147.0		147.0	147.0		147.0		147.0	147.0	147.0	147.0	147.0	147.0						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0						
Receptor Zr Co-Ordinates, m	152.0	152.0	0.0	152.0	152.0	0.0	152.0	0.0	152.0	152.0	152.0	152.0	152.0	152.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI 1	BI 2		CM1		CI1	CI2	CI3	CI4	CI5	CI6						
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Car Moving		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle						
Source Xs Co-Ordinates, m	385.0	385.0		400.0	400.0		220.0		355.0	415.0	355.0	415.0	450.0	385.0						
Source Ys Co-Ordinates, m	225.0	215.0		230.0	215.0		290.0		295.0	290.0	275.0	275.0	280.0	260.0						
Ground Elevation at source, m	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8		0.8	0.8	0.8	0.8	0.8	0.8						
Source Zs Co-Ordinates, m	153.0	153.0		153.0	153.0		150.8		150.8	150.8	150.8	150.8	150.8	150.8						
Point or Line Source (P or L) ?	L	L		P	P		L		P	P	P	P	P	P						
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		60.0		56.0	56.0	56.0	56.0	56.0	56.0						
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		15.0		7.0	7.0	7.0	7.0	7.0	7.0						
Source-Receptor Distance,m	188	182		203	194		186		222	255	205	244	273	212						
Selected Ds-r ,m	188	182		203	194		186		222	255	205	244	273	212						
Frequency	500	500		500	500		500		500	500	500	500	500	500						
Geomtrical Spreading																				
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Reference Dist. for Lp, m	10	10		8	8		15		7	7	7	7	7	7						
Source-Receptor Distance,m	188	182		203	194		186		222	255	205	244	273	212						
Distance Reduction Factor	20	20		20	20		20		20	20	20	20	20	20						
Distance Error Flag	Ok	Ok		Ok	Ok		Ok		Ok	Ok	Ok	Ok	Ok	Ok						
Geometrical Spreading, dB	-25.5	-25.2		-28.7	-28.3		-21.9		-30.0	-31.2	-29.3	-30.8	-31.8	-29.6						
No Ground Attenuation																				
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1		1	1	1	1	1	1						
Distance used for calculation	188	182		203	194		186		222	255	205	244	273	212						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8		0.8	0.8	0.8	0.8	0.8	0.8						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0						
Barrier Height Factor(2xbh) (CMHC)	0	0		0	0		0		0	0	0	0	0	0						
P+T Factors (CMHC only)	0	0		0	0		0		0	0	0	0	0	0						
Is there a sound Barrier ?	N	N		N	N		N		N	N	N	N	N	N						
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						

WA07-090

Yes Atmospheric Attenuation	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Atmospheric Attenuation, dB	-0.4	-0.4		-0.4	-0.4		-0.4		-0.5	-0.6	-0.5	-0.5	-0.6	-0.5						
Barrier Attenuation	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Ground Elevation at source, m	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0		15.0	15.0		15.0		15.0	15.0	15.0	15.0	15.0	15.0						
Ground Elevation at Receptor,m	147.0	147.0		147.0	147.0		147.0		147.0	147.0	147.0	147.0	147.0	147.0						
RECEIVER-BARRIER DIST.(rbd)	173.2	167.0		188.0	179.2		171.1		207.1	239.7	190.2	229.0	258.4	197.3						
BARRIER HEIGHT (bh)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
BARRIER GND. ELEV.(bge)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Barrier Attenuation, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Barrier Acoustic Zone	bright	bright		bright	bright		bright		bright	bright	bright	bright	bright	bright						
Barrier Top Elevation	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
Sub-Total Attenuation, dBA	-25.9	-25.6		-29.1	-28.7		-22.3		-30.5	-31.8	-29.8	-31.4	-32.4	-30.1						
Additional Adjustments	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
Common Adjustment	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Line-to-Point Source Barrier Adjust.	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Sub-Total Adjustments, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Lp @ Receptor, dBA	47.1	47.4		41.9	42.3		37.7		25.5	24.2	26.2	24.6	23.6	25.9						
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0		60.0	60.0	60.0	60.0	60.0	60.0						
Line Source Data :	Yes	Yes		N/A	N/A		Yes		N/A	N/A	N/A	N/A	N/A	N/A						
- Length of Line Segment, m	120	120					200.0		50	50	50	50	50	50						
- Source Speed, Km/Hr	20	20					20.0		10	10	10	10	10	10						
- No. of Movements in Time Base	31	31					153.0		1	1	1	1	1	1						
-Segment integration time, min.	11.16	11.16		#DIV/0!	#DIV/0!		91.80		0.30	0.30	0.30	0.30	0.30	0.30						
Point Source Data :	N/A	N/A		Yes	Yes		N/A		Yes	Yes	Yes	Yes	Yes	Yes						
- No. of Events in Time Base				31	31				24	30	24	30	12	33						
- Each Event Duration, min.				5	5				3	3	3	3	3	3						
- Duration Of All Events, min.				155.00	155.00				72.00	90.00	72.00	90.00	36.00	99.00						
Leq @ Receptor, dBA	39.8	40.1		46.0	46.4		39.6		26.3	26.0	27.0	26.4	21.3	28.1						
Other Adjustments	.....	.....		.....	.....		.....		.....	.....	.....	.....	.....	.....						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Net Source Leq ,dBA	39.8	40.1		46.0	46.4		39.6		26.3	26.0	27.0	26.4	21.3	28.1						
ALL SOURCES Leq	51																			

Overall Lp

52 dBA

Maximum Lp

47 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
DIXIE ROAD BRT STATION

3/1/2009 15:27

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re12: 2nd Storey Window on North Façade of House at 1311 Underwood Drive

Other data Night Peak Hours (6am -7am)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	240.0	240.0		240.0	240.0		240.0		240.0	240.0	240.0	240.0	240.0	240.0						
Receptor Yr Co-Ordinates, m	105.0	105.0		105.0	105.0		105.0		105.0	105.0	105.0	105.0	105.0	105.0						
Ground Elevation at Receptor, m	147.0	147.0		147.0	147.0		147.0		147.0	147.0	147.0	147.0	147.0	147.0						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0						
Receptor Zr Co-Ordinates, m	152.0	152.0	0.0	152.0	152.0	0.0	152.0	0.0	152.0	152.0	152.0	152.0	152.0	152.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI 1	BI 2		CM1		CI1	CI2	CI3	CI4	CI5	CI6						
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Car Moving		Car Idle	Car Idle	Car Idle	Car Idle	Car Idle	Car Idle						
Source Xs Co-Ordinates, m	385.0	385.0		400.0	400.0		220.0		355.0	415.0	355.0	415.0	450.0	385.0						
Source Ys Co-Ordinates, m	225.0	215.0		230.0	215.0		290.0		295.0	290.0	275.0	275.0	280.0	260.0						
Ground Elevation at source, m	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8		0.8	0.8	0.8	0.8	0.8	0.8						
Source Zs Co-Ordinates, m	153.0	153.0		153.0	153.0		150.8		150.8	150.8	150.8	150.8	150.8	150.8						
Point or Line Source (P or L) ?	L	L		P	P		L		P	P	P	P	P	P						
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		60.0		56.0	56.0	56.0	56.0	56.0	56.0						
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		15.0		7.0	7.0	7.0	7.0	7.0	7.0						
Source-Receptor Distance, m	188	182		203	194		186		222	255	205	244	273	212						
Selected Ds-r, m	188	182		203	194		186		222	255	205	244	273	212						
Frequency	500	500		500	500		500		500	500	500	500	500	500						
Geometrical Spreading																				
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y						
Reference Dist. for Lp, m	10	10		8	8		15		7	7	7	7	7	7						
Source-Receptor Distance, m	188	182		203	194		186		222	255	205	244	273	212						
Distance Reduction Factor	20	20		20	20		20		20	20	20	20	20	20						
Distance Error Flag	Ok	Ok		Ok	Ok		Ok		Ok	Ok	Ok	Ok	Ok	Ok						
Geometrical Spreading, dB	-25.5	-25.2		-28.7	-28.3		-21.9		-30.0	-31.2	-29.3	-30.8	-31.8	-29.6						
No Ground Attenuation																				
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1		1	1	1	1	1	1						
Distance used for calculation	188	182		203	194		186		222	255	205	244	273	212						
Source Height above ground, m	3.0	3.0		3.0	3.0		0.8		0.8	0.8	0.8	0.8	0.8	0.8						
Receptor Height above ground, m	5.0	5.0		5.0	5.0		5.0		5.0	5.0	5.0	5.0	5.0	5.0						
Barrier Height Factor(2xbh) (CMHC)	0	0		0	0		0		0	0	0	0	0	0						
P+T Factors (CMHC only)	0	0		0	0		0		0	0	0	0	0	0						
Is there a sound Barrier ?	N	N		N	N		N		N	N	N	N	N	N						
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0						

WA07-090

Yes Atmospheric Attenuation																			
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y	Y				
Atmospheric Attenuation, dB	-0.4	-0.4		-0.4	-0.4		-0.4		-0.5	-0.6	-0.5	-0.5	-0.6	-0.5					
Barrier Attenuation																			
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y		Y	Y	Y	Y	Y	Y					
Ground Elevation at source, m	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0					
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0		15.0	15.0		15.0		15.0	15.0	15.0	15.0	15.0	15.0					
Ground Elevation at Receptor,m	147.0	147.0		147.0	147.0		147.0		147.0	147.0	147.0	147.0	147.0	147.0					
RECEIVER-BARRIER DIST.(rbd)	173.2	167.0		188.0	179.2		171.1		207.1	239.7	190.2	229.0	258.4	197.3					
BARRIER HEIGHT (bh)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
BARRIER GND. ELEV.(bge)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
Barrier Attenuation, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
Barrier Acoustic Zone	bright	bright		bright	bright		bright		bright	bright	bright	bright	bright	bright					
Barrier Top Elevation	150.0	150.0		150.0	150.0		150.0		150.0	150.0	150.0	150.0	150.0	150.0					
Sub-Total Attenuation, dBA	-25.9	-25.6		-29.1	-28.7		-22.3		-30.5	-31.8	-29.8	-31.4	-32.4	-30.1					
Additional Adjustments																			
Common Adjustment	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
Line-to-Point Source Barrier Adjust.	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
Sub-Total Adjustments, dB	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
Lp @ Receptor, dBA	47.1	47.4		41.9	42.3		37.7		25.5	24.2	26.2	24.6	23.6	25.9					
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0		60.0	60.0	60.0	60.0	60.0	60.0					
Line Source Data :	Yes	Yes		N/A	N/A		Yes		N/A	N/A	N/A	N/A	N/A	N/A					
- Length of Line Segment, m	120	120					200.0		50	50	50	50	50	50					
- Source Speed, Km/Hr	20	20					20.0		10	10	10	10	10	10					
- No. of Movements in Time Base	11	11					102.0		1	1	1	1	1	1					
-Segment integration time, min.	3.96	3.96		#DIV/0!	#DIV/0!		61.20		0.30	0.30	0.30	0.30	0.30	0.30					
Point Source Data :	N/A	N/A		Yes	Yes		N/A		Yes	Yes	Yes	Yes	Yes	Yes					
- No. of Events in Time Base				11	11				16	20	16	20	8	22					
- Each Event Duration, min.				5	5				3	3	3	3	3	3					
- Duration Of All Events, min.				55.00	55.00				48.00	60.00	48.00	60.00	24.00	66.00					
Leq @ Receptor, dBA	35.3	35.6		41.5	41.9		37.8		24.5	24.2	25.2	24.6	19.6	26.3					
Other Adjustments																			
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0					
Net Source Leq ,dBA	35.3	35.6		41.5	41.9		37.8		24.5	24.2	25.2	24.6	19.6	26.3					
ALL SOURCES Leq	46																		

Overall Lp

52 dBA

Maximum Lp

47 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
RENFORTH DRIVE BRT STATION

3/17/2009 19:20

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re7: 2nd Storey Window on North Façade of House along Bigham Crescent

Other data Day Peak Hours (7am-10am)**Other data** No Noise Controls

Receptor Xr Co-Ordinates, m	235.0	235.0		235.0	235.0		235.0													
Receptor Yr Co-Ordinates, m	165.0	165.0		165.0	165.0		165.0													
Ground Elevation at Receptor, m	157.0	157.0		157.0	157.0		157.0													
Receptor Height above ground, m	4.5	4.5		4.5	4.5		4.5													
Receptor Zr Co-Ordinates, m	161.5	161.5	0.0	161.5	161.5	0.0	161.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Source Code Name	BM1	BM2		BI 1	BI 2		BLO													
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Bus Layover													
Source Xs Co-Ordinates, m	270.0	270.0		270.0	270.0		145.0													
Source Ys Co-Ordinates, m	410.0	430.0		410.0	430.0		127.0													
Ground Elevation at source, m	157.0	157.0		157.0	157.0		157.0													
Source Height above ground, m	3.0	3.0		3.0	3.0		3.0													
Source Zs Co-Ordinates, m	160.0	160.0		160.0	160.0		160.0													
Point or Line Source (P or L) ?	L	L		P	P		P													
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		71.0													
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		7.5													
Source-Receptor Distance, m	247	267		247	267		98													
Selected Ds-r, m	247	267		247	267		98													
Frequency	500	500		500	500		500													
Geometrical Spreading	-----	-----		-----	-----		-----													
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y													
Reference Dist. for Lp, m	10	10		8	8		8													
Source-Receptor Distance, m	247	267		247	267		98													
Distance Reduction Factor	20	20		20	20		20													
Distance Error Flag	Ok	Ok		Ok	Ok		Ok													
Geometrical Spreading, dB	-27.9	-28.5		-30.4	-31.0		-22.3													
No Ground Attenuation	-----	-----		-----	-----		-----													
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1													
Distance used for calculation	247	267		247	267		98													
Source Height above ground, m	3.0	3.0		3.0	3.0		3.0													
Receptor Height above ground, m	4.5	4.5		4.5	4.5		4.5													
Barrier Height Factor(2xbh) (CMHC)	0	0		0	0		0													
P+T Factors (CMHC only)	0	0		0	0		0													
Is there a sound Barrier ?	N	N		N	N		N													
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0													

WA07-090

Yes Atmospheric Attenuation	.....	.....		.....	.....	.....													
Consider atm.atten.(Y or N) ?	Y	Y		Y	Y		Y												
Atmospheric Attenuation, dB	-0.5	-0.6		-0.6	-0.6		-0.2												
Barrier Attenuation	.....	.....		.....	.....		.....												
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y												
Ground Elevation at source, m	157.0	157.0		157.0	157.0		157.0												
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0		15.0	15.0		15.0												
Ground Elevation at Receptor,m	157.0	157.0		157.0	157.0		157.0												
RECEIVER-BARRIER DIST.(rbd)	232.5	252.3		232.5	252.3		82.7												
BARRIER HEIGHT (bh)	0.0	0.0		0.0	0.0		0.0												
BARRIER GND. ELEV.(bge)	0.0	0.0		0.0	0.0		0.0												
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0												
Barrier Attenuation, dB	0.0	0.0		0.0	0.0		0.0												
Barrier Acoustic Zone	bright	bright		bright	bright		bright												
Barrier Top Elevation	157.0	157.0		157.0	157.0		157.0												
Sub-Total Attenuation, dBA	-28.4	-29.1		-30.9	-31.6		-22.5												
Additional Adjustments	.....	.....		.....	.....		.....												
Common Adjustment	0.0	0.0		0.0	0.0		0.0												
Line-to-Point Source Barrier Adjust.	0.0	0.0		0.0	0.0		0.0												
.....	0.0	0.0		0.0	0.0		0.0												
Sub-Total Adjustments, dB	0.0	0.0		0.0	0.0		0.0												
Lp @ Receptor, dBA	44.6	43.9		40.1	39.4		48.5												
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0												
Line Source Data :	Yes	Yes		N/A	N/A		N/A												
- Length of Line Segment, m	163	163		1	1		200.0												
- Source Speed, Km/Hr	20	20		1	1		20.0												
- No. of Movements in Time Base	47	47					54.0												
-Segment integration time, min.	22.98	22.98		0.00	0.00		32.40												
Point Source Data :	N/A	N/A		Yes	Yes		Yes												
- No. of Events in Time Base				47	47		20												
- Each Event Duration, min.				3	3		3												
- Duration Of All Events, min.				141.00	141.00		60.00												
Leq @ Receptor, dBA	40.4	39.7		43.8	43.1		48.5												
Other Adjustments	.....	.....		.....	.....		.....												
Shielding by commercial buildings	-5.0	-5.0		-5.0	-5.0		-5.0												
.....	0.0	0.0		0.0	0.0		0.0												
.....	0.0	0.0		0.0	0.0		0.0												
Net Source Leq ,dBA	35.4	34.7		38.8	38.1		43.5												
ALL SOURCES Leq	46																		

Overall Lp

52 dBA

Maximum Lp

48 dBA

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
RENFORTH DRIVE BRT STATION

3/17/2009 19:20

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re7: 2nd Storey Window on North Façade of House along Bigham Crescent

Other data Evening Peak Hour (7pm-8pm)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	235.0	235.0		235.0	235.0		235.0												
Receptor Yr Co-Ordinates, m	165.0	165.0		165.0	165.0		165.0												
Ground Elevation at Receptor,m	157.0	157.0		157.0	157.0		157.0												
Receptor Height above ground, m	4.5	4.5		4.5	4.5		4.5												
Receptor Zr Co-Ordinates, m	161.5	161.5	0.0	161.5	161.5	0.0	161.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BM1	BM2		BI 1	BI 2		BLO												
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Bus Layover												
Source Xs Co-Ordinates, m	270.0	270.0		270.0	270.0		145.0												
Source Ys Co-Ordinates, m	410.0	430.0		410.0	430.0		127.0												
Ground Elevation at source, m	157.0	157.0		157.0	157.0		157.0												
Source Height above ground, m	3.0	3.0		3.0	3.0		3.0												
Source Zs Co-Ordinates, m	160.0	160.0		160.0	160.0		160.0												
Point or Line Source (P or L) ?	L	L		P	P		P												
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		71.0												
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		7.5												
Source-Receptor Distance,m	247	267		247	267		98												
Selected Ds-r ,m	247	267		247	267		98												
Frequency	500	500		500	500		500												
Geometrical Spreading	-----	-----		-----	-----		-----												
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y												
Reference Dist. for Lp, m	10	10		8	8		8												
Source-Receptor Distance,m	247	267		247	267		98												
Distance Reduction Factor	20	20		20	20		20												
Distance Error Flag	Ok	Ok		Ok	Ok		Ok												
Geometrical Spreading, dB	-27.9	-28.5		-30.4	-31.0		-22.3												
No Ground Attenuation	-----	-----		-----	-----		-----												
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1												
Distance used for calculation	247	267		247	267		98												
Source Height above ground, m	3.0	3.0		3.0	3.0		3.0												
Receptor Height above ground, m	4.5	4.5		4.5	4.5		4.5												
Barrier Height Factor(2xbh) (CMHC)	0	0		0	0		0												
P+T Factors (CMHC only)	0	0		0	0		0												
Is there a sound Barrier ?	N	N		N	N		N												
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0												

WA07-090

Yes Atmospheric Attenuation	*****	*****		*****	*****		*****												
Consider atm.attn.(Y or N) ?	Y	Y		Y	Y		Y												
Atmospheric Attenuation, dB	-0.5	-0.6		-0.6	-0.6		-0.2												
Barrier Attenuation	*****	*****		*****	*****		*****												
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y												
Ground Elevation at source, m	157.0	157.0		157.0	157.0		157.0												
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0		15.0	15.0		15.0												
Ground Elevation at Receptor,m	157.0	157.0		157.0	157.0		157.0												
RECEIVER-BARRIER DIST.(rbd)	232.5	252.3		232.5	252.3		82.7												
BARRIER HEIGHT (bh)	0.0	0.0		0.0	0.0		0.0												
BARRIER GND. ELEV.(bge)	0.0	0.0		0.0	0.0		0.0												
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0												
Barrier Attenuation, dB	0.0	0.0		0.0	0.0		0.0												
Barrier Acoustic Zone	bright	bright		bright	bright		bright												
Barrier Top Elevation	157.0	157.0		157.0	157.0		157.0												
Sub-Total Attenuation, dBA	-28.4	-29.1		-30.9	-31.6		-22.5												
Additional Adjustments	*****	*****		*****	*****		*****												
Common Adjustment	0.0	0.0		0.0	0.0		0.0												
Line-to-Point Source Barrier Adjust.	0.0	0.0		0.0	0.0		0.0												
.....	0.0	0.0		0.0	0.0		0.0												
Sub-Total Adjustments, dB	0.0	0.0		0.0	0.0		0.0												
Lp @ Receptor, dBA	44.6	43.9		40.1	39.4		48.5												
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0												
Line Source Data :	Yes	Yes		N/A	N/A		N/A												
- Length of Line Segment, m	194	194					200.0												
- Source Speed, Km/Hr	20	20					20.0												
- No. of Movements in Time Base	25	25					28.0												
-Segment integration time, min.	14.55	14.55		#DIV/0!	#DIV/0!		16.80												
Point Source Data :	N/A	N/A		Yes	Yes		Yes												
- No. of Events in Time Base				25	25		20												
- Each Event Duration, min.				3	3		3												
- Duration Of All Events, min.				75.00	75.00		60.00												
Leq @ Receptor, dBA	38.4	37.7		41.0	40.3		48.5												
Other Adjustments	*****	*****		*****	*****		*****												
Shielding by commercial buildings	-5.0	-5.0		-5.0	-5.0		-5.0												
.....	0.0	0.0		0.0	0.0		0.0												
.....	0.0	0.0		0.0	0.0		0.0												
Net Source Leq ,dBA	33.4	32.7		36.0	35.3		43.5												
ALL SOURCES Leq	46																		
Overall Lp	52	dBA																	
Maximum Lp	48	dBA																	

N23 : Line & Point Sources (20) Model- March 12, 1999

SS WILSON ASSOCIATES
SOUND LEVEL PREDICTION MODEL
RENFORTH DRIVE BRT STATION

3/17/2009 19:20

File Number : WA07-090

Project Name : Mississauga BRT EAST

Receptor Name : Re7: 2nd Storey Window on North Façade of House along Bigham Crescent

Other data Night Peak Hour (6am-7am)

Other data No Noise Controls

Receptor Xr Co-Ordinates, m	235.0	235.0		235.0	235.0		235.0												
Receptor Yr Co-Ordinates, m	165.0	165.0		165.0	165.0		165.0												
Ground Elevation at Receptor,m	157.0	157.0		157.0	157.0		157.0												
Receptor Height above ground, m	4.5	4.5		4.5	4.5		4.5												
Receptor Zr Co-Ordinates, m	161.5	161.5	0.0	161.5	161.5	0.0	161.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Consider Source ? (YorN)	Y	Y	N	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Source Code Name	BM1	BM2		BI 1	BI 2		BLO												
Source Name/Details	Bus Moving	Bus Moving		Bus Idle	Bus Idle		Bus Layover												
Source Xs Co-Ordinates, m	270.0	270.0		270.0	270.0		145.0												
Source Ys Co-Ordinates, m	410.0	430.0		410.0	430.0		127.0												
Ground Elevation at source, m	157.0	157.0		157.0	157.0		157.0												
Source Height above ground, m	3.0	3.0		3.0	3.0		3.0												
Source Zs Co-Ordinates, m	160.0	160.0		160.0	160.0		160.0												
Point or Line Source (P or L) ?	L	L		P	P		P												
Reference Sound Level, dBA	73.0	73.0		71.0	71.0		71.0												
Reference Dist. for Lp, m	10.0	10.0		7.5	7.5		7.5												
Source-Receptor Distance,m	247	267		247	267		98												
Selected Ds-r ,m	247	267		247	267		98												
Frequency	500	500		500	500		500												
Geometrical Spreading	*****	*****		*****	*****		*****												
Consider Dist.atten.(Y or N) ?	Y	Y		Y	Y		Y												
Reference Dist. for Lp, m	10	10		8	8		8												
Source-Receptor Distance,m	247	267		247	267		98												
Distance Reduction Factor	20	20		20	20		20												
Distance Error Flag	Ok	Ok		Ok	Ok		Ok												
Geometrical Spreading, dB	-27.9	-28.5		-30.4	-31.0		-22.3												
No Ground Attenuation	*****	*****		*****	*****		*****												
Model (1=none,2=CMHC,3=ISO)	1	1		1	1		1												
Distance used for calculation	247	267		247	267		98												
Source Height above ground, m	3.0	3.0		3.0	3.0		3.0												
Receptor Height above ground, m	4.5	4.5		4.5	4.5		4.5												
Barrier Height Factor(2xbh) (CMHC)	0	0		0	0		0												
P+T Factors (CMHC only)	0	0		0	0		0												
Is there a sound Barrier ?	N	N		N	N		N												
Ground Attenuation, dB	0.0	0.0		0.0	0.0		0.0												

WA07-090

Yes Atmospheric Attenuation	*****	*****		*****	*****		*****												
Consider atm.attn.(Y or N) ?	Y	Y		Y	Y		Y												
Atmospheric Attenuation, dB	-0.5	-0.6		-0.6	-0.6		-0.2												
Barrier Attenuation	*****	*****		*****	*****		*****												
Consider Barrier Attenuation (Y or N)	Y	Y		Y	Y		Y												
Ground Elevation at source, m	157.0	157.0		157.0	157.0		157.0												
SOURCE-BARRIER DISTANCE(sbd)	15.0	15.0		15.0	15.0		15.0												
Ground Elevation at Receptor,m	157.0	157.0		157.0	157.0		157.0												
RECEIVER-BARRIER DIST.(rbd)	232.5	252.3		232.5	252.3		82.7												
BARRIER HEIGHT (bh)	0.0	0.0		0.0	0.0		0.0												
BARRIER GND. ELEV.(bge)	0.0	0.0		0.0	0.0		0.0												
BARRIER THICKNESS (bt)	0.0	0.0		0.0	0.0		0.0												
Barrier Attenuation, dB	0.0	0.0		0.0	0.0		0.0												
Barrier Acoustic Zone	bright	bright		bright	bright		bright												
Barrier Top Elevation	157.0	157.0		157.0	157.0		157.0												
Sub-Total Attenuation, dBA	-28.4	-29.1		-30.9	-31.6		-22.5												
Additional Adjustments	*****	*****		*****	*****		*****												
Common Adjustment	0.0	0.0		0.0	0.0		0.0												
Line-to-Point Source Barrier Adjust.	0.0	0.0		0.0	0.0		0.0												
.....	0.0	0.0		0.0	0.0		0.0												
Sub-Total Adjustments, dB	0.0	0.0		0.0	0.0		0.0												
Lp @ Receptor, dBA	44.6	43.9		40.1	39.4		48.5												
Leq Time Base , Minutes	60.0	60.0		60.0	60.0		60.0												
Line Source Data :	Yes	Yes		N/A	N/A		N/A												
- Length of Line Segment, m	194	194					200.0												
- Source Speed, Km/Hr	20	20					20.0												
- No. of Movements in Time Base	8	8					10.0												
-Segment integration time, min.	4.66	4.66		#DIV/0!	#DIV/0!		6.00												
Point Source Data :	N/A	N/A		Yes	Yes		Yes												
- No. of Events in Time Base				8	8		20												
- Each Event Duration, min.				3	3		3												
- Duration Of All Events, min.				24.00	24.00		60.00												
Leq @ Receptor, dBA	33.5	32.8		36.1	35.4		48.5												
Other Adjustments	*****	*****		*****	*****		*****												
Shielding by commercial buildings	-5.0	-5.0		-5.0	-5.0		-5.0												
.....	0.0	0.0		0.0	0.0		0.0												
.....	0.0	0.0		0.0	0.0		0.0												
Net Source Leq ,dBA	28.5	27.8		31.1	30.4		43.5												
ALL SOURCES Leq	45																		

Overall Lp

52 dBA

Maximum Lp

48 dBA

APPENDIX D

STANDARDS



Printable version from Transport Canada's website

Disclaimer: These documents are not the official versions (more).

MOTOR VEHICLE SAFETY ACT

Motor Vehicle Safety Regulations

- Noise Emissions (Standard 1106)
 - Interpretation
 - Exterior Sound Level
 - Interior Sound Level
 - Established by
-

SCHEDULE V.1

(Section 5)

Noise Emissions (Standard 1106)

Interpretation

1. The definitions in this section apply in this Schedule and in the documents referred to in this Schedule.

"dBA"

« *dBA* »

"dBA" means the A-weighted sound level in decibels, measured using a sound level meter or a sound data acquisition system referred to in Appendix A of *Test Method 1106-Noise Emission Tests* (August 2005) that uses the values set out in Table 1 of that Appendix.

"decibel" or "dB"

« *décibel ou dB* »

"decibel" or "dB" means 20 times the logarithm to the base 10 of the ratio of the measured sound pressure relative to a reference sound pressure of 20 mPa.

"rated engine speed" or "maximum rated engine speed"

« régime maximal nominal, rated engine speed ou maximum rated engine speed »

"rated engine speed" or "maximum rated engine speed" means the rotational speed of an engine in revolutions per minute (RPM) at which the maximum horsepower of the engine is attained.

"sound level"

« niveau sonore »

"sound level" means the root-mean-square of the values measured in dBA that are recorded during testing conducted pursuant to this section.

Exterior Sound Level

2. Every vehicle, other than a motorcycle or a vehicle referred to in section 4, shall be so constructed that

(a) where tested in accordance with Annex 3 to ECE Regulation No. 51, *Uniform Provisions concerning the Approval of Motor Vehicles Having at Least Four Wheels with regard to Their Noise Emissions*, dated March 11, 1996, excluding the requirements of paragraph 3.2 of that Annex, the vehicle conforms to section 6 of that Regulation; or

(b) where tested in accordance with

(i) section 3 of *Test Method 1106-Noise Emission Tests* (August 2005), the exterior sound level does not exceed 83 dBA when a value of 2 dBA is subtracted from the highest average sound level recorded during the test, in the case of a bus with a GVWR of more than 4 536 kg (10,000 lb.),

(ii) SAE Recommended Practice J986, *Sound Level for Passenger Cars and Light Trucks* (August 1994), or SAE Standard J1470, *Measurement of Noise Emitted by Accelerating Highway Vehicles* (March 1992), the exterior sound level does not exceed 83 dBA when a value of 2 dBA is subtracted from the highest average sound level recorded during the test, in the case of a heavy-duty vehicle with a GVWR of 4 536 kg (10,000 lb.) or less, and

(iii) SAE Recommended Practice J986, *Sound Level for Passenger Cars and Light Trucks* (August 1994), or SAE Standard J1470, *Measurement of Noise Emitted by Accelerating Highway Vehicles* (March 1992), the exterior sound level does not exceed 80 dBA when a value of 2 dBA is subtracted from the highest average sound level recorded during the test, in the case of a light-duty vehicle.

3. Every motorcycle shall be so constructed that

(a) where tested in accordance with Annex 3 to ECE Regulation No. 41, *Uniform Provisions concerning the Approval of Motor Cycles with regard to Noise*, dated January 19, 1981, as amended September 14, 1984, excluding the requirements of paragraph 3.2 of that Annex, the exterior sound level does not exceed

(i) 77 dBA, in the case of a motorcycle with an engine displacement not exceeding 80 cm³,

(ii) 80 dBA, in the case of a motorcycle with an engine displacement exceeding 80cm³ and not exceeding 175 cm³, and

(iii) 82 dBA, in the case of a motorcycle with an engine displacement exceeding 175 cm³; or

(b) where tested in accordance with

(i) Appendix I-2 to subparts D and E, part 205, chapter I, title 40 of the United States *Code of Federal Regulations*, as amended by Vol. 45, No. 252 of the *Federal Register* of the United States published on December 31, 1980, at pages 86727 and 86728, the exterior sound level does not exceed 70 dBA, in the case of a motorcycle with an engine displacement not exceeding 50 cm³ and a maximum attainable speed of 48 km/h on a level paved surface, and

(ii) Appendix I-1 to subparts D and E, part 205, chapter I, title 40 of the United States *Code of Federal Regulations*, as amended by Vol. 45, No 252 of the *Federal Register* of the United States published on December 31, 1980, at pages 86726 and 86727, the exterior sound level does not exceed 80 dBA, in any other case.

4. Every truck or incomplete vehicle fitted with a cab, with a GVWR of more than 4 536 kg (10,000 lb.) shall be so constructed that

(a) where the vehicle is tested in accordance with Annex 3 to ECE Regulation No. 51, *Uniform Provisions concerning the Approval of Motor Vehicles Having at Least Four Wheels with regard to Their Noise Emissions*, dated March 11, 1996, excluding the requirements of paragraph 3.2 of that Annex, the exterior sound level does not exceed

(i) 80 dBA, in the case of a heavy-duty truck with an engine that produces less than 75 kW,

(ii) 83 dBA, in the case of a heavy-duty truck with an engine that produces at least 75 kW but less than 150 kW, and

(iii) 84 dBA, in the case of a heavy-duty truck with an engine that produces 150 kW or more; or

(b) where the vehicle is tested in accordance with the low speed sound emission test procedures set out in section 205.54-1 of subpart B, part 205, chapter I, title 40 of the United States *Code of Federal Regulations* (revised as of July 1, 1995), the exterior sound level does not exceed 80 dBA.

Interior Sound Level

5. Every truck or bus with a GVWR of more than 4 536 kg (10,000 lb.) shall be so constructed that, where tested in accordance with section 4 of *Test Method 1106-Noise Emission Tests* (August 2005), the interior sound level at the driver's seating position does not exceed 90 dBA when a value of 2 dBA is subtracted from the average sound level obtained in accordance with the test.

Established by

Established by the CONSOLIDATED REGULATIONS OF CANADA, 1978.

amended by

SOR/79-115 26 January, 1979 pursuant to sections 4 and 7 of the *Motor Vehicle Safety Act*, effective September 1, 1979

Revoked and replaced.

SOR/86-387 26 March, 1986 pursuant to sections 4 and 7 of the *Motor Vehicle Safety Act*, effective September 1, 1987

Section 1106 of Schedule V by adding subsection (3).

PLEASE NOTE THAT THE MOTOR VEHICLE SAFETY ACT IS NOW CHAPTER M-10 OF THE REVISED STATUTES OF CANADA, 1985.

SOR/89-279 25 May, 1989 pursuant to section 9 of the *Motor Vehicle Safety Act*

Portion of subsection 1106(1) of Schedule V preceding paragraph (a); paragraph 1106(1)(b) of Schedule V; and section 1106 of Schedule V by adding subsection (1.1) immediately after subsection (1).

SOR/97-141 11 March, 1997 pursuant to section 5 and subsection 11 (1) of the *Motor Vehicle Safety Act*.

Section 1106 of Schedule V is revoked and replaced by Schedule IV.1.

SOR/97-421 28 August, 1997 pursuant to subsection 5(1) and section 11 of the *Motor Vehicle Safety Act*, in force August 28, 1997

Schedule IV.1 is renumbered Schedule V.1.

SOR/2002-55 31 January 2002 pursuant to section 5 and subsection 11(1) of the *Motor Vehicle Safety Act*, comes into force February 13, 2003.

The portion of section 4 of Schedule V.1 before paragraph (a) is replaced.

SOR/2005-342 15 November, 2005 pursuant to section 5 and subsection 11(1) of the *Motor Vehicle Safety Act*, comes into force 15 November, 2005

The expression "(October 15, 1996)" is replaced with the expression "(August 2005)" wherever it occurs in the following provisions: (a) the definition "dBA" in section 1 of Schedule V.1; (b) subparagraph 2(b)(i) of Schedule V.1; and (c) section 5 of Schedule V.1.

[Return to previous page](#)

NPC - 102

Publication NPC-102

Instrumentation

1. Scope

This Publication sets out minimum specifications for equipment used for the measurement of sound and vibration. For most of the specifications the International Electrotechnical Commission (IEC) recommended standards 123 (First edition 1961), 179 (Second edition 1973) and 179A (First supplement to IEC 179, published 1973) have been adopted. In some cases, these standards are amended or augmented for greater precision.

TABLE 102-1

NPC - 102 Section	Type of Instrument	Application
3	General Purpose Sound Level Meter	Non-Impulsive Sounds
4	Impulse Sound Level Meter	Impulsive Sounds
5	Peak Pressure Level Detector	Peak Pressure Perturbations
6	Type B Integrating Sound Level Meter	Varying Sounds of Low Crest Factor
7	Type A Integrating Sound Level Meter	Varying Sounds of High Crest Factor
8	Vibration Velocity Detector	Peak Vibration Velocity in Solids
9	Acoustic Calibrator	Calibration of Sound Level Meters

2. Technical Definitions

The technical terms used in this Publication are defined in the specifications themselves or in Publication NPC-101 - Technical Definitions.

NPC - 102

3. General Purpose Sound Level Meter

(1) Purpose

A General Purpose Sound Level Meter is a sound level meter which is intended to be used for the measurement of non-impulsive sounds, without significant A-weighted acoustic energy above 2000 Hz.

(2) Specifications

A sound level meter which meets the following specifications is a General Purpose Sound Level Meter:

- (a) the sound level meter, including a microphone equipped with a windscreen shall meet the specifications of IEC 123, except that, in addition to meeting the specifications of subclause 5.2 thereof, the microphone of the sound level meter shall also meet the specifications of subclause 5.2 amended by the substitution therein of an angle of incidence of $\pm 30^\circ$ instead of $\pm 90^\circ$ it therein appears, and by the substitution of Table 102-2 hereof instead of Table 1, as it therein appears;
- (b) the sound level meter shall incorporate A-weighting, which is specified in IEC 123 as optional;
- (c) the sound level meter shall have a minimum usable range of sensitivity of from 40 dBA to 100 dBA and it shall read to an accuracy of ± 1.0 dB over that range;
- (d) a windscreen shall be installed on the microphone and shall not affect by more than 1 dB the tolerance prescribed in clauses (a) and (c);
- (e) the sound level meter, including a microphone equipped with a windscreen, shall, when operated in the presence of wind, indicate a wind-induced sound level not in excess of the relevant value listed in Table 102-3.

4. Impulse Sound Level Meter

(1) Purpose

An Impulse Sound Level Meter is a sound level meter which is intended to be used for the measurement of any sounds, including sounds for which a General Purpose Sound Level Meter may be used.

(2) Specifications

A sound level meter which meets the following specifications is an Impulse Sound Level Meter:

- (a) the sound level meter, including a microphone equipped with a windscreen, shall meet the specifications of a General Purpose Sound Level Meter;

NPC - 102

- (b) the sound level meter, including a microphone equipped with a windscreen, shall meet the specifications of IEC 179 and IEC 179A, supplement to IEC 179, including the optional characteristics mentioned in subclause 4.5 of IEC 179A;
- (c) the sound level meter shall incorporate A-weighting as specified in IEC 179.

5. Peak Pressure Level Detector

(1) Purpose

A Peak Pressure Level Detector is a sound level meter which is intended to be used for the measurement of peak pressure perturbations in air. The value indicated by this device is not an average of the pressure level perturbations.

(2) Specifications

A sound level meter which meets the following specifications is a Peak Pressure Level Detector (the features of this device are incorporated in an Impulse Sound Level Meter as specified in section 4 above):

- (a) the microphone of the sound level meter, when equipped with a windscreen, shall perform within a tolerance of ± 1 dB throughout the frequency range of from 5 Hz to 31.5 Hz in the circumstances and conditions for use set out in Table 1 of IEC 179;
- (b) the sound level meter without the microphone shall be capable of providing linear response as specified in subclause 4.5 of IEC 179, within a tolerance of ± 1 dB throughout the frequency range of from 5 Hz to 15 kHz;
- (c) the sound level meter shall incorporate the optional characteristics specified in subclause 9.5 of IEC 179A;
- (d) the sound level meter shall meet the specifications set out in IEC 179 clause 3, subclauses 4.1, 4.2, 4.4, 4.5, 4.7, 4.8, clause 5, subclauses 6.2, 6.3, 6.4, 6.5, 6.8, 6.9, 7.1 through 7.9, 7.11, 8.1, 8.2, 8.3, 8.6 through 8.9, and the appropriate specifications of clause 10.

6. Type B Integrating Sound Level Meter

(1) Purpose

- (a) An Integrating Sound Level Meter is a sound level meter which is intended to be used for the measurement of sound over a period of time, such that the equivalent sound level (L_{eq}) of the sound may be obtained.
- (b) The Type B Integrating Sound Level Meter is specified with sufficient dynamic range and measurement precision to measure equivalent sound levels of general sounds that exceed limitations set out in this by-law.
- (c) Either a Type A or Type B Integrating Sound Level Meter may be used for most such applications, but a Type A Integrating Sound Level Meter must be used when the sound under study is Quasi-Steady Impulsive Sound (see NPC-103 -

NPC - 102

Procedures, sections 3 and 4) or when the operational dynamic range greatly exceeds 40 dB .

(2) General Description

The tolerances specified for the microphone, weighting and amplifier of a Type B Integrating Sound Level Meter are the same as those specified for a General Purpose Sound Level Meter in section 3 of this Publication. The computational portions of the instrument must operate within a net accuracy of ± 1 dB for time periods of 20 minutes to one hour over a dynamic range of at least 40 dB with test signals having a crest factor (as defined in IEC 179A) up to 3. An operator-activated switch is included to inhibit the integration function alone and, if the system includes an elapsed-time clock, to inhibit both the integration and time summation functions.

(3) Specifications

A sound level meter which meets the following specifications is a Type B Integrating Sound Level Meter:

- (a) the instrument will generally be a combination of microphone, amplifier, A-weighting network, computation circuit to obtain the integral of the mean square A-weighted pressure, display and a means of inhibiting the integration, but may vary from the above provided that it performs the same functions within the tolerances set out below;
- (b) the instrument may include computational circuitry to calculate and display the equivalent sound level directly;
- (c) the microphone of the instrument shall meet the specifications of clause 5 of IEC 123, except that, in addition to meeting the specifications of subclause 5.2 thereof, the microphone shall also meet the specifications of subclause 5.2 amended by the substitution therein of an angle of incidence of $\pm 30^\circ$ instead of $\pm 90^\circ$ it therein appears, and by the substitution of Table 102-2 hereof instead of Table 1, as it therein appears;
- (d) a windscreen shall be installed on the microphone during operation and shall not affect by more than 1 dB the tolerance prescribed in clause (c);
- (e) the sound level meter, including a microphone equipped with a windscreen, shall, when operated in the presence of wind, indicate a wind induced sound level not in excess of the relevant value listed in Table 102-3.
- (f) the A-weighting network shall meet the specifications of Table II and Figure I of IEC 123;
- (g) the amplifier shall meet the specifications of subclauses 7.2, 7.3 and 7.1.1 of IEC 123;

NPC - 102

- (h) for each sensitivity setting of the instrument the amplifier shall have a power handling capacity at least 10 dB greater than the maximum sound level specified for that sensitivity setting;
- (i) if the computation circuit is of the sampling (digital) type, when operating in conjunction with the microphone, windscreen, A-weighting network and amplifier, it shall generate a signal proportional to the mean square A-weighted pressure with a 1 ± 0.25 s exponential averaging time constant;
- (j) the computation circuit shall integrate the mean square A-weighted pressure and shall be capable of doing so on each sensitivity setting for a minimum of 6 minutes at the maximum sound level specified for that sensitivity setting;
- (k) if the computation circuit is not capable of meeting the specification of clause (j) with the reference therein to "6 minutes" changed to "60 minutes", then the device shall be provided with a means to indicate to the operator when the integration capability has been exceeded;
- (l) if the computational circuit is of the sampling (digital) type, sampling shall take place at least twice per second;
- (m) the computation circuit shall operate over the usable dynamic range of the instrument with a linearity of ± 1 dB for any sound with a ratio of peak pressure to root mean square pressure up to 3 (crest factor up to 3) ;
- (n) an operator-activated switch shall be provided to inhibit integration or, if the instrument has an internal elapsed time clock, to inhibit both integration and accumulation of time;
- (o) the combination of windscreen, microphone, A-weighting network, amplifier and computation circuit shall have a usable dynamic range extending at least from 50 dBA to 90 dBA and the manufacturer shall specify the usable dynamic range;
- (p) the instrument may be provided with more than one sensitivity setting and the manufacturer shall specify the minimum and maximum input sound level for each sensitivity setting;
- (q) if the maximum sound level specified for any sensitivity setting is less than 100 dBA, the system shall include a means of indicating to the operator that the maximum input sound level for that sensitivity setting has been exceeded and such indication shall be maintained until cancelled by the operator;
- (r) the display shall indicate either,
 - (i) an output proportional to the integrated mean square A-weighted pressure, or
 - (ii) the integrated mean square A-weighted pressure divided by the duration of the period of time for which the equivalent sound level is to be determined, or

NPC - 102

- (iii) the equivalent sound level for the period of time for which the equivalent sound level is to be determined;
- (s) it shall be possible: to read from the display or to calculate from the reading of the display, the equivalent sound level to a resolution of ± 1 dB over the usable dynamic range of the instrument for integration times from 20 minutes to 60 minutes;
- (t) if the indication of the display is as described in subclause (ii) or (iii) of clause (r), the instrument shall include an elapsed-time clock;
- (u) the complete instrument shall follow the recommendations and meet the specifications of subclauses 7.4, 7.5, 7.6, 7.7, 7.8 and 7.90 of IEC 123; and
- (v) the instrument shall include a means of determining whether the battery of the instrument if any, has sufficient life to permit proper operation for a period of at least one hour.

7. Type A Integrating Sound Level Meter

(1) Purpose

- (a) An Integrating Sound Level Meter is a sound level meter which is intended to be used for the measurement of sound over a period of time, such that the equivalent sound level (L_{eq}) of the sound may be obtained.
- (b) The Type B Integrating Sound Level Meter is specified with sufficient dynamic range and measurement precision to measure equivalent sound levels of general sounds that exceed limitations set out in this by-law.
- (c) Either a Type A or a Type B Integrating Sound Level Meter may be used for most such applications, but a Type A Integrating Sound Level Meter must be used when the sound under study is Quasi-Steady Impulsive Sound (see NPC-103 - Procedures, Sections 3 and 4) or when the operational dynamic range greatly exceeds 40 dB.

(2) General Description

The tolerances specified for the microphone, weighting and amplifier of a Type A Integrating Sound Level Meter are the same as those specified for a General Purpose Sound Level Meter in section 3 of this Publication. The computational portions of the instrument must operate within a net accuracy of ± 1 dB for time periods of 20 minutes to one hour over a dynamic range of at least 80 dB with test signals having a crest factor (as defined in IEC 179A) up to 5. An operator activated switch is included to inhibit both the integration and time summation functions.

NPC - 102

(3) Specifications

A sound level meter which meets the following specifications is a Type A Integrating Sound Level Meter:

- (a) the sound level meter shall meet the specifications of a Type B Integrating Sound Level Meter;
- (b) the instrument shall be provided with an internal elapsed-time clock;
- (c) for each sensitivity setting of the instrument, the amplifier shall have a power handling capacity at least 14 dB greater than the maximum sound level specified for that sensitivity setting;
- (d) the computation circuit shall operate over the usable dynamic range of the instrument with a linearity of ± 1 dB for any sound with a ratio of peak pressure to root mean square pressure up to 5 (Crest Factor up to 5); and
- (e) the combination of windscreen, microphone, A-weighting network, amplifier and computation circuit shall have a usable dynamic range extending at least from 40 dBA to 120 dBA,

8. Vibration Velocity Detector

(1) Purpose

A Vibration Velocity Detector is a device intended to be used for the measurement of the peak particle velocity of a solid surface.

(2) Specifications

A device which meets the following specifications is a Vibration Velocity Detector:

- (a) the device shall include either a transducer which responds to the total vibration vector or three transducers which have their axes of maximum sensitivity mutually orthogonal $\pm 1^\circ$;
- (b) where three transducers are used to measure three mutually orthogonal components of vibration, the response of any one of the transducers to vibration in the plane normal to its axis of maximum sensitivity shall be less than 10% of its response to the same vibration along its axis of maximum sensitivity;
- (c) the output of the device shall be proportional to the velocity of the surface on which the transducer is, or the transducers are, mounted and the output of the device shall be in such form that the device indicates, or can be used to calculate, the peak particle velocity in the frequency range of from 5 Hz to 500 Hz over a range of peak particle velocity of from 0.25 cm/s to 10 cm/s with a tolerance of $\pm 10\%$ and

NPC - 102

- (d) it shall be possible to field-calibrate the device with an accuracy of $\pm 5\%$ using either a reference electrical signal in series with the equivalent transducer impedance or a reference vibration source.

9. Acoustic Calibrator

(1) Purpose

An Acoustic Calibrator is an electro-mechanical or mechanical device which produces sound of a known frequency and which, when coupled to a sound level meter, produces a predictable response in the sound level meter if the sound level meter is operating properly at the calibration frequency,

(2) Specifications

A device, capable of producing sound, which meets the following specifications is an Acoustic Calibrator:

- (a) the device shall be capable of being physically attached to a sound level meter in such a way that the device and the sound level meter are "acoustically coupled", that is, sound from the device is transmitted through the air by way of a chamber formed by the attachment of the device to the microphone of the sound level meter;
- (b) the device shall produce sound of a stated frequency, within a frequency tolerance of $\pm 5\%$;
- (c) the manufacturer of the device shall provide with the device, any data required in order to determine the sound level reading which should be indicated on the sound level meter when calibrated for those microphone and sound level meter types with which the manufacturer recommends the device be used. Where additional accessories must be used to provide this sound level reading, the manufacturer shall state that they must be used;
- (d) the maximum tolerance in the sound pressure level generated by the device when coupled to the microphone shall apply over an atmospheric pressure range of 87 kPa to 107 kPa, and shall be ± 0.5 dB over the temperature range of from 0°C to 40°C and ± 1.0 dB over the temperature range of from -10°C to 50°C ;
- (e) if the device is battery powered, means for checking the battery condition shall be included with the device;
- (f) the following data shall be provided with the device by the manufacturer,
 - (i) the nominal sound pressure level produced,
 - (ii) the nominal frequency at which the device operates,
 - (iii) the ranges of temperature and atmospheric pressure over which the device is intended to operate, and the applicable overall sound pressure level tolerance for these ranges.

NPC - 102

TABLE 102-2

**Permissible Tolerances on Microphone Sensitivity
Over an Angle of $\pm 30^\circ$**

Frequency (Hz)	Permissible Tolerances (dB)	
	A*	B**
31.5 - 500	± 1	± 1
1000	± 1	± 1
2000	± 2	+1 - 2
4000	± 4	+1 - 4
8000	± 10	+1 - 10

* COLUMN A: The microphone is mounted on the sound level meter.

** COLUMN B: The microphone is physically separated from the sound level meter but electrically connected thereto.

TABLE 102-3

**Maximum Wind Induced Sound Level Indication Using A-weighting
and Slow Response (where available)**

Wind Speed	dBA
15 km/h	41
20 km/h	48
25 km/h	53

NPC - 103

Publication NPC-103

Procedures

1. Scope

This Publication comprises the various measurement procedures to be used in connection with other Publications which provide limits or standards for sound or vibration. Several of the procedures adopted are those of nationally or internationally recognized agencies. Table 103-1 lists the measurement procedures which are included in this Publication.

TABLE 103-1

NPC - 103 Section	Type of Measurement	Procedure
3	Steady or Impulsive Sound	Ministry
4	Varying Sound	Ministry
5	Sound and Vibration from Blasting	Ministry
6	Powered Mobile Construction Equipment	SAE J88a
7	Pneumatic Equipment	MEMAC
8	Small Engines	SAE J1046
9	Trucks with Governed Diesel Engines	CSA 107.22-M

2. Technical Definitions

The technical terms used in a procedure shall have the meaning given either in that procedure or in Publication NPC-101 - Technical Definitions.

3. Procedure for Measurement of Steady or Impulsive Sound

(1) (a) Classification

For the purposes of this procedure sounds can conveniently be placed in four mutually exclusive categories as follows:

- (i) impulsive sounds, other than Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from gunshots, certain explosive pest control devices and certain industrial metal working operations (e.g. forging, hammering, punching, stamping, cutting, forming and moulding);
- (ii) Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from pavement breakers, rivetting guns, ineffectively muffled internal combustion engines or ineffectively muffled air compressors;
- (iii) buzzing sounds, such as, but not limited to, the sounds from positive displacement blowers, chain saws, small combustion engines and concrete finishers;
- (iv) all other sounds.

(b) Application

This procedure applies to measurements at a point of reception of:

- (i) sound of a type mentioned in category (i) or (ii) of clause (a); and
- (ii) sound of a type mentioned in categories (iii) or (iv) of clause (a), which is always higher than the permissible level or which, when the sound is present, does not vary in level over a range of more than 6 dB during the period of observation.

(2) Instrumentation

(a) Sound Level Meter

- (i) An Impulse Sound Level Meter shall be used for the measurement of sound in category (i), (ii) or (iii) of clause 3(1) (a).
- (ii) A General Purpose Sound Level Meter shall be used for the measurement of sound in category (iv) of clause 3(1) (a).
NOTE: An Integrating Sound Level Meter may be used for the measurement of sound in category (iv) of clause 3(1)(a), but the procedure set out in section 4 - Procedure for Measurement of Varying Sound must be used.

(b) Calibrator

An Acoustic Calibrator shall be used.

(c) Windscreen

A windscreen shall be used in all outdoor measurements.

NPC - 103

(3) **Measurement Location**

For sound transmitted solely through air, the measurement location shall be one or more of the following points of reception:

- (a) a location out-of-doors where a person may be exposed to the sound; or
- (b) the plane of an exterior door or window of a room in which a person may be exposed to the sound, where the door or window is open.

(4) **Use of Instrumentation**

(a) **Battery Check**

If the sound level meter is battery powered the condition of the battery shall be checked after the meter has been allowed to warm up and stabilize. The battery condition shall be rechecked at least once per hour during a series of measurements and at the conclusion of such measurements.

The meter shall not be used unless the battery condition is confirmed to be within the range recommended by the manufacturer for proper operation.

(b) **Calibration**

The sound level meter shall be calibrated after the meter has been allowed to warm up and stabilized at least once per hour during a series of measurements and at the conclusion of such measurements.

(c) **Sound Level Meter Settings**

Measurements shall be taken using the following response settings:

(i) **Impulse Response (dBAI)**

The impulse response and A-weighting shall be used for impulsive sound in category (i) of clause 3 (1)(a). An "impulse hold" facility may be used if available on the meter.

(ii) **Slow Response (dBA)**

The slow response and A-weighting shall be used for sound in categories (ii), (iii) or (iv) of clause 3 (1)(a).

(d) **Instrument Configuration**

(i) **Reflective Surfaces**

The microphone shall be located not less than 1 m above the ground, not less than 1 m from any sound reflective surface except for the purposes of clause 3(3)(b) and not less than arm's length from the body of the person operating the meter. Not more than one person, other than the operator of the meter, shall be within 7 m of the microphone and that person shall be behind the operator of the meter.

NPC - 103

For the case of clause 3(3)(b) the microphone shall be in the middle of the aperture located not less than 15 cm from the window frame or door frame.

(ii) **Microphone Orientation**

The microphone shall be oriented such that the sound to be measured is incident at an angle recommended by the microphone manufacturer for flattest frequency response in a free field.

(e) **Measurement - Slow Response**

(i) **Readings Taken**

For sound in categories (ii), (iii) or (iv) of clause 3 (I)(a), a minimum of three observations with a minimum observation time of 15 s each shall be made. The observed average reading for each of the observations shall be noted as well as the minimum and the maximum of the range of sound levels during each observation period. If the difference between any two observed average readings is greater than 3 dB, a minimum of six observations shall be made. For the purpose of adjustments for intermittency the duration of the sound in any one hour shall be noted.

(ii) **Readings Reported**

The arithmetic mean of the observed average readings shall be reported, rounded to the nearest decibel. Adjustments for intermittence and quality of sound shall be made in accordance with Publication NPC-104 - Sound Level Adjustments, and the result shall be reported. The result is the one hour equivalent sound level (L_{eq}) of the sound under study for any one hour period during which the readings were taken pursuant to subclause (i).

(iii) **Wide Variation of Sound Levels**

If, in making observations pursuant to subclause (i), there is a difference of more than 6 dB between the lowest and highest values of the observed ranges of sound levels, this procedure shall not be used unless the lower limit of each such range is above the maximum permissible level. Instead, the procedure set out in Section 4 - Procedure for Measurement of Varying Sound at a point of reception, shall be used.

NPC - 103

(f) **Measurement - Impulse Response - Frequent Impulses**

(i) **Readings Taken**

For sound in category (i) of clause 3 (1) (a) not less than 20 impulses shall be measured within a continuous period of 20 minutes and each measurement taken shall be reported.

(ii) **Extension of Time**

Where a minimum of 20 impulses cannot be measured within a continuous period of 20 minutes pursuant to subclause (i) the time period may be extended to 2 hours if an impulse occurred in each of the four consecutive periods of five minutes each during the initial 20 minute measurement period.

(iii) **Level Reported**

The Logarithmic Mean Impulse Sound Level (LLM) of the 20 or more measurements shall be calculated and reported to the nearest decibel. This Logarithmic Mean Impulse Sound Level is a valid and effective sound level for any one hour period during which readings were taken pursuant to subclauses (i) and (ii).

(g) **Measurement - Impulse Response - Single Event**

Readings Taken and Reported for impulsive sounds in category (i) of clause 3(1)(a), that occur as single, seemingly independent events not normally measurable using the procedure set out in clause (f) for frequent impulses, each impulse shall be independently measured and each impulse sound level reported to the nearest decibel.

(h) **Variation in Calibration**

Measurements shall not be reported if the sound level meter calibration has changed more than 0.5 dB from the previous calibration.

(i) **Weather Conditions**

(i) **Wind**

Measurements shall not be taken unless the wind-induced sound level is more than 10 dB below the measured levels. Reference should be made to Publication NPC-102 - Instrumentation, particularly Table 102-3.

(ii) **Humidity**

Measurements shall not be taken if the relative humidity is above the maximum for which the meter specification is guaranteed by the manufacturer (normally 90%) .

(iii) **Precipitation**

Measurements shall not be taken during precipitation.

(iv) **Temperature**

Measurements shall not be taken when the air temperature is outside the range for which the specification of the instrument is guaranteed by the manufacturer. (Normally, only the lower temperature limit is significant.)

(5) **Documentation**

The following represents the minimum information which shall be contained in a report of an investigation where the above procedure was used. (Adapted from CSA Z107.2-1973 Methods for the Measurement of Sound Pressure Levels.)

(a) **Acoustic Environment**

- (i) Location and description of sound sources.
- (ii) Dimensioned sketch including photographs, if possible, of the location of the sound source and the point of reception, showing all buildings, trees, structures and any other sound reflective surfaces.
- (iii) Physical and topographical description of the ground surface.
- (iv) Meteorological conditions prevailing at the time of the investigation including approximate local wind speed in km/h, wind direction, air temperature in °C, approximate relative humidity and extent of cloud cover.

(b) **Instrumentation**

All the equipment used for making sound level measurements shall be listed, including:

- (i) type, model and serial number of sound level meter;
- (ii) type, model and serial number of microphone;
- (iii) type, model and serial number of Acoustic Calibrator;
- (iv) extension cables and additional amplifier, if used.

(c) **Acoustical Data**

The measurement details shall be described, including:

- (i) the location of the microphone, using a sketch if necessary;
- (ii) measurements or readings obtained, preferably listed in tabular form, referencing location on a sketch or map, time periods involved, and relevant data required for making calculations;
- (iii) adjustments made for quality of sound or intermittence;
- (iv) details of any calculations;
- (v) comparison with applicable sound level limits, standards or guidelines.

4. Procedure for Measurement of Varying Sound

(1) (a) **Classification**

For the purposes of this procedure sounds can conveniently be placed in four mutually exclusive categories as follows:

- (i) impulsive sounds, other than Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from gunshots, certain explosive pest control devices and certain industrial metal working operations (e.g. forging, hammering, punching, stamping, cutting, forming and moulding);
- (ii) Quasi-Steady Impulsive Sounds, such as, but not limited to, the sound from pavement breakers, rivetting guns, ineffectively muffled internal combustion engines or ineffectively muffled air compressors;
- (iii) buzzing sounds, such as, but not limited to the sound from positive displacement blowers, chain saws, small combustion engines and concrete finishers;
- (iv) all other sounds.

(b) **Application**

This procedure applies to measurements at a point of reception of continuous or intermittent sound mentioned in category (ii), (iii) or (iv) of clause (a).

(2) **Instrumentation**

(a) **Integrating Sound Level Meter**

An Integrating Sound Level Meter shall be used which is appropriate for the sound to be measured:

- (i) Either a Type A or Type B Integrating Sound Level Meter may be used for the measurement of sound in category (iv) of clause 4(1)(a);
- (ii) A Type A Integrating Sound Level Meter shall be used for the measurement of sound in categories (ii) or (iii) of clause 4(1)(a).

(b) **Calibrator**

An Acoustic Calibrator shall be used.

(c) **Windscreen**

A windscreen shall be used in all outdoor measurements.

(3) **Measurement Location**

(a) **Air-Borne Sound**

For sound transmitted solely through air, the measurement location shall be one or more of the following points of reception:

- (i) a location out-of-doors where a person may be exposed to the sound; or
- (ii) the plane of an exterior door or window of a room in which a person may be exposed to the sound, where the door or window is open.

(4) **Use of Instrumentation**

(a) **Battery Check**

If the Integrating Sound Level Meter uses a battery, the condition of the battery shall be checked before each measurement, and measurement shall not commence unless the battery has sufficient life remaining to permit proper operation for a period of at least one hour.

(b) **Calibration**

The Integrating Sound Level Meter shall be calibrated before and after each measurement period.

(c) **Instrument Configuration**

(i) **Reflective Surfaces**

The microphone shall be located not less than 1 m above the ground, not less than 1 m from any sound reflective surface except for the purposes of subclause 4(3)(a)(ii) and not less than arm's length from the body of the person operating the meter. Not more than one person, other than the operator of the meter, shall be within 7 m of the microphone and that person shall be behind the operator of the meter. For the case of subclause 4(3)(a)(ii) the microphone shall be in the middle of the aperture located not less than 15 cm from the window frame or door frame.

(ii) **Microphone Orientation**

The microphone shall be oriented such that the sound to be measured is incident at an angle recommended by the microphone manufacturer for flattest frequency response in a free field.

(d) **Extraneous Sources**

When measuring the sound from a source, integration shall from time to time be inhibited by the operator immediately when the received sound is dominated by sound from a source other than the source under study and it shall remain inhibited while such a condition persists and for at least 10 seconds thereafter. While integration is inhibited the elapsed time used to calculate the equivalent sound level shall not be allowed to accumulate.

(e) **Timing**

If the Integrating Sound Level Meter is not provided with an internal elapsed-time clock, the operator shall accumulate the elapsed time during the measurement period by means of a stop-watch or other time measuring device.

(f) **Readings**

(i) **Stationary Source**

When measuring the sound from a stationary source, measurements to be used in calculating results shall be taken during a continuous period not in excess of one hour and, for purposes of calculation and reporting of results, the accumulated elapsed time of measurement as obtained in accordance with clause (d) is deemed to be one hour if the accumulated time is 20 minutes or more. Measurements containing information from an accumulated time period of less than 20 minutes are insufficient for purposes of calculating the equivalent sound level (L_{eq}) of a stationary source.

NPC - 103

(ii) Road Traffic Noise Sources

When measuring the sound from road traffic the accumulated elapsed time obtained in accordance with clause (d) shall not be less than twenty minutes and the actual accumulated elapsed time of measurement shall be used for purposes of calculation.

(g) Adjustments

Adjustments for quality of sound shall be made in accordance with Publication NPC-104 - Sound Level Adjustments and the result reported. No adjustment shall be made for intermittence.

(h) Variation in Calibration

A measurement shall not be reported if the Integrating Sound Level Meter calibration after the measurement period is more than 0.5 dB different from that before the measurement commenced.

(i) Weather Conditions

(i) Wind

Measurements shall not be made unless the wind-induced sound level is more than 10 dB below the measured levels. Reference should be made to Publication NPC-102-Instrumentation and particularly Table 102-3.

(ii) Humidity

Measurements shall not be taken if the relative humidity is above the maximum for which the meter specification is guaranteed by the manufacturer (normally 90%).

(iii) Precipitation

Measurements shall not be taken during precipitation.

(iv) Temperature

Measurements shall not be taken when the air temperature is outside the range for which the specification of the instrument is guaranteed by the manufacturer. (Normally, only the lower temperature limit is significant.)

(j) Readings Reported

- (i)** For sound from a stationary source, the value to be reported based on Measurements made during the accumulated elapsed time of 20 minutes or more and the time period for calculation which is one hour is, after adjustment in accordance with clause (g), the one hour equivalent sound level (L_{eq}) of the sound under study for any one hour period during which measurements were taken pursuant to subclause 4(4)(f)(i).

NPC - 103

- (ii) For sound from road traffic, the value to be reported based on measurements made during the accumulated elapsed time of 20 minutes or more and the time period for calculation which is the actual accumulated elapsed time, is the one hour equivalent sound level (L_{eq}) of the sound under study for any one hour period during which measurements were taken pursuant to subclause 4(4)(f)(ii).
- (iii) The one hour equivalent sound level (L_{eq}) shall be reported to the nearest decibel.

(5) **Documentation**

The following represents the minimum information which shall be contained in a report of an investigation where the above procedure was used. (Adapted from CSA Z107.2-1973 Methods for the Measurement of Sound Pressure Levels.)

(a) **Acoustic Environment**

- (i) Location and description of sound sources.
- (ii) A list of the types of extraneous noise sources which caused integration to be inhibited during measurement.
- (iii) Dimensioned sketch including photographs, if possible, of the location of the sound source and the point of reception, showing all buildings, trees, structures and any other sound reflective surfaces.
- (iv) Physical and topographical description of the ground surface.
- (v) Meteorological conditions prevailing at the time of the investigation including approximate local wind speed in km/h, wind direction, air temperature in °C, approximate relative humidity and extent of cloud cover.

(b) **Instrumentation**

All the equipment used for making sound level measurements shall be listed, including:

- (i) type, model and serial number of Integrating Sound Level Meter;
- (ii) type, model and serial number of microphone;
- (iii) type, model and serial number of Acoustic Calibrator;
- (iv) extension cables and additional amplifier, if used.

(c) **Acoustical Data**

The measurement details shall be described, including:

- (i) the location of the microphone, using a sketch if necessary;
- (ii) the continuous time period of observation;
- (iii) the accumulated elapsed time of measurement following the procedure of clauses 4(q)(d) and (e);

NPC - 103

- (iv) the Integrating Sound Level Meter reading or output and any other relevant data required for calculations;
- (v) adjustments made for quality of sound;
- (vi) details of all calculations;
- (vii) the equivalent sound levels obtained, preferably listed in tabular form, referencing location on a sketch or map;
- (viii) comparison with applicable sound level limits, standards or guidelines.

5. **Procedure for Measurement of Sound and Vibration Due to Blasting Operations**

(1) **Application**

This procedure applies to the measurement of sound (concussion) and vibration due to blasting operations.

(2) **Sound**

(a) **Instrumentation**

(i) **Measuring Device**

A Peak Pressure Level Detector shall be used.

(ii) **Calibrator**

An Acoustic Calibrator shall be used .

(iii) **Windscreen**

A windscreen shall be used in all outdoor measurements.

(b) **Measurement Location**

The measurement location shall be at a point of reception out-of-doors within 7 m of a building.

(c) **Use of Instrumentation**

(i) **Battery Check**

If the measuring device is battery powered, the condition of the battery shall be checked after the device has been allowed to warm up and stabilize and after each measurement has been made. The device shall not be used unless the battery condition is confirmed to be within the range recommended by the manufacturer for proper operation.

(ii) **Calibration**

The measuring device shall be calibrated after it has been allowed to warm up and stabilize and after each measurement has been made.

(iii) **Meter Setting**

The measuring device shall be set to read the peak pressure level using linear response and a "hold" facility, if available.

(d) **Instrument Configuration**

(i) **Reflective Surfaces**

The microphone shall be located not less than 1 m above the ground, not less than 1 m from any sound reflective surface and not less than arm's length from the body of the person operating the device. Not more than one person, other than the operator of the meter, shall be within 7 m of the microphone and that person shall be behind the operator of the meter.

NPC - 103

- (ii) **Microphone Orientation**

The microphone shall be oriented such that the concussion wave to be measured is incident at an angle recommended by the microphone manufacturer for flattest frequency response in a free field.
- (e) **Readings**
 - (i) **Peak Pressure Level**

The value of peak pressure level reported shall be given to the nearest decibel.
 - (ii) **Variation in Calibration**

A measurement shall not be reported if the meter calibration after the measurement is more than 0.5 dB different from that before the measurement.
 - (iii) **Battery Deterioration**

A measurement shall not be reported if the battery condition after the measurement is not within the range recommended by the manufacturer for proper operation.
- (f) **Weather Conditions**
 - (i) **Wind**

Measurements shall not be reported unless the wind-induced sound pressure level is more than 10 dB below the measured peak pressure level. Reference should be made to Publication NPC-102 - Instrumentation.
 - (ii) **Humidity**

Measurements shall not be taken if the relative humidity is above the maximum for which the meter specification is guaranteed by the manufacturer (normally 90%).
 - (iii) **Precipitation**

Measurements shall not be taken during precipitation.
 - (iv) **Temperature**

Measurements shall not be taken when the air temperature is outside the range for which the meter specification is guaranteed by the manufacturer. (Normally only the lower temperature limit is significant.)
- (3) **Vibration**
 - (a) **Instrumentation**
 - (i) **Measuring Device**

A Vibration Velocity Detector shall be used.
 - (ii) **Calibrator**

An electrical reference signal of known voltage and frequency shall be used in the field for calibration of the Vibration Velocity Detector excluding the transducer. A reference vibration source shall be used for laboratory calibration of the complete Vibration Velocity Detector.

NPC - 103

- (b) **Measurement Location**

Vibration measurements shall be made at a point of reception inside a building below grade or less than 1 m above grade, preferably on a basement floor close to an outside corner.
- (c) **Use of Instrumentation**
 - (i) **Battery Check**

If the measuring device is battery powered, the condition of the battery shall be checked after the device has been allowed to warm up and stabilize and after each measurement has been made. The device shall not be used unless the battery condition is confirmed to be within the range recommended by the manufacturer for proper operation,
 - (ii) **Calibration**

Field calibration shall be carried out before and after each measurement. Laboratory calibration of the complete Vibration Velocity Detector as used in the field, including the transducer, shall be carried out not less than once per calendar year and the results certified.
- (d) **Instrument Configuration**
 - (i) **Mounting**

The transducer shall be affixed to a part of the structure so as to prevent movement of the transducer relative to the structure. The preferred structural element is the basement floor as indicated in clause (b),
 - (ii) **Transducer Orientation**

If three vector components of vibration velocity are recorded individually, it is preferable to orient the transducers such that the three axes of measurement are (a) vertical, (b) radial (along a horizontal line joining the location of the blast to the location of measurement) and, (c) transverse (along a horizontal line at right angles to the line joining the location of the blast to the location of measurement).
- (e) **Readings**
 - (i) **Peak Particle Velocity**

The peak particle velocity in cm/s shall be reported.
 - (ii) **Variation in Calibration**

A measurement shall not be reported if calibration after the measurement is more than 5% different from that before the measurement.

NPC - 103

(iii) **Battery Deterioration**

A measurement shall not be reported if the battery condition after the measurement is not within the range recommended by the manufacturer for proper operation.

(4) **Documentation**

The following represents the minimum information which shall be contained in a report of an investigation where the above procedure was used.

(a) **Description of Area**

- (i) Location and description of the blasting operation.
- (ii) Dimensioned sketch including photographs, if possible, of the location of the blasting operation, the nearest premises and the measurement location.
- (iii) Description of the measurement location.
- (iv) Physical and topographical description of the ground surface.
- (v) Meteorological conditions at the time of the investigation, including approximate wind speed in km/h, wind direction, air temperature in degrees Celsius, approximate relative humidity, degree of cloud cover and whether or not a condition of thermal inversion prevailed.

(b) **Instrumentation**

All the equipment used for making sound and vibration measurements shall be listed, including:

- (i) type, model and serial number of Peak Pressure Level Detector;
- (ii) type, model and serial number of microphone;
- (iii) type, model and serial number of Acoustic Calibrator;
- (iv) windscreen;
- (v) extension cables and additional amplifiers, if used;
- (vi) type, model and serial number of Vibration Velocity Detector;
- (vii) type, model and serial number of transducers.
- (viii) type, model and serial number of vibration calibrator.

(c) **Sound and Vibration Data**

The measurement details shall be described, including:

- (i) the location where measurements were taken, the time period involved and the orientation of instrumentation using a sketch, if necessary;
- (ii) details of all calculations;
- (iii) the peak pressure level in dB and/or peak particle velocity in cm/s
- (iv) comparison with applicable peak pressure limits and/or peak particle velocity limits.

NPC - 103

6. Exterior Sound Level Measurement Procedure For Powered Mobile Construction Equipment - SAE J88a

SAE J88a Recommended Practice is adopted by the Ministry with the following change:

Where ANSI Type 1 sound level meter specification is referred to, reference shall be made instead to Publication IEC-179 (1973) for Precision sound level meters. (General Purpose Sound Level Meter)

7. MEMAC Test Code For the Measurement of Sound From Pneumatic Equipment

The MEMAC Test Code For The Measurement Of Sound From Pneumatic Equipment is adopted by the Ministry with the following additional requirement:

For measurement of percussive machines the sound level meter used shall meet the specifications of IEC Publications 179 and 179A (1973). (Impulse Sound Level Meter)

8. Exterior Sound Level Measurement Procedure For Small Engine Powered Equipment - SAE J 1046

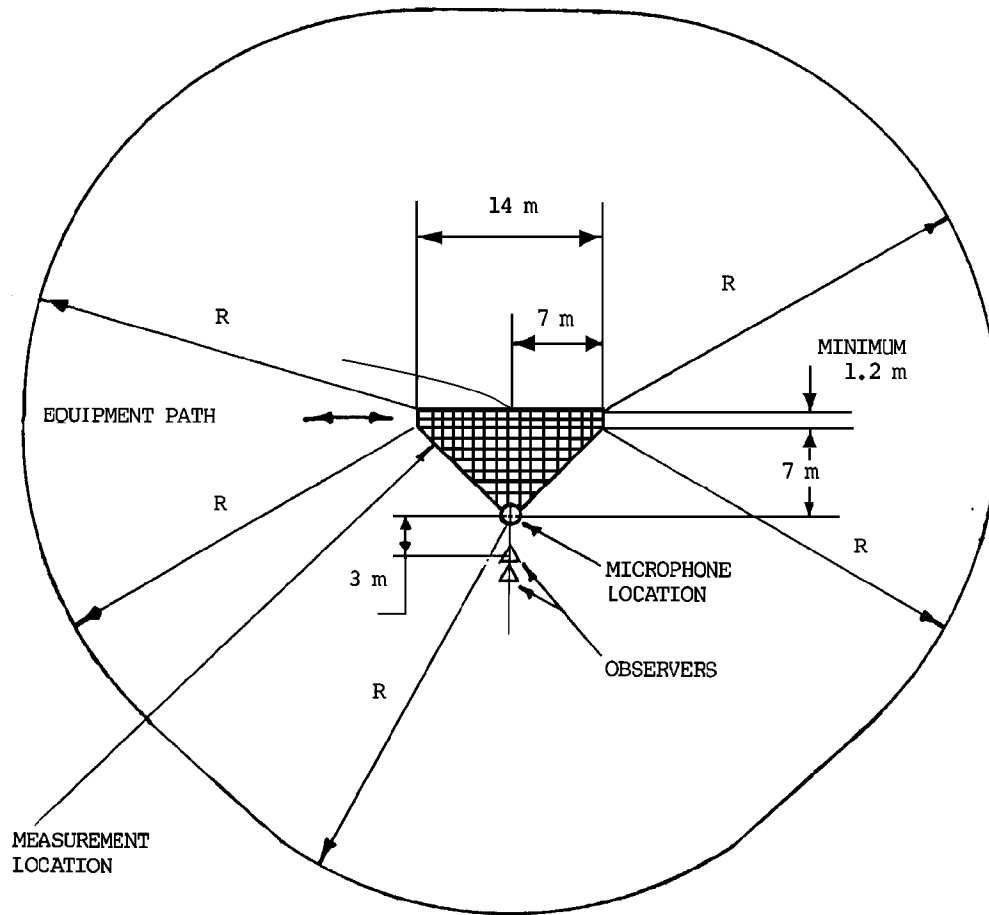
SAE J 1046 - Recommended Practice, is adopted by the Ministry with the following changes:

- (1) Where ANSI Type 1 sound level meter specification is referred to, reference shall be made instead to IEC Publications 179 and 179A (1973). (Impulse Sound Level Meter)
- (2) Replace clause 3.1.1 with the following:
The minimum dimensions of the measurement zone are defined as a path of travel 1.2 m wide by 14 m long plus an adjacent area having the base along the edge of the path of travel and the apex 7 m from the midpoint of the base.
- (3) Replace Fig. 1 with Fig. 103-1, hereof.
- (4) In section 3.3 Measurements, all references to 25 ft. shall be changed to 7 m.

9. Procedure for Measurement of the Maximum Exterior Sound Level of Stationary Trucks with Governed Diesel Engines-CSA Z107.22-M1977

- (1) CSA Z107.22-M1977 standard is adopted by the Ministry with the following change:

A General Purpose Sound Level Meter shall be used.



REF. US EPA 550/9-74-011

R = 30 m MINIMUM RADIUS

FIGURE 103 - 1 : TEST SITE CONFIGURATION FOR EXTERIOR SOUND LEVEL MEASUREMENT PROCEDURE FOR SMALL ENGINE POWERED EQUIPMENT - SAE J 1046

NPC-115

NPC-115

Construction Equipment

1. Scope

This Publication sets sound emission standards for various items of new construction equipment according to the date of manufacture of the equipment.

2. Technical Definitions

The technical terms used in this Publication are defined in Publication NPC101 Technical Definitions.

3. Sound Emission Standards

Tables 115-1 to 115-4 inclusive list Residential Area sound emission standards and Quiet Zone sound emission standards for specific items of new construction equipment measured in accordance with the procedures indicated.

TABLE 115-1

Quiet Zone and Residential Area Sound Emission Standards for Excavation Equipment, Dozers, Loaders, Backhoes or Other Equipment Capable of Being Used for Similar Application

Maximum Sound Level (dBA) as determined using Publication NPC - 103 - Procedures, section 6		
	dBA	
Date of Manufacture	Power Rating Less than 75 kW	Power Rating 75 kW and Larger
January 1, 1979 to December 31, 1980	85	88
January 1, 1981 and after	83	85

NPC-115**TABLE 115-2****Sound Emission Standards for Pneumatic Pavement Breakers**

Standard	Date of Manufacture	Maximum Sound Level (dBA) as measured using Publication NPC - 103
Quiet Zone Sound Emission	January 1, 1979 and after	85
Residential Area Sound Emission Standard	January 1, 1979 to December 31, 1980	90
	January 1, 1981 and after	85

TABLE 115-3**Sound Emission Standards for Portable Air Compressors**

Standard	Date of Manufacture	Maximum Sound Level (dBA) as measured using Publication NPC - 103
Quiet Zone Sound Emission Standard	January 1, 1979 to December 31, 1980	76
	January 1, 1981 and after	70
Residential Area Sound Emission	January 1, 1979 and after	76

NPC-115

TABLE 115-4

Sound Emission Standard for Tracked Drills

Standard	Date of Manufacture	Maximum Sound Level (dBA) as measured using Publication NPC - 103 Procedures, section 6
Quiet Zone and Residential Area Sound Emission Standard	January 1, 1981 and after	100

NPC-118

NPC - 118

Motorized Conveyances

1. **Scope**

This Publication sets sound emission standards for motorized conveyances of various types.

2. **Technical Definitions**

(1) The technical terms used in this Publication are defined in Publication NPC-101 - Technical Definitions.

(2) Definitions Specific to this Publication
Heavy Vehicle

"Heavy vehicle" means a motorized conveyance having a registered gross weight of more than 4,500 kg.

3. **Sound Emission Standards - Governed Diesel Engines**

Table 118-1 lists for various years of manufacture, the sound emission standard for a heavy vehicle powered by a governed diesel engine when measured in accordance with the procedure set out in the Table.

TABLE 118-1
Sound Emission Standards for Heavy Vehicles
with Governed Diesel Engines

Date of Manufacture	Maximum Sound Level (dBA) as measured using NPC - 103, section 9
Prior to January 1, 1979	100
January 1, 1979 and after	95

4. **Sound Emission Standards - Gasoline Engines**

Table 118-2 lists for various years of manufacture, the sound emission standard for a heavy vehicle powered by an ungoverned gasoline engine, when measured in accordance with the procedure set out in the Table.

TABLE 118-2

UNDER PREPARATION