HIGHWAY 7 CORRIDOR AND VAUGHAN NORTH-SOUTH LINK PUBLIC TRANSIT IMPROVEMENTS ENVIRONMENTAL ASSESSMENT NOISE AND VIBRATION IMPACT ASSESSMENT

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August 2005

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1.0 INTRODUCTION

1.1 BACKGROUND

The York Region Rapid Transit Plan (YRTP) has its origins in the York Region Transportation Master Plan (TMP) approved by York Region Council in June 2002. The TMP identified a program of rapid transit projects to form a rapid transit network in York Region with intermodal connections to other Regions in the Greater Toronto Area (GTA). The key corridors of this proposed rapid transit network include Yonge Street, Highway 7, Vaughan Corporate Centre-York University/Spadina subway, and Markham Centre-Don Mills subway station/Sheppard subway. Three of the four corridors have inter-regional connections to the Toronto Transit Commission (TTC) subway system.

As part of its implementation strategy for rapid transit, York Region established a public-private partnership with York Consortium 2002. The initial agreement with the Consortium is to complete the environmental assessment (EA) studies required for the four key corridors.

The YRTP implementation strategy is based on three phases:

- Phase 1 – Quick Start program [to create high occupancy vehicle (HOV) lanes, bus lanes signal priority, transit centres, stations and stops];
- Phase 2 – Full Rapid Transit Network (will include execution of agreement with both TTC and GO Transit to integrate services); and
- Phase 3 – Growth Related Expansion.

As part of the EA process, SENES Consultants Limited (SENES) was retained by York Consortium 2002 to assess the Phase 2 and 3 air quality impacts of the YRTP on the three main corridors, namely Yonge Street, Highway 7 and Markham Road. A noise and vibration impact study has already been prepared under separate cover for the Yonge Street Corridor. This current study assesses the noise and vibration impacts of the Highway 7 Corridor.

1.2 REPORT FORMAT

This report presents the results of the background noise and vibration monitoring, computer modelling and impact assessments completed for the Highway 7 Corridor. Chapter 2 describes the Highway 7 Corridor and the predominant landuses throughout the Corridor. Chapter 3 provides a description of the appropriate noise regulations/guidelines. Chapter 4 discusses the results of the background /ambient noise monitoring program. The noise impact assessment is presented in Chapter 5. The vibration impact assessment is presented in Chaper 6. Chapter 7 assesses the impacts of extending the Spadina Subway on an alignment west of Jane Street. Chapter 8 outlines the key conclusions.

2.0 EXISTING CONDITIONS

2.1 DESCRIPTION OF HIGHWAY 7 CORRIDOR

The Highway 7 Corridor nominally includes the area bounded by Steeles Avenue on the south, Major MacKenzie Drive on the north, Highway 50 on the west and the York/Durham Line on the east, as shown on Figure 2.1. It includes sections of the City of Vaughan, City of Toronto, Town of Richmond Hill and Town of Markham. In the Highway 7 Corrridor between Highway 50 and the York-Durham Line, the preferred surface rapid transit route comprises a dedicated transitway mostly in the median of Highway 7 except for diversions along Centre and Bathurst Streets and through the planned Markham Regional Centre between Warden Avenue and Kennedy Road. At certain constrained locations, the rapid transit service will operate in mixed traffic. The route also includes the Vaughan North-South Link which will initially consist of surface rapid transit along Jane and Keele Streets from Highway 7 to Steeles Avenue and ultimately, an extension of the Spadina Subway to Highway 7 on an alignment west of Jane Street. Surface transitway stations are generally spaced 1 to 2 km apart in the roadway median.

For the most part, the Highway 7 Corridor study area is an area of primarily 20th century urban development consisting of commercial, industrial and residential areas, hydro-electric transmission corridors and linear transportation corridors such as roads and railway lines. The corridor serves traffic and pedestrian movements associated with neighbourhood access, retail/commercial development demands, and through commuter traffic demands.

2.1.1 Predominant Land Uses

Figure 2.1 shows the land uses within the study area. It indicates a mix of residential, commercial, industrial, institutional and park/open space land uses. For the most part, the areas adjacent/closest to Highway 7 along the entire route are characterized by commercial and residential uses, however, there are several industrial pockets abutting the Corridor. These pockets are most noticeable in the City of Vaughan between Martin Grove Road and Ansley Grove Road; in the Town of Thornhill, on Bathurst Street, between Centre Street and Highway 7; In the Town of Richmond Hill, between Bayview Avenue and Leslie Street; and several areas east of Warden Avenue, in the Town of Markham. Several office, institutional, and industrial buildings also front onto Highway 7 at various points along the Corridor.

FIGURE 2.1

HIGHWAY 7 CORRIDOR WITH LAND USE FEATURES

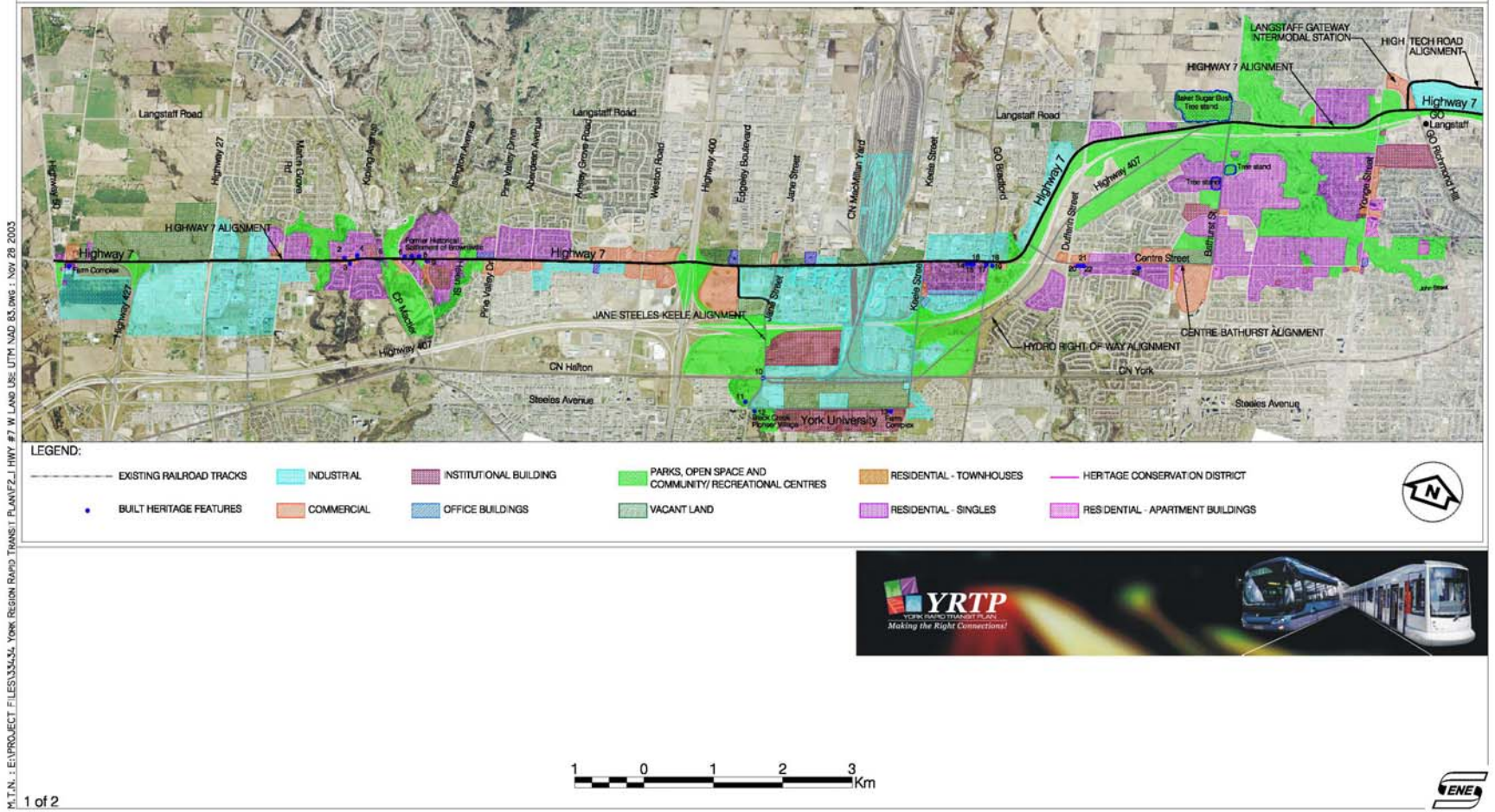
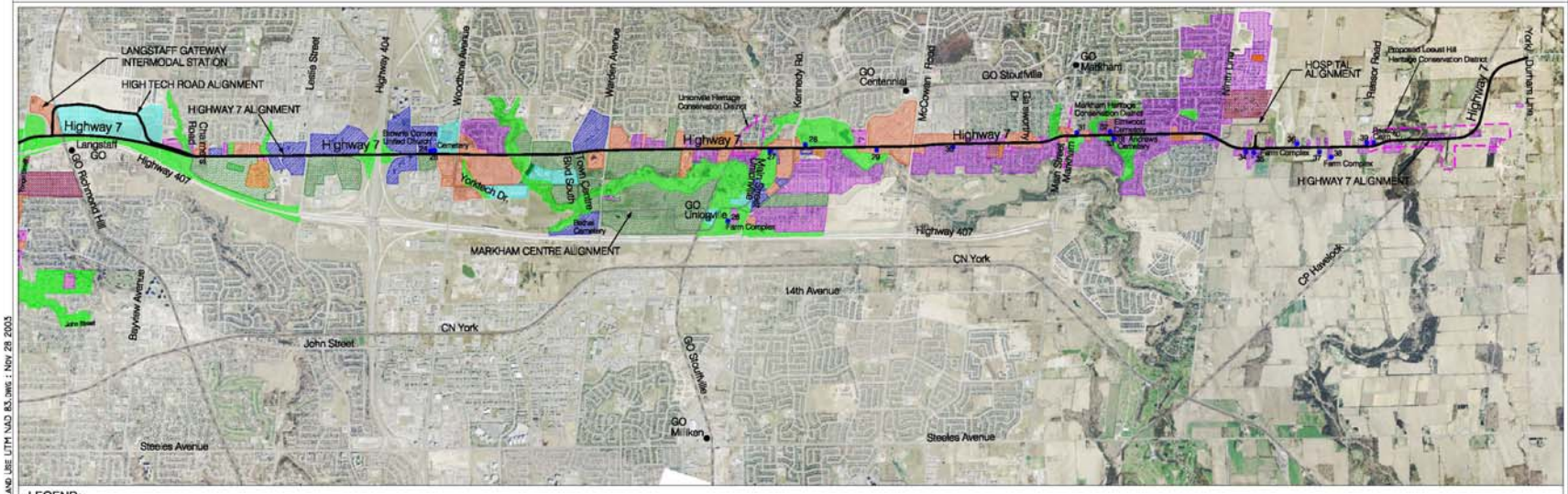


FIGURE 2.1 (cont'd)

HIGHWAY 7 CORRIDOR WITH LAND USE FEATURES



3.0 REGULATORY REQUIREMENTS

3.1 APPROACH

Noise limits applicable to transit development projects are contained in provincial protocols and the Ontario Model Municipal Noise Control By-law. Local municipal noise control by-laws also contain time and place restrictions on construction activities that in turn may have implications for such undertakings.

To determine the appropriate noise requirements for this project, meetings were held with the various relevant representatives from the Ontario Ministry of the Environment, including the Ministry's Environmental Assessment and Approvals Branch, Central Region Office and Air and Noise Unit. On the basis of these consultations, and the review of existing protocols for other transit projects, specific protocols for noise and vibration were developed for assessing this project. These are:

1. for existing/future noise, the impact will be established based on the higher of either a daytime limit of 50 dBA or existing levels, and that nighttime limits be based on the higher of either 45 dBA or existing levels, determined either by traffic noise predictions and/or measurements;
2. that mitigation be considered if the existing established sound levels at the closest receptor be exceeded by > 5 dBA;
3. stationary noise sources be assessed in accordance with NPC-205;
4. construction noise be assessed in accordance with NPC-115; and
5. vibration impact be assessed in accordance with the MOEE/TTC Protocol.

Table 3.1 summarizes the key criteria specified in the above mentioned protocols. Additional details on the protocols, NPC-205 and NPC-115 are included in Appendix A. Information on sound level terminology is also contained in this appendix.

TABLE 3.1
SUMMARY OF NOISE AND VIBRATION PROTOCOLS

Component	Protocol	Procedure	Receptor Criteria	Mitigation
Existing/ Future Noise	MTO/MOE	Prediction and measurements	Objective for outdoor sound levels is the higher of the Leq 55 dBA or existing ambient	Considered when the ambient is exceeded by > 5 dBA
	MOEE/TTC	Prediction is preferred to individual measurements	55 dBA or the ambient for daytime and 50 dBA for nighttime. 80 dBA for single train passby	Will be Incorporated when limits are exceeded by more than 5 dBA
	NPC-205	Existing measured background or traffic	Level established through measurement or prediction	
Stationary Noise Sources	MTO/MOE	Not addressed	Not addressed	Not addressed
	MOEE/TTC	Predicted in accordance with NPC-205	As per NPC-205	
	NPC-205	Measurements and/or predictions	For an urban area, For daytime, 50 dBA or resulting noise from road traffic and industry; for nighttime, 45 dBA or noise resulting from traffic and industry	Any exceedance above the limit must be mitigated
Construction Noise	MTO/MOE	Commitments to be included in E.A. documents; sound level criteria for construction equipment outlined in NPC-115	NPC-115 limits	
	MOEE/TTC	To be based on Noise Control Guideline for Class Environmental Assessment of Undertakings	To be based on Noise Control Guideline for Class Environmental Assessment of Undertakings	To be based on Noise Control Guideline for Class Environmental Assessment of Undertakings
	NPC-115	Noise emission measurements or manufacturers data	Sound Emission Standards for specific equipment	
Ground Vibration	MTO/MOE	Not Addressed	Not Addressed	Not Addressed
	MOEE/TTC	Predicted during design		If the vertical vibrations exceeds 0.1 mm/sec, mitigation measured shall be applied during the detailed design phase to meet this criterion to the extent technologically, economically and administratively feasible

3.2 RECEPTORS

The Model Municipal Noise Control By-Law defines a receptor or point of reception as *"any point on the premises of a person where sound or vibration originating from other than those premises is received."* The point of reception may be located on any of the following existing, or zoned for future use, premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residence, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship.

Based on reconnaissance throughout the study area, review of zoning and land use information for the municipalities in the study areas, various residential and institutional (churches, schools, seniors residences, day care centres) land uses were identified. These receptors are shown on Figure 2.1. The Pedestrian Mall proposed for the Markham Centre area is a unique section of the corridor in that transit will be the only through traffic in this largely residential area.

3.3 MUNICIPAL REQUIREMENTS FOR CONSTRUCTION ACTIVITIES

The Corridor, for the most part, lies within the municipalities of Markham, Richmond Hill and Vaughan. A section of the Corridor also lies within the City of Toronto. Both the Town of Markham and the City of Vaughan have incorporated the Ontario Model Municipal Noise Control By-law into their local noise control by-laws. Hence the requirements specified for construction equipment in NPC-115 are applicable in these two municipalities. In addition to the requirements contained in NPC-115, time and place restrictions within Quiet Zone and Residential Areas can also restrict construction activities. Table 3.2 below summarizes the time and place restrictions on construction activities as outlined in the three by-laws. It shows that the restrictions are identical for all three municipalities.

TABLE 3.2
TIME AND PLACE RESTRICTIONS ON CONSTRUCTION ACTIVITIES

Municipality	By-Law Section	Activity	Prohibited Period of Time	
			Quiet Zone	Residential Area
Town of Markham (By-Law # 218-89) City of Vaughan (By-Law # 158-73) Town of Richmond Hill (Chapter 1055)	Section 3	The operation of any equipment in connection with construction.	All day Sunday and statutory holidays. 19:00 one day to 07:00 next day.	All day Sunday and statutory holidays. 19:00 one day to 07:00 next day.

Chapter 241 (Noise) of the Toronto Municipal Code, sets noise restrictions within the City. The Chapter states qualitative prohibitions as well as quantitative noise limits for certain activities.

Section 241-2 (Disturbing Noise Prohibited) states that:

> *No person shall make, cause or permit noise which disturbs or may disturb the quiet, peace, rest enjoyment, comfort or convenience of the inhabitants of the City.*

Section 241-3C.(1) prohibits that:

> *Any noise from any excavation or construction work, including the erection, demolition, alteration or repair of any building which disturbs or is likely to disturb the peace, quiet, rest, enjoyment, comfort or convenience of persons in any office or residential point of reception or of any person in the vicinity, arising between the hours of 6:00 p.m. of one day and 7:00 a.m. of the following day, unless the following day is a Sunday or holiday, in which case the time shall be 9:00 am.*

Schedule A, Sound Regulations Respecting Equipment, stipulates "Permissible Maximum Sound Levels (dBA)" for various type of equipment including air compressors, leaf blowers, pneumatic pavement breakers, dozers, backhoes, mobile cranes, etc., based on the size of the equipment and the year of manufacture.

4.0 ESTABLISHING BACKGROUND SOUND LEVELS

4.1 OVERALL APPROACH

The background/existing noise environment was determined based on the following:

1. Traffic noise predictions using the Ministry of the Environment STAMSON noise model; and
2. Ambient noise monitoring at 13 receptors within the study area.

4.2 TRAFFIC NOISE PREDICTIONS

4.2.1 Data Source

Existing (2002) traffic volumes for Highway 7 were provided by The IBI Group (IBI), transportation specialists on the project. The IBI data estimated AADT volumes for various road segments along the preferred route. The data assumes a 50/50 split in two-way traffic along the route. Traffic data for the road segments at the receptor locations are shown on the following table.

TABLE 4.1
2002 AADT TRAFFIC VOLUME ON PREFERRED ROUTE

Section		2002 AADT
From	**To**	
Highway 7 Alignment		
Martin Grove Road	Kipling Avenue	42,083
Pine Valley Drive	Whitmore Road	48,895
Centre Street	Langstaff Road	30,681
Bayview Avenue	Leslie Street	58,415
Woodbine Avenue	Rodick Road	43,038
Warden Avenue	Kennedy Road	39,000
McCowan Road	Laidlaw Blvd.	27,876
Ninth Line	Markham Bypass	8,265
Keele Street Alignment		
Highway 7	Highway 407	37,956
Centre Street Alignment		
Bathurst Street	Dufferin Street	24,672
Bathurst Street Alignment		
Centre Street	Highway 7	42,552
Town Centre Boulevard South Alignment		
Town Centre Blvd. South	Main Street Unionville	32,099
Kennedy Road Alignment		
Main Street (Unionville)	Highway 7	34,105

As was noted earlier, on the basis of site reconnaissance and land use maps, the locations of sensitive receptors were identified along the Highway 7 Corridor, within each of the road segments. These included residences, including seniors residences, schools, churches, hotels, motels, daycare centers, etc.

4.2.2 Key Assumptions for Modelling Traffic Noise

Both daytime and nighttime traffic noise levels were predicted. The traffic noise predictions were based on the following key assumptions:

1. an existing (2002) AADT;
2. varying annual increase in traffic volumes depending on the road segment;
3. a traffic volume breakdown in most instances consisting of about 93-96% automobiles, 2-2.5% medium trucks and 2-4.5% heavy trucks;
4. all residential receptors are located outdoors (backyards) during the daytime;
5. nighttime receptor height of 4.5 m (second story window); and
6. a daytime/nighttime traffic volume split of 90/10%.

In each instance, the traffic noise was predicted at the existing or planned future receptor closest to the roadway. The traffic data used for predicting noise levels are shown in the table below.

TABLE 4.2
BASELINE (2002) TRAFFIC VOLUME ON PREFERRED ROUTE
(Based on 2002 AADT Volumes)

Section		Current (2003) AADT Volumes				Receptors	
From	**To**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**	**Closest Receptors**	**Receptor Distances (m)**
Highway 7 Alignment							
Martin Grove Road	Kipling Avenue	36191	2104	3787	42083	Single family dewllings	18.5
Pine Valley Drive	Whitmore Road	42,050	2,445	4,401	48,895	Single family dewllings	19
Centre Street	Langstaff Road	26,999	1,534	2,148	30,681	Single family dwellings	46.5
Bayview Avenue	Leslie Street	52574	2337	3505	58,415	Single family dwellings	30.5
Woodbine Avenue	Rodick Road	40,025	1,506	1,506	43,038	Single family dwellings	50
Warden Avenue	Kennedy Road	36,270	1,365	1,365	39,000	Single family dwellings	15
McCowan Road	Laidlaw Blvd.	25,925	976	976	27,876	Single family dwellings	15
Ninth Line	Markham Bypass	7,686	289	289	8,265	Single family dwellings	40
Keele Street Alignment							
Highway 7	Highway 407	33,401	1,898	2,657	37,956	Single family dwellings	28.5
Centre Street Alignment							
Bathurst Street	Dufferin Street	23,192	740	740	24,672	Single family dwellings	18
Bathurst Street Alignment							
Centre Street	Highway 7	39,999	1277	1277	42,552	Single family dwellings	22.5
Town Centre Boulevard South Alignment							
Town Centre Blvd. South	Main Street Unionville	31,457	321	321	32,099	Vacant Farm Land	147
Kennedy Road Alignment							
Main Street Unionville	Highway 7	31718	1194	1194	34,105	Single family dwellings	21

4.2.3 Model Details

The traffic sound levels were estimated using the Ontario Ministry of Environment (Ontario MOE) STAMSON 5.0 noise model that is based on Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT). STAMSON calculates sound levels using three vehicle categories:

- Automobiles
  All vehicles having two axles and four wheels designed primarily for the transportation of nine or fewer passengers or the transportation of cargo (e.g. vans and light trucks). Generally, the gross vehicle weight is less than 4,500 kg.
- Medium Trucks
  All vehicles having two axles and six wheels designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 4,500 but less than 12,000 kg. City buses are also included in this category.
- Heavy Trucks
  All vehicles having three or more axles and designed for the transportation of cargo. Generally, the gross vehicle weight is greater than 12,000 kg. Inter-city buses are included in this category.

Other key parameters utilized by STAMSON include vehicle speed, road surface, topography gradient, ground surface conditions (absorptive or reflective) and the presence or absence of sound barriers. In order to predict sound levels for road traffic, the STAMSON model requires an hourly traffic flow of at least 40 vehicles/hour, travelling at least 40 km/h, and a receptor location with minimum and maximum distance of 15 m and 500 m, respectively from the traffic source.

4.2.4 Traffic Noise Prediction Results for Existing Conditions

Table 4.3 below shows the traffic noise prediction results for existing conditions at selected closest receptor locations along the preferred route for both daytime and nighttime. The STAMSON model data sheets are presented in Appendix B.

TABLE 4.3
PREDICTED EXISTING DAYTIME AND NIGHTTIME TRAFFIC NOISE LEVELS

Section		Predicted Sound Level (dBA)		Closest Receptor Distance
From	**To**	**Daytime**	**Nighttime**	**(m)**
Highway 7 Alignment				
Martin Grove Road	Kipling Avenue	66	60	18.5
Pine Valley Drive	Whitmore Road	70	63	19
Centre Street.	Langstaff Road	62	55	46.5
Baview Avenue	Leslie Street	71	64	30.5
Woodbine Avenue	Rodick Road	64	58	50
Warden Avenue	Kennedy Road	73	66	15
McCowan Road	Laidlaw Blvd.	62	56	15
Ninth Line	Markham Bypass	59	52	40
Keele Street Alignment				
Highway 7	Highway 407	62	69	28.5
Centre Street Alignment				
Bathurst Street	Dufferin Street	65	59	18
Bathurst Street Alignment				
Centre Street	Highway 7	64	57	22.5
Town Centre Boulevard South Alignment				
Town Centre Blvd. South	Main Street Unionville	51	45	147
Kennedy Road Alignment				
Main Street Unionville	Kennedy Road	58	52	21

The table shows high daytime and nighttime sound levels at receptors closest to the major roads along the corridor. The high existing noise levels reflect the high traffic volumes on these roads.

4.3 BACKGROUND/AMBIENT NOISE MONITORING

4.3.1 Sound Level Monitoring Survey Methodology

The background sound level monitoring program was carried out in accordance with the procedures specified in Publication NPC-103. The monitoring was scheduled to include weekdays and weekends. However, most of the monitoring was conducted on weekends to obtain conservatively low background levels.

All continuous background sound level measurements were made using four sound level meters: (1) a Larson-Davis Model 812 Type 1 integrating sound level meter calibrated with a Larson-Davis 114.0 dB 1 kHz acoustic calibrator; (2) a Larson-Davis Model 700 Type 1 integrating sound level meter calibrated with a Larson-Davis 114.0 dB 1 kHz acoustic calibrator; (3) a Larson-Davis Model 700 Type 2 integrating sound level meter calibrated with a Bruel Kjaer

Type 4231 94.0 dB 1 kHz acoustic calibrator; and (4) a RION NL-14 precision integrating sound level meter, equipped with an NX-05 filter set and calibrated with a RION-73 1 kH, 94.0 acoustic calibrator.

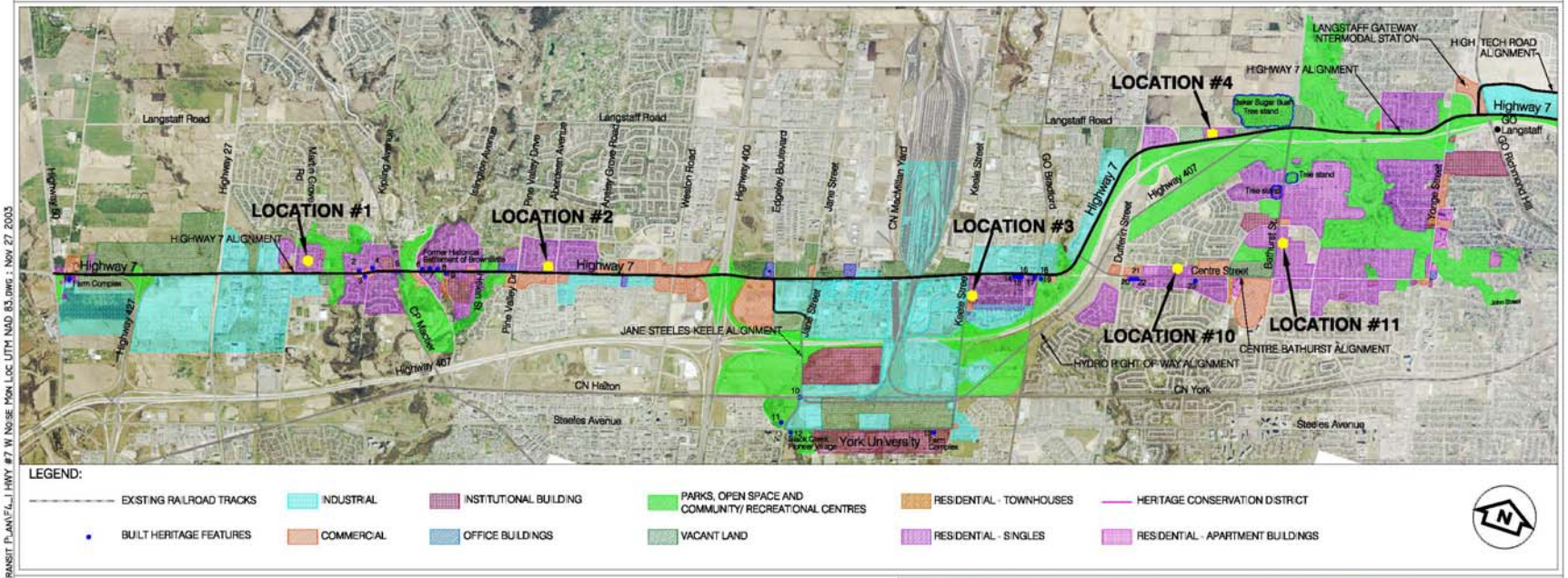
The continuous sound level measurements were made with the noise meters set on the "A" weighting scale. This scale simulates the response of the human ear. The meters were calibrated at the beginning and end of the monitoring period. A windscreen was placed on the microphone of each noise meter while monitoring to reduce the effects of wind induced noise.

4.3.2 Sound Level Monitoring at Receptor Locations

The monitoring program consisted of at least 52 hours of noise monitoring at 13 receptors along the preferred route on the Highway 7 Corridor between September 5 and December 9, 2003, as shown on Table 4.4. The receptor locations are shown on Figure 4.1. The monitoring locations were selected based on their proximity to the preferred route and their potential to be affected by lane realignment along the route.

FIGURE 4.1

NOISE MONITORING RECEPTOR LOCATIONS



LEGEND

LOCATION #1 NOISE MONITORING LOCATION

1 0 1 2 3 Km

1 of 2

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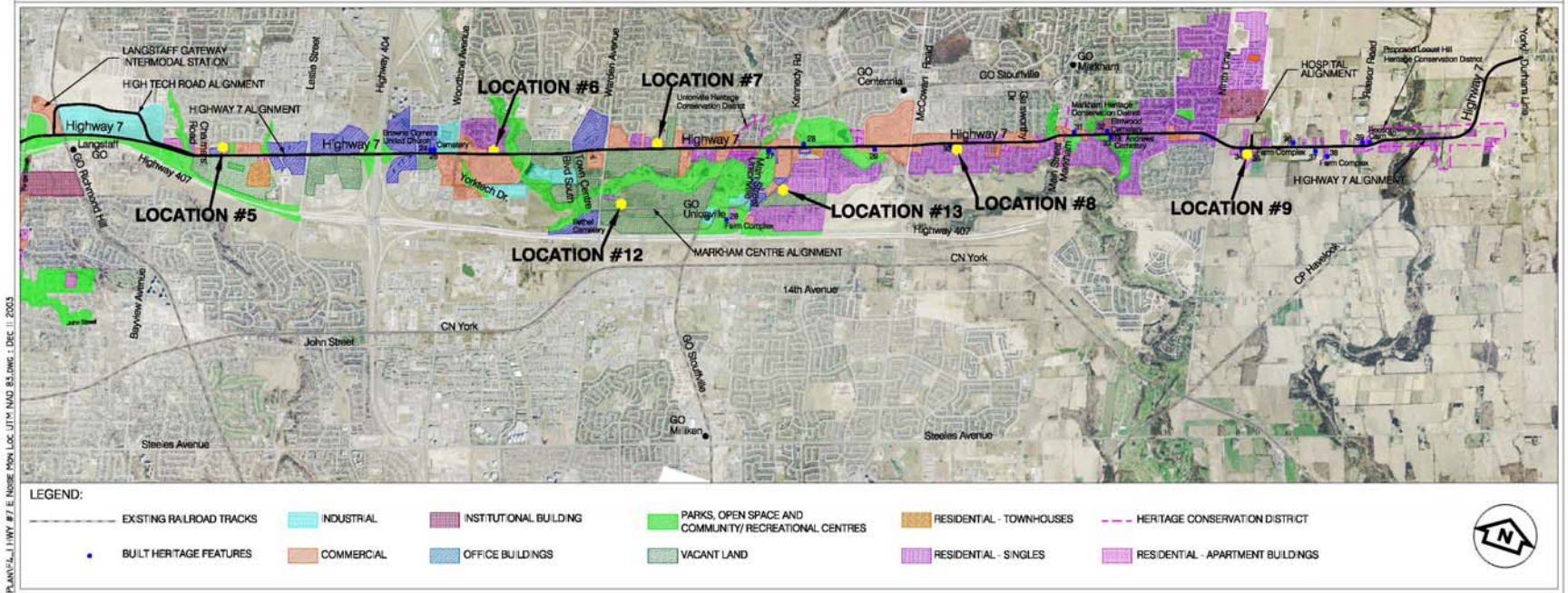
FIGURE 4.1 (cont'd)

NOISE MONITORING RECEPTOR LOCATIONS



LOCATION #5

LEGEND

NOISE MONITORING LOCATION

1 0 1 2 3 Km

2 of 2

TABLE 4.4
SUMMARY OF RECEPTOR LOCATIONS

Receptor #	Address	Monitoring Date	Monitoring Hours
1	83 Button Road	November 14 – 17	69
2	59 Embassador Court	October 10 – 14	95
3	7651 Keele Street	November 5 – 10	118
4	104 Suger Crescent	September 5 – 9	95
5	364 Highway 7	November 5 – 10	118
6	2 Montgomery Court	September 11 – 15	86
7	73 Lichfield Road	September 11 – 13	52
8	10 Gladiator Road	September 11 – 15	86
9	6921 Highway 7	November 7 – 11	97
10	154 Thornway Avenue	October 10 –14	86
11	79 Chilmar Crescent	October 10 –14	73
12	Future Markham Centre	December 5 – 8	71
13	231 Valentina Drive	November 5 – 10	122

4.3.3 Sound Level Monitoring Results

The detailed 2003 monitoring results are included in Appendix C. The data indicate that for the most part, daytime (7 am – 11 pm) sound levels at the receptors along the Highway 7 Corridor exceeded 60 dBA. Even at night time (11 pm – 7 am), the minimum measured sound levels were generally higher than 50 dBA. The only exception to this trend is the future Markham Centre location where the existing sound levels are found to be closer to 50 dBA during the daytime and 45 dBA at nighttime.

The detailed monitoring results in Appendix C show the following key trends:

- consistently high sound levels during the daytime until at least midnight;
- lowest sound levels were generally recorded between 2 am and 5 am;
- weekend sound levels were generally lower than weekday sound levels;
- sound levels were highest for receptors closest to Highway 7; and
- the range and distribution of sound levels at the monitoring locations indicate that the sound environment at these locations are typical of "Class 1 Areas" as defined in Appendix A.

4.3.4 Comparison of Traffic Noise with Measured Background Noise Levels

To assess the impact of road traffic noise at the receptor locations, a comparison was made between the measured background sound levels and STAMSON predicted sound levels at the same locations, based on the AADT traffic volumes. Equivalent daytime (16 hrs) and nighttime 8 hrs) L_{eq} sound levels were calculated for all complete days (24 hrs) of monitoring. The results are summarized in Table 4.5 below.

The data in the table show that the predicted daytime and nighttime traffic noise levels are most often within the range of the average measured sound levels at each receptor location, indicating the strong influence of road traffic on existing sound levels. However, as noted earlier, there are other factors which impact existing sound levels including institutional, commercial and industrial buildings in close proximity to the receptors.

TABLE 4.5
COMPARISON OF MEASURED WITH PREDICTED TRAFFIC NOISE LEVELS

Location	Address	Monitoring Date	Measured Equivalent Daytime (16 hr) and Nighttimes (8 hr) L_{eq} Sound Level (dBA)		Predicted Leq Sound Levels from AADT Traffic Volumes (dBA)		Closest Receptor Distance (m)
			Day	Night	Day	Night	
1	83 Button Road	Nov 14	62.5	60.1	66	60	18.5
		Nov 15	62.7	58.9			
		Nov 16	61.6	60.9			
2	59 Embassador Court	Oct 11	65.4	61.3	70	63	19
		Oct 12	63.6	60.9			
		Oct 13	63.5	61.4			
3	7651 Keele Street	Nov 6	67.9	65.3	69	62	28.5
		Nov 7	71.3	64.8			
		Nov 8	67.6	61.7			
		Nov 9	63.7	63.2			
4	104 Suger Crescent	Sep 6	59.3	54.1	62	55	46.5
		Sep 7	61.5	57.9			
		Sep 8	63.0	58.6			
5	364 Highway 7	Nov 6	60.1	57.4	71	64	30.5
		Nov 7	60.7	55.0			
		Nov 8	57.3	53.9			
		Nov 9	57.2	57.7			
6	2 Montgomery Court	Sep 12	62.3	58	64	58	50
		Sep 13	60.9	57			
		Sep 14	60.1	58.9			
7	73 Lichfield Road	Sep 12	70.8	66.4	73	66	15
		Sep 13	71.2	N/A			
8	10 Gladiator Road	Sep 12	64.8	59.5	62	56	15
		Sep 13	63.7	58.2			
		Sep 14	62.5	60.4			
9	6921 Highway 7	Nov 7	61.3	53.3	59	52	40
		Nov 8	59.4	54.0			
		Nov 9	58.1	57.4			
10	154 Thornway Avenue	Oct 11	66	62.9	65	59	18
		Oct 12	61.2	57.6			
		Oct 13	59.9	63.6			
11	79 Chilmar Crescent	Oct 11	61.8	61.3	64	57	22.5
		Oct 12	62.7	62.8			
		Oct 13	63.4	62.4			
12	Future Markham Centre	Dec 6	50	45	51	45	147
		Dec 7	48	47			
		Dec 8	52	N/A			
13	231 Valentina Drive	Nov 6	55.7	51.6	58	52	21
		Nov 7	67.0	53.1			
		Nov 8	55.7	48.7			
		Nov 9	55.6	51.8			

N/A- not available

5.0 NOISE IMPACT ANALYSIS FOR BRT AND LRT OPTIONS

For the purpose of the noise impact assessment of the Highway 7 Corridor, the transit options considered are bus rapid transit (BRT) and light rail transit (LRT). To assess the impact of transit traffic noise along the Highway 7 Corridor, including the Markham Centre area, noise levels were predicted for the preferred route, for four scenarios:

Scenario 1	-	noise levels without the transit project (baseline conditions)
Scenario 2	-	noise levels due to the bus transit option
Scenario 3	-	noise levels due to the rail transit option
Scenario 4	-	noise levels due to subway option

Future noise levels were predicted based on estimated AADT volumes since the data presented in Chapter 4 demonstrates that traffic is the predominant noise source along most of the corridor.

5.1 SCENARIO 1 – PREDICTED FUTURE BASELINE NOISE LEVELS

Scenario 1 predicts sound levels based on estimated AADT traffic volumes for Highway 7 for the year 2021. This scenario is considered the baseline situation as it does not include the transit traffic volumes.

Table 5.1 below shows the AADT traffic volumes, without the transit project, for the key road segments along the Preferred route on the corridor for the year 2021.

TABLE 5.1
PREDICTED AADT VOLUMES FOR KEY ROAD SEGMENTS
FOR 2021 (BASELINE/EXISTING TRAFFIC ONLY)

Section		2021 AADT Baseline	
From	**To**		
Highway 7 Alignment			
Martin Grove Road	Kipling Avenue	Day	49075
		Night	5453
Pine Valley Drive	Whitmore Road	Day	43900
		Night	4878
Centre Street	Langstaff Road	Day	45351
		Night	5039
Bayview Avenue	Leslie Street	Day	52378
		Night	5820
Woodbine Avenue	Rodick Road	Day	51949
		Night	5772
Warden Avenue	Kennedy Road	Day	44238
		Night	4915
McCowan Road	Laidlaw Blvd.	Day	37752
		Night	4195
Ninth Line	Markham Bypass	Day	12539
		Night	1393
Keele Street Alignment			
Highway 7	Highway 407	Day	32291
		Night	3588
Centre Street Alignment			
Bathurst Street	Dufferin Street	Day	30110
		Night	3346
Bathurst Street Alignment			
Centre Street	Highway 7	Day	39857
		Night	4429
Town Centre Boulevard South Alignment			
Town Centre Blvd. South	Main Street Unionville	Day	40876
		Night	4542
Kennedy Road Alignment			
Main Street Unionville	Highway 7	Day	49910
		Night	5546

Note: Directional split is 50/50

The key assumptions used for predicting future baseline road traffic noise on the Highway 7 Corridor are as follows:

- the road alignment will remain as presently configured;
- a daytime/nighttime traffic volume split identical to the present; and
- variable annual traffic volume growth rates between road segments ranging from about 9 to 115% as provided by the transportation consultant.

Using the AADT volumes outlined in Table 5.1, traffic sound levels were predicted with the STAMSON model as shown on Table 5.2.

TABLE 5.2
SOUND LEVELS PREDICTED BASED ON AADT VOLUMES FOR ALL ROAD SEGMENTS (BASELINE TRAFFIC ONLY)

	Locations		Predicted Sound Level	Closest Receptor Distance
			2021	(m)
1	83 Button Road	Day	66	18.5
		Night	69	
2	59 Embassador Court	Day	75	19
		Night	68	
3	7651 Keele Street	Day	68	28.5
		Night	62	
4	104 Suger Crescent	Day	63	46.5
		Night	63	
5	364 Highway 7	Day	71	30.5
		Night	65	
6	2 Montgomery Court	Day	66	50
		Night	60	
7	73 Lichfield Road	Day	74	15
		Night	67	
8	10 Gladiator Road	Day	62	15
		Night	67	
9	6921 Highway 7	Day	61	40
		Night	55	
10	154 Thornway Avenue	Day	66	18
		Night	60	
11	79 Chilmar Crescent	Day	61	22.5
		Night	62	
12	Future Markham Centre	Day	53	147
		Night	47	
13	231 Valentina Drive	Day	62	21
		Night	64	

The data in Table 5.2 indicate continuing high sound levels on all segments of the Highway 7 Corridor, with most receptors likely to experience both daytime and nighttime hourly Leq sound levels in excess of 60 dBA, except for the Markham Centre area. Relevant STAMSON data sheets are included in Appendix D.

5.2 SCENARIO 2 – BUS TRANSIT OPTION

Scenario 2 predicts the sound levels on the same road segments for the same year (2021), but with the added influence of the bus transit traffic.

The following key assumptions were used to predict the impact of the bus transit option:

- Highway 7 will be realigned to include two middle transit lanes on all key segments, as shown on figures 5.1 and 5.2, except on Centre Street, Keele Street and Bathurst Street;
- curb lanes will be realigned 5 m outward (i.e. 5 m closer to receptors);
- transit vehicles will be the only traffic in the immediate Markham Centre area;
- an even split (50/50) in east and westbound traffic on Highway 7;
- peak hourly bus transit volumes as shown in Table 5.3;
- the noise emission level for the transit buses is 75 dBA at 15 m distance; and
- bus transit traffic, due to the dedicated lanes and with less bus stops, will be predominately free flowing.

Bus transit noise levels were estimated for each road segment based on the peak daytime and nightime volumes shown in Table 5.3 below:

TABLE 5.3
PEAK HOUR YRTP TRANSIT VEHICLE VOLUMES

Road Segment	Eastbound Buses	Westbound Buses	Eastbound LRT	Westbound LRT
DAYTIME PEAK HOUR (07:00 – 23:00 hrs)				
Entire Highway 7 Corridor and All Diversions from Highway 7	30	30	10	10
NIGHTTIME PEAK HOUR (23:00 – 07:00 hrs)				
Entire Highway 7 Corridor and All Diversions from Highway 7	4	4	4	4

Note: Day/Night = 16 / 8 hour split

FIGURE 5.1

TYPICAL B.R.T. STATION CROSS-SECTION
6-LANE TRAFFIC WITH LEFT TURN LANE

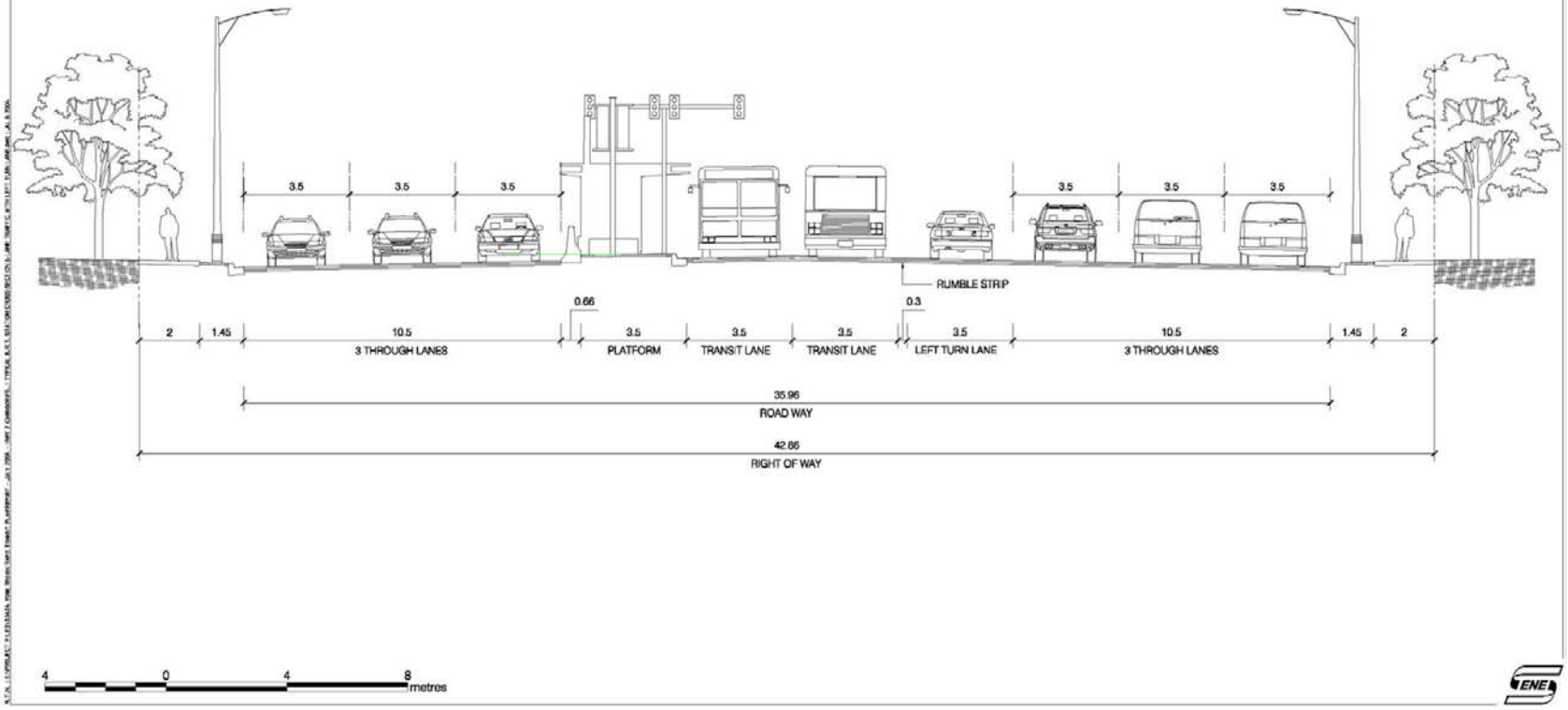
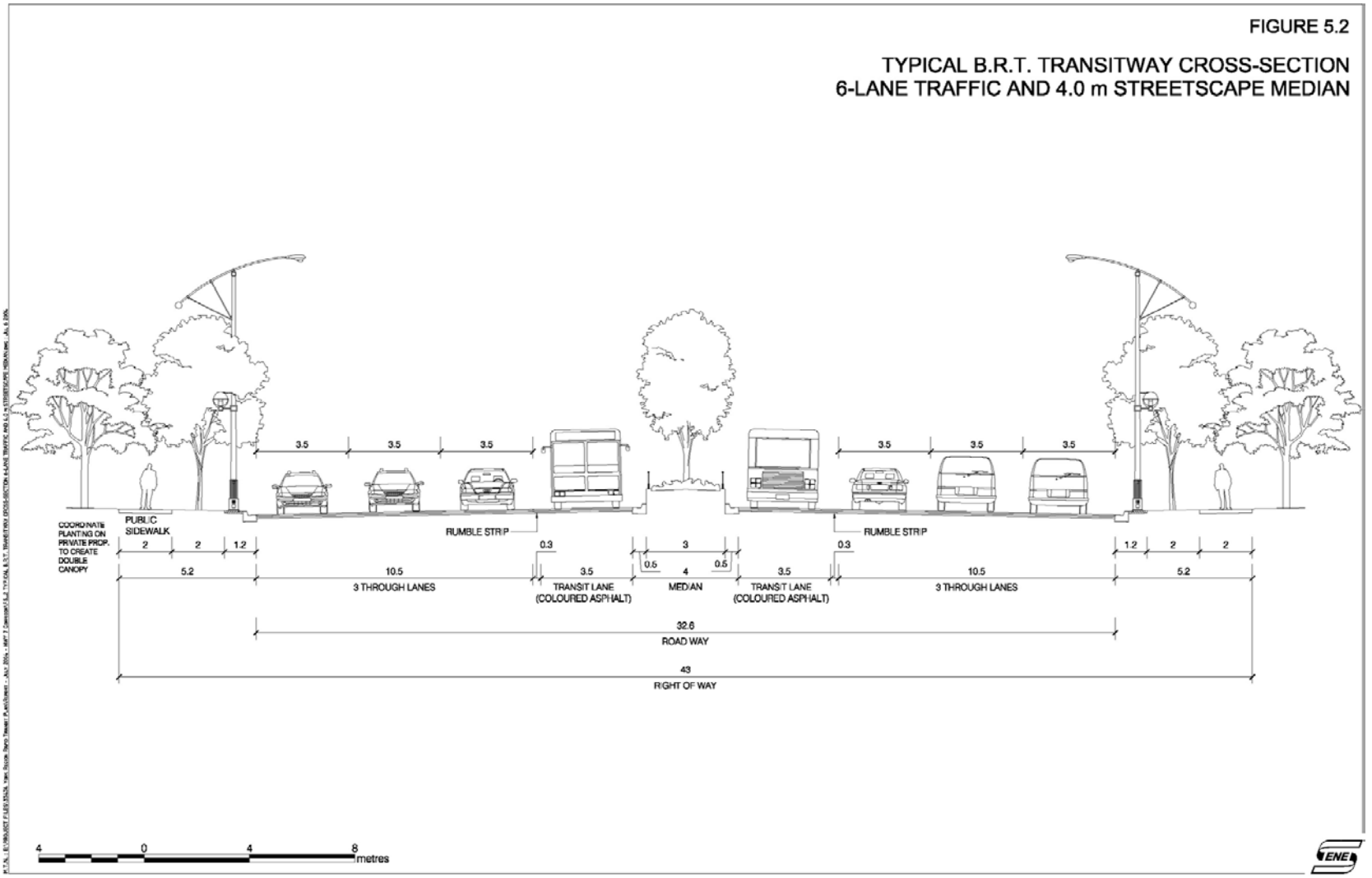


FIGURE 5.2

TYPICAL B.R.T. TRANSITWAY CROSS-SECTION
6-LANE TRAFFIC AND 4.0 m STREETSCAPE MEDIAN



The impact of the bus transit option can be determined by comparing the sound levels for Scenario 1 with Scenario 2.

Table 5.4 shows the traffic volumes, including bus transit volumes, for the preferred route on the Highway 7 Corridor.

TABLE 5.4
PREDICTED 2021 AADT VOLUMES FOR ALL ROAD SEGMENTS ON HIGHWAY 7 (BASELINE TRAFFIC PLUS BUS TRANSIT)

Section			2021 AADT Volumes*	
From	**To**		**Eastbound**	**Westbound**
Highway 7 Alignment				
Martin Grove Road	Kipling Avenue	Day	24845	24845
		Night	2739	2739
Pine Valley Drive	Whitmore Road	Day	22430	22430
		Night	2471	2471
Centre Street	Langstaff Road	Day	22444	22444
		Night	2473	2473
Bayview Avenue	Leslie Street	Day	27358	27358
		Night	3018	3018
Woodbine Avenue	Rodick Road	Day	26712	26712
		Night	2947	2947
Warden Avenue	Kennedy Road	Day	23125	23125
		Night	2548	2548
McCowan Road	Laidlaw Blvd.	Day	17981	17981
		Night	1977	1977
Ninth Line	Markham Bypass	Day	6053	6053
		Night	651	651
Centre Street Alignment				
Bathurst Street	Dufferin Street	Day	15135	15135
		Night	1660	1660
			Northbound	**Southbound**
Keele Street Alignment				
Highway 7	Highway 407	Day	16417	16417
		Night	1803	1803
Bathurst Street Alignment				
Centre Street	Highway 7	Day	19404	19404
		Night	2135	2135
Town Centre Boulevard South Alignment				
Town Centre Blvd. South	Main Street Unionville	Day	19688	19688
		Night	2166	2166
Kennedy Road Alignment				
Main Street Unionville	Highway 7	Day	24422	24422
		Night	2692	2692

*Directional split is 50/50

Based on the traffic data in Table 5.4, traffic sound levels were predicted for the preferred route on the Highway 7 Corridor using the STAMSON model. The modelling results are shown in Table 5.5. The STAMSON data sheets are included as Appendix E.

TABLE 5.5
SOUND LEVELS PREDICTED BASED ON THE AADT VOLUMES FOR ALL ROAD SEGMENTS (BASELINE TRAFFIC PLUS BUS TRANSIT)

Section			Predicted Sound Level	Closest Receptor Distance (m)	
From	**To**		**(dBA)**	**Eastbound**	**Westbound**
Highway 7 Alignment					
Martin Grove Road	Kipling Avenue	Day	66	28.6	15
		Night	69		
Pine Valley Drive	Whitmore Road	Day	75	29	15
		Night	68		
Centre Street	Langstaff Road	Day	64	56.6	36.4
		Night	63		
Bayview Avenue	Leslie Street	Day	72	41	20
		Night	66		
Woodbine Avenue	Rodick Road	Day	66	60.1	40
		Night	60		
Warden Avenue	Kennedy Road	Day	72	28	15
		Night	66		
McCowan Road	Laidlaw Blvd.	Day	61	21	15
		Night	63		
Ninth Line	Markham Bypass	Day	62	30	48.2
		Night	56		
Centre Street Alignment					
Bathurst Street	Dufferin Street	Day	68	15	19
		Night	61		
				Northbound	**Southbound**
Keele Street Alignment					
Highway 7	Highway 407	Day	69	23	34
		Night	63		
Bathurst Street Alignment					
Centre Street	Highway 7	Day	61	17.3	28
		Night	62		
Town Centre Boulevard South Alignment					
Town Centre Blvd. South	Main Street Unionville	Day	61	144*	151*
		Night	53		
Kennedy Road Alignment					
Main Street Unionville	Highway 7	Day	62	15	29
		Night	62		

*It is assumed that all transit traffic will be at about 15 m from the closest receptor. The distance for non-transit traffic is assumed to be 144 m and 151 m.

5.2.1 Bus Transit Noise Impact

Table 5.6 compares the traffic noise levels for Scenario 1 with those of Scenario 2. The data indicate that for all road segments, except for the Town centre Boulvard South Alignment (future Markham Centre area), only a very small (0 to 2 dB) increase in sound levels will be experienced by the closest receptors due to the bus transit option in all road segments along the preferred route of the Highway 7 Corridor. This reflects the minimal contribution of YRTP bus transit volumes as compared to the very high baseline traffic volumes.

Daytime sound levels at the future Markham Centre location are predicted to increase by about 8 dB and nighttime by 6 dB. This is due to the fact that transit will be the only traffic in the immediate vincinity of the Mall. As noted earlier in Chapter 3, mitigation measures are to be considered at this location as the exceedance above the predicted background sound level as expected to be greator than 5 dB.

Housing proposed for the Markham Centre area will most likely consist of low-rise condominiums. In areas where the noise impact exceeds the applicable criteria, warning clauses and mitigation measures such as site planning, architectural design, special building components and/or central air conditioning may be necessary.

TABLE 5.6
COMPARISON OF BASELINE SOUND LEVELS WITH BUS TRANSIT SOUND LEVELS

Section			Predicted baseline sound level	Predicted baseline plus bus transit sound level
From	To		dBA	
Highway 7 Alignment				
Martin Grove Road	Kipling Avenue	Day	66	66
		Night	69	69
Pine Valley Drive	Whitmore Road	Day	75	75
		Night	68	68
Centre Street	Langstaff Road	Day	63	64
		Night	63	63
Bayview Avenue	Leslie Street	Day	71	72
		Night	65	66
Woodbine Avenue	Rodick Road	Day	66	66
		Night	60	60
Warden Avenue	Kennedy Road	Day	74	72
		Night	67	66
McCowan Road	Laidlaw Blvd.	Day	62	61
		Night	67	63
Ninth Line	Markham Bypass	Day	61	62
		Night	55	56
Keele Street Alignment				
Highway 7	Highway 407	Day	68	69
		Night	62	63
Centre Street Alignment				
Bathurst Street	Dufferin Street	Day	66	68
		Night	60	61
Bathurst Street Alignment				
Centre Street	Highway 7	Day	61	61
		Night	62	62
Town Centre Boulevard South Alignment				
Town Centre Blvd. South	Main Street Unionville	Day	53	61
		Night	47	53
Kennedy Road Alignment				
Main Street Unionville	Highway 7	Day	62	62
		Night	64	62

Notes: The closest receptor distances are shown in Table 5.5

5.3 SCENARIO 3 – IMPACT OF LIGHT RAIL TRANSIT OPTION

An approach and methodology similar to the bus transit assessment was used for assessing the impact of the LRT option. The objective again was to compare the noise levels from baseline/existing traffic with that caused by the addition of LRT vehicles.

The following assumptions were used to predict the impact of the LRT option:

- Highway 7 Corridor will be realigned to include two middle transit lanes on all segments (see figures 5.3 and 5.4) except for Keele Street, Centre Street and Bathurst Street which will retain their current configuration;
- curb lanes will be realigned 5 m outward (i.e. 5 m closer to receptors);
- transit vehicles will be the only traffic in the immediate;
- an even split (50/50%) in east and westbound traffic on Highway 7;
- peak hourly LRT volumes as shown on Table 5.3;
- the noise emission level for the LRT vehicles is 76 dBA at 15 m; and
- LRT transit traffic will be predominately free flowing.

FIGURE 5.3

TYPICAL L.R.T. STATION CROSS-SECTION
6-LANE TRAFFIC WITH LEFT TURN LANE

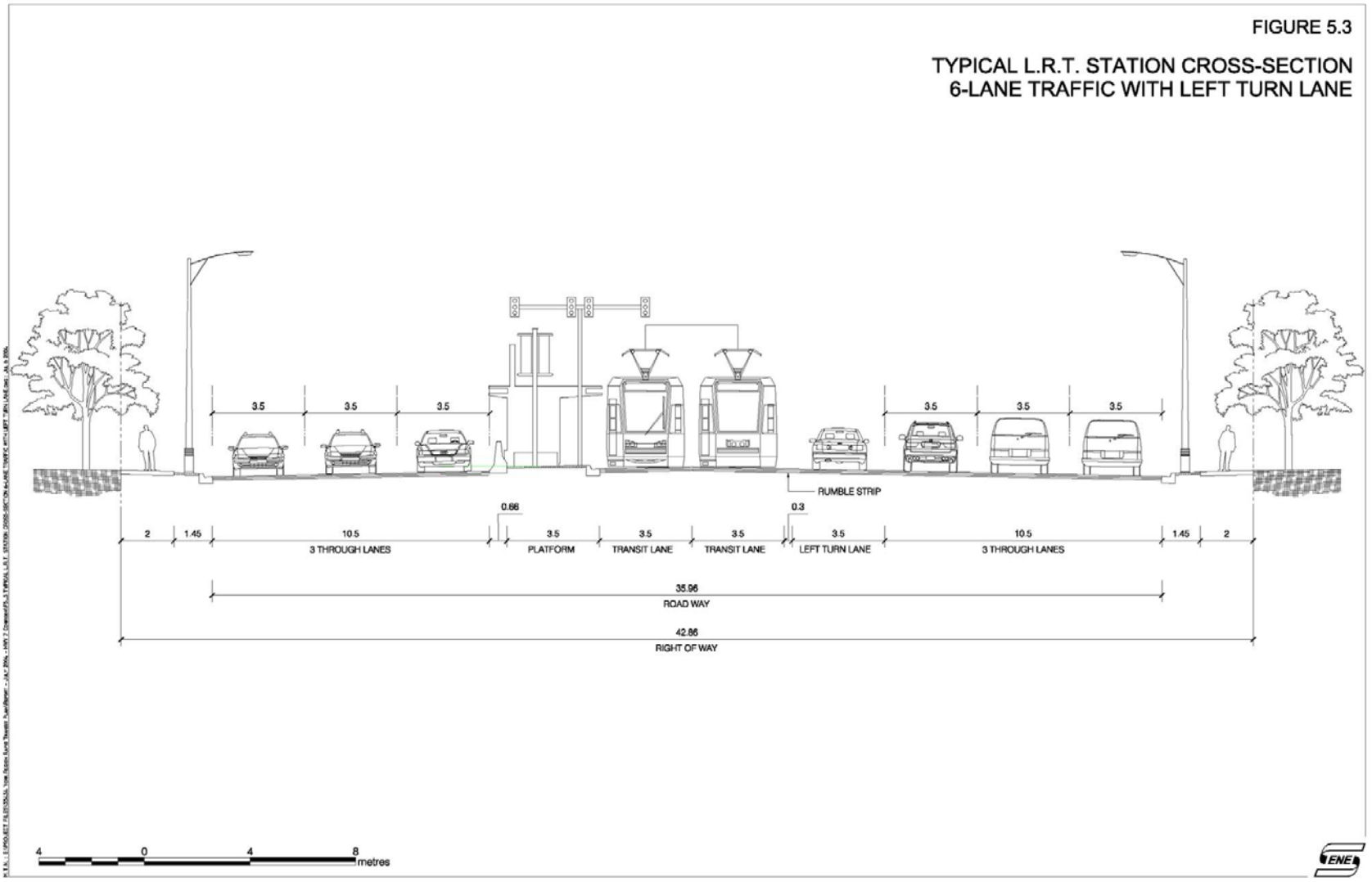


FIGURE 5.4

TYPICAL L.R.T. TRANSITWAY CROSS-SECTION
6-LANE TRAFFIC AND 4.0 m STREETSCAPE MEDIAN

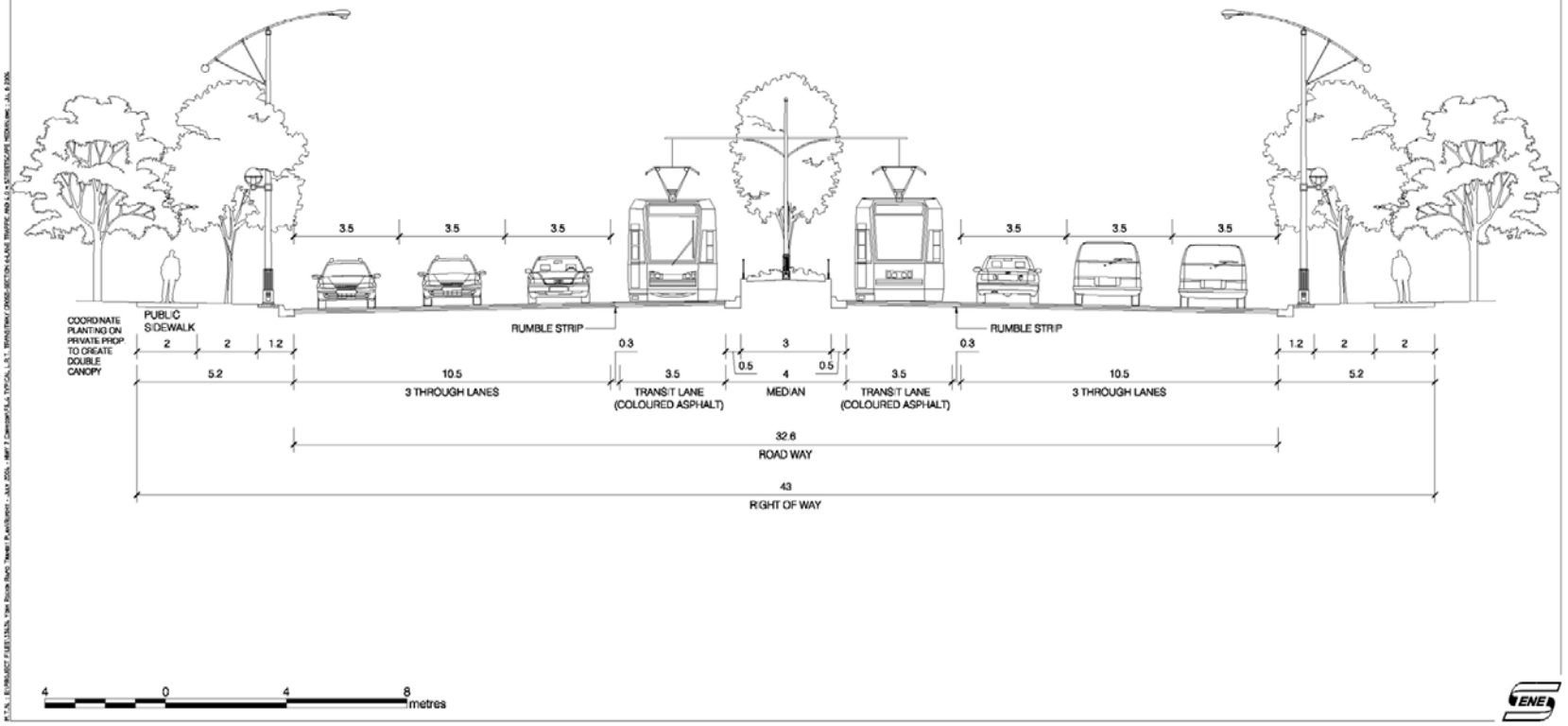


Table 5.7 shows the traffic volumes, including LRT traffic volumes, for the preferred route on the Highway 7 Corridor.

TABLE 5.7
PREDICTED 2021 AADT VOLUMES FOR ALL ROAD SEGMENTS ON HIGHWAY 7 (BASELINE TRAFFIC PLUS LRT)

Section			2021 AADT Volumes*	
From	**To**		**Eastbound**	**Westbound**
Highway 7 Alignment				
Martin Grove Road	Kipling Avenue	Day	24525	24525
		Night	2739	2739
Pine Valley Drive	Whitmore Road	Day	22110	22110
		Night	2471	2471
Centre Street	Langstaff Road	Day	22124	22124
		Night	2473	2473
Bayview Avenue	Leslie Street	Day	27038	27038
		Night	3018	3018
Woodbine Avenue	Rodick Road	Day	26392	26392
		Night	2947	2947
Warden Avenue	Kennedy Road	Day	22805	22805
		Night	2548	2548
McCowan Road	Laidlaw Blvd.	Day	17661	17661
		Night	1977	1977
Ninth Line	Markham Bypass	Day	5733	5733
		Night	651	651
Centre Street Alignment				
Highway 7	Highway 407	Day	14815	14815
		Night	1660	1660
From	**To**		**Northbound**	**Southbound**
Keele Street Alignment				
Bathurst Street	Dufferin Street	Day	16097	16097
		Night	1803	1803
Bathurst Street Alignment				
Centre Street	Highway 7	Day	19084	19084
		Night	2135	2135
Town Centre Boulevard South Alignment				
Town Centre Blvd. South	Main Street Unionville	Day	19368	19368
		Night	2166	2166
Kennedy Road Alignment				
Main Street Unionville	Highway 7	Day	24102	24102
		Night	2692	2692

Note: the directional split is 50/50

The data in the table indicate only a small increase in the overall daily traffic volume, when compared to the baseline traffic data on the same road segments predicted for the same year (see Table 5.1).

Table 5.8 shows predicted sound levels resulting from the addition of LRT vehicles along the preferred route segments. The data in the table show that the highest future sound levels are predicted for the closest receptors in the Pine Valley drive to Whitmore Road segment on the Highway 7 Alignment.

TABLE 5.8
SOUND LEVELS PREDICTED BASED ON THE AADT VOLUMES FOR ALL ROAD SEGMENTS (BASELINE PLUS LRT)

Section			Predicted Sound Level	Closest Receptor Distance (m)	
From	**To**		**(dBA)**	**Eastbound**	**Westbound**
Highway 7 Alignment					
Martin Grove Road	Kipling Avenue	Day	66	28	15
		Night	69		
Pine Valley Drive	Whitmore Road	Day	75	29	15
		Night	68		
Centre Street	Langstaff Road	Day	64	56	38
		Night	63		
Bayview Avenue	Leslie Street	Day	72	40	22
		Night	65		
Woodbine Avenue	Rodick Road	Day	66	60	42
		Night	60		
Warden Avenue	Kennedy Road	Day	72	27	15
		Night	66		
McCowan Road	Laidlaw Blvd.	Day	61	21	15
		Night	63		
Ninth Line	Markham Bypass	Day	61	33	48
		Night	55		
Centre Street Alignment					
Bathurst Street	Dufferin Street	Day	67	15	19
		Night	61		
				Northbound	**Southbound**
Keele Street Alignment					
Highway 7	Highway 407	Day	69	23	34
		Night	63		
Bathurst Street Alignment					
Centre Street	Highway 7	Day	61	17	28
		Night	62		
Town Centre Boulevard South Alignment					
Town Centre Blvd. South	Main Street Unionville	Day	58	144*	151*
		Night	54		
Kennedy Road Alignment					
Main Street Unionville	Highway 7	Day	62	15	29
		Night	62		

*It is assumed that all transit traffic will be at about 15 m from the closest receptor. The distance for non-transit traffic is assumed to be 144 m and 151 m.

Table 5.9 compares the sound levels with and without the LRT vehicles. The data in the latter table show only a marginal increase in sound levels, between 0 and 1 dB, due to the LRT vehicles on all segments of the Highway 7 Corridor, except for the Town centre Boulevard South Alignment (future Markham Centre area).

Daytime sound levels at the future Markham Centre area are predicted to increase by about 5 dB and nighttime sound levels by 7 dB. This is due to the fact that LRT will be the only traffic in the immediate vicinity of the Mall. As noted earlier in Section 5.2.1, mitigation measures are to be considered at this location as the exceedance above the predicted background sound level is expected to be greater than 5 dB.

TABLE 5.9
COMPARISON OF BASELINE SOUND LEVELS WITH LRT TRANSIT SOUND LEVELS

Section			Baseline predicted sound level	Baseline plus LRT predicted sound level
From	To		dBA	
Highway 7 Alignment				
Martin Grove Road	Kipling Avenue	Day	66	66
		Night	69	69
Pine Valley Drive	Whitmore Road	Day	75	75
		Night	68	68
Centre Street	Langstaff Road	Day	63	64
		Night	63	63
Bayview Avenue	Leslie Street	Day	71	72
		Night	65	65
Woodbine Avenue	Rodick Road	Day	66	66
		Night	60	60
Warden Avenue	Kennedy Road	Day	74	72
		Night	67	66
McCowan Road	Laidlaw Blvd.	Day	62	61
		Night	67	63
Ninth Line	Markham Bypass	Day	61	61
		Night	55	55
Keele Street Alignment				
Highway 7	Highway 407	Day	68	69
		Night	62	63
Centre Street Alignment				
Bathurst Street	Dufferin Street	Day	66	67
		Night	60	61

TABLE 5.9 (Cont'd)
COMPARISON OF BASELINE SOUND LEVELS WITH LRT TRANSIT SOUND LEVELS

Section			Baseline predicted sound level	Baseline plus LRT predicted sound level
From	To		dBA	
Bathurst Street Alignment				
Centre Street	Highway 7	Day	61	61
		Night	62	62
Town Centre Boulevard South Alignment				
Town Centre Blvd. South	Main Street Unionville	Day	53	58
		Night	47	54
Kennedy Road Alignment				
Main Street Unionville	Highway 7	Day	62	62
		Night	64	62

Note: The closest receptor distances are shown in Table 5.8

5.4 SUMMARY

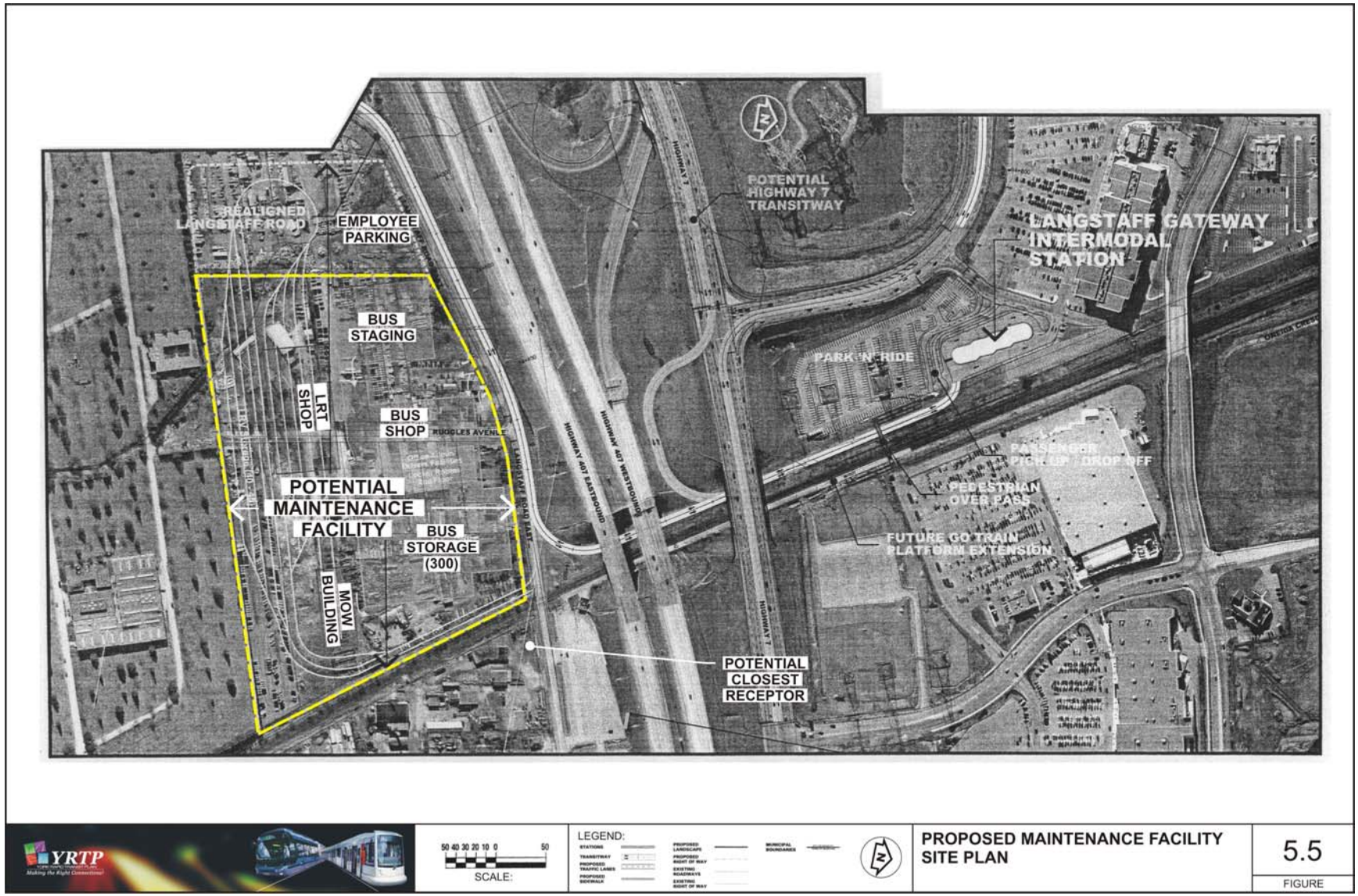
The foregoing discussion indicates that the YRTP, whether based on the bus or LRT option, will not significantly increase traffic volumes on most of the preferred route of the Highway 7 Corridor when compared to predicted baseline traffic volumes for the year 2021. The bus transit option will result in higher traffic volumes than the LRT option.

The future traffic sound levels were predicted using the MOE STAMSON Model. As with current conditions, receptors closest to the roadway are likely to experience the highest sound levels. The Model results indicate only a small (0 to 2 dB) increase in sound levels due to the YRTP. This minimal increase is predicted for both daytime and nighttime hours. This small increase above future background sound levels is well within the 5 dB increase limit for which noise mitigation measures are to be considered as specified in the noise protocol for this project (Appendix A).

The future Markham Centre area is the only area where the predicted transit traffic noise is expected to require noise mitigation measures. Housing proposed for the Markham Centre area will most likely consist of low to medium-rise condominiums. In areas where the noise impact would exceed the applicable criteria for future buildings, development conditions and mitigation measures such as building orientation, architectural design, special building components and/or central air conditioning may be necessary.

5.5 STATIONARY NOISE IMPACT

From a noise perspective, the only significant stationary source associated with the YRTP is the Maintenance Facility proposed for Langstaff Road, between Ruggles Avenue and the Canadian National Railway (C.N.R.) line (see Figure 5.5). An assessment of this facility was previously completed for the Yonge Street Corridor environmental assessment hence this facility is not part of this undertaking.


REALIGNED LANGSTAFF ROAD
EMPLOYEE PARKING
BUS STAGING
LRT SHOP
BUS SHOP
RUGGLES AVENUE
POTENTIAL MAINTENANCE FACILITY
BUS STORAGE (300)
MOW BUILDING
LANGSTAFF ROAD EAST
HIGHWAY 407 EASTBOUND
HIGHWAY 407 WESTBOUND
HIGHWAY 7
POTENTIAL HIGHWAY 7 TRANSITWAY
LANGSTAFF GATEWAY INTERMODAL STATION
PARK 'N' RIDE
PASSENGER PICK UP / DROP OFF
PEDESTRIAN OVER PASS
FUTURE GO TRAIN PLATFORM EXTENSION
POTENTIAL CLOSEST RECEPTOR
YRTP
50 40 30 20 10 0 50
SCALE:
LEGEND:
PROPOSED MAINTENANCE FACILITY SITE PLAN
5.5
FIGURE

6.0 VIBRATION IMPACT ASSESSMENT FOR BRT AND LRT OPTIONS

6.1 APPROACH

The vibration from transit vehicles is usually in the form of ground-borne transmission. For transit vehicles located at grade, the propagation is in the form of surface waves and the assessments are usually evaluated through some form of measurement program.

The vibration character is usually expressed in terms of vertical vibration velocity measured in terms of mm/sec. The decibel description is also applied in vibration evaluations and is usually given by,

$$\text{Vibration Level} = 20 \log (Vv_{ver} / Vv_{ref.}), \text{ dB}$$

Where:

Vv_{ver} is the vertical vibration velocity in mm/sec and Vv_{ref} is the reference value is 1 μm/sec.

The vibration protocol agreement between MOE and TTC will be used for the current analysis. The vibration limit to be used is the vibration velocity of 0.1mm/sec.

The vibration analysis is broken into two parts. The ambient vibration levels from existing traffic along Highway 7 is described in Section 6.2. and the impact of vibration levels from the proposed transitway is summarized in Section 6.3.

6.2 EXISTING VIBRATION LEVELS ALONG HIGHWAY 7, YORK REGION

Background noise levels were measured as part of this study at thirteen (13) locations along the existing Highway 7 as well as along the proposed alternate routes for the highway between Martin Grove Avenue in Vaughn, Ontario and 9th Line in Markham, Ontario. The same 13 locations were chosen for vibration measurements. The vibration levels were measured on the ground surface through a mounted accelerometer. The accelerometer was connected to a vibration meter, whose output drove a paper chart. The whole system was calibrated using a Bruel and Kjaer vibration calibrator. The calibrator produces a level of 10 mm/sec velocity at 160 Hz.

The vertical vibration at each of the 13 locations was collected over a 20-minute period. The period included pass-bys (at various speeds) of cars, vans, buses and trucks of various sizes. The results are shown in Figures 6.1 through 6.13.

The results present a sample of the collected data. The results show that there are no perceptible vibration levels from existing traffic at the closest sensitive receptor locations along the Highway 7 Corridor. Most of the values are well below 0.1 mm/sec. This is as expected since the traffic basically consists of rubberized-tire vehicles and the levels from such traffic is negligible unless there are some anomalies, such as an expansion joint, in the roadbed. The only vibration sensation that was detected by the transducer occurred when the equipment operator tapped adjacent to it.

FIGURE 6.1
VIBRATION AT LOCATION 1, 83 Button Road

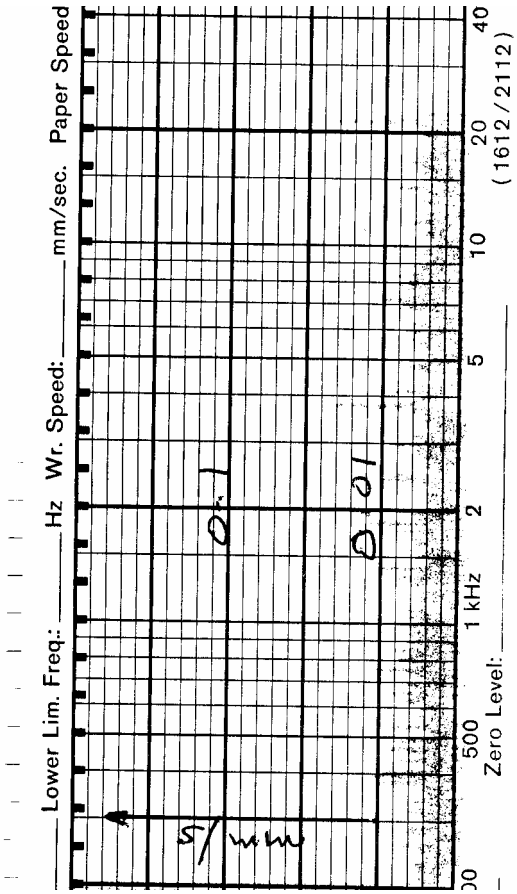


FIGURE 6.2
VIBRATION AT LOCATION 2, 59 Embassador Court

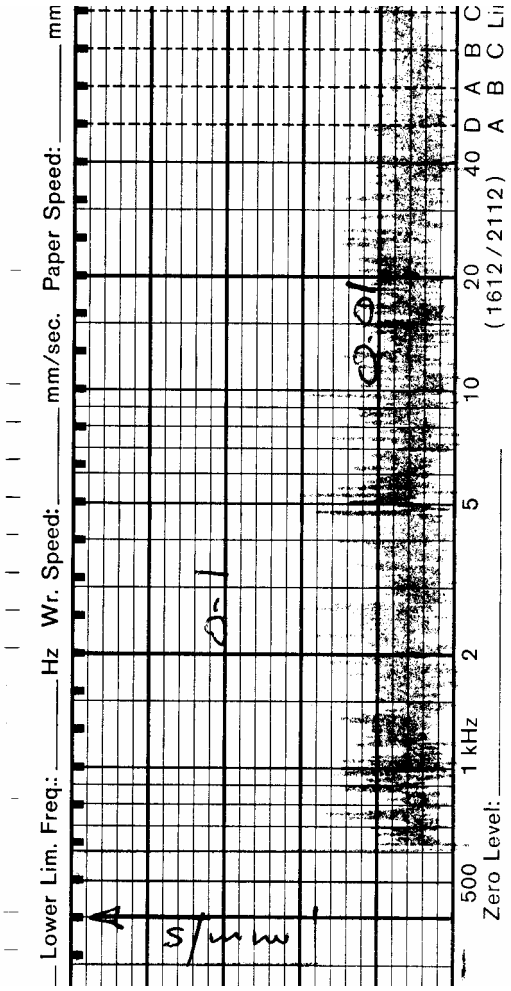


FIGURE 6.3
VIBRATION AT LOCATION 3, 7651 Keele Street

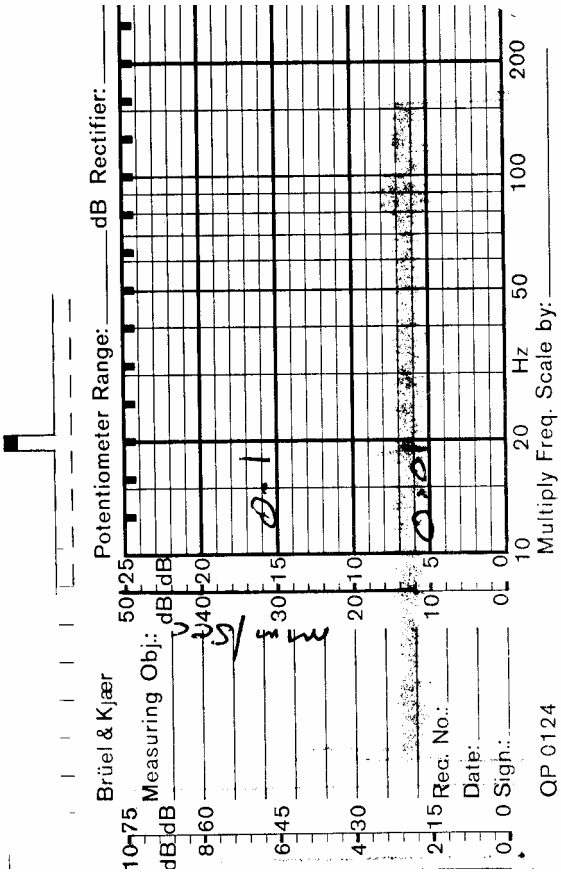


FIGURE 6.4
VIBRATION AT LOCATION 4, 104 Suger Crescent

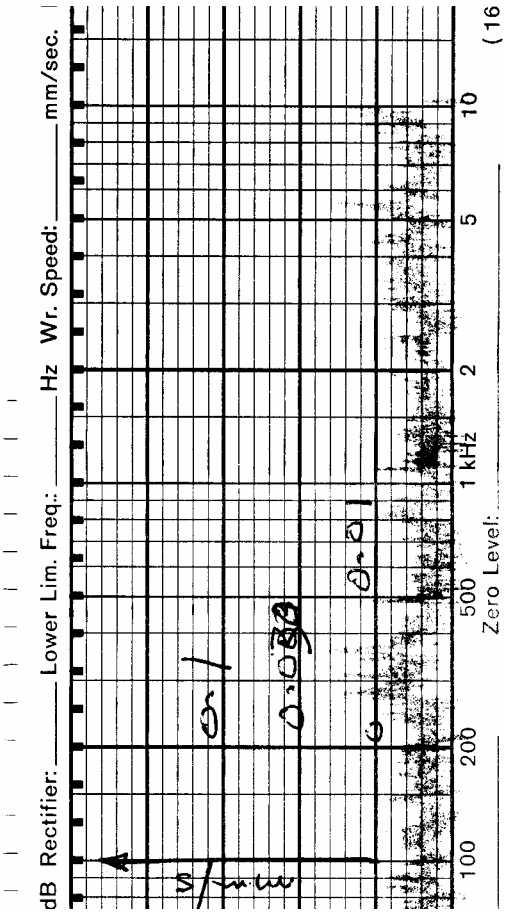


FIGURE 6.5
VIBRATION AT LOCATION 5, 349 Highway 7

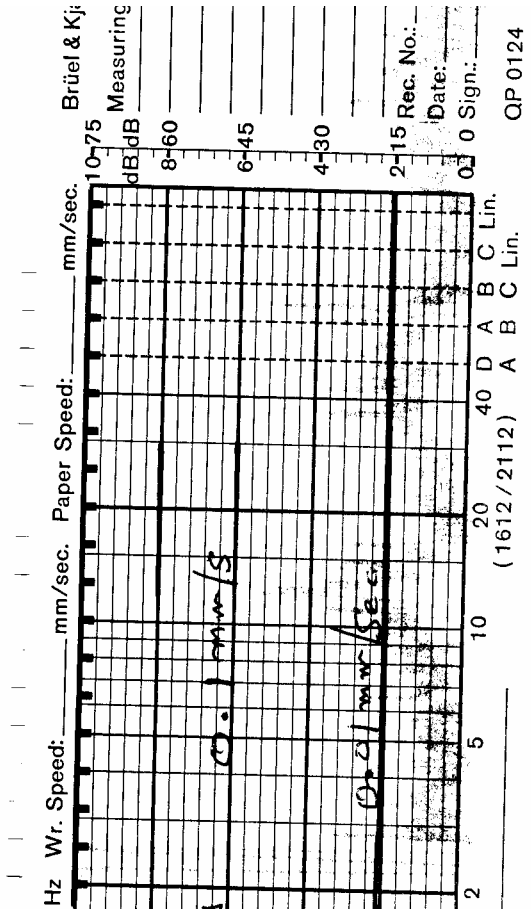


FIGURE 6.6
VIBRATION AT LOCATION 6, 2 Montgomery Court

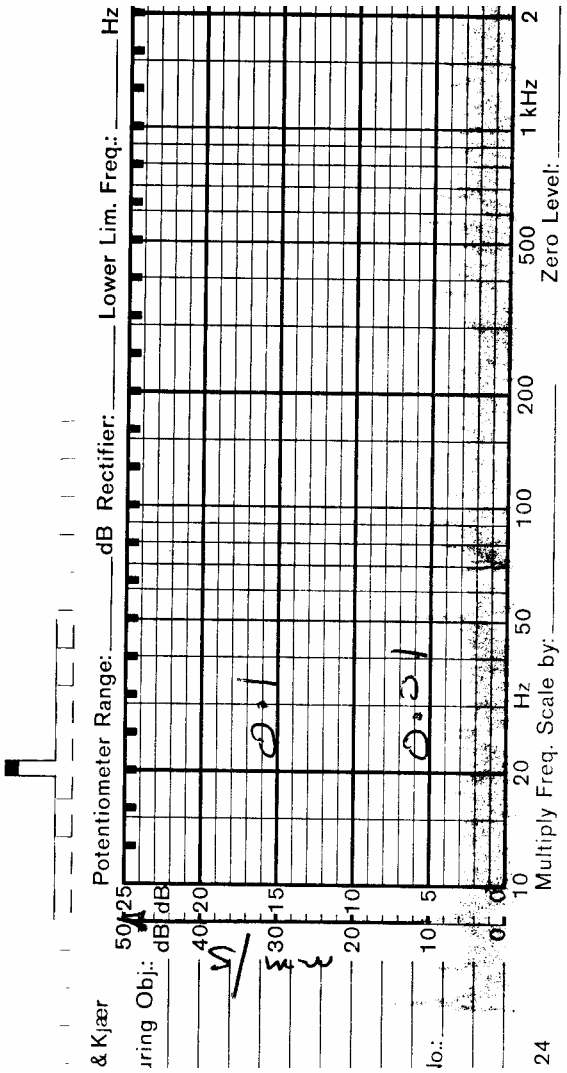


FIGURE 6.7
VIBRATION AT LOCATION 7, 73 Lichfield Road

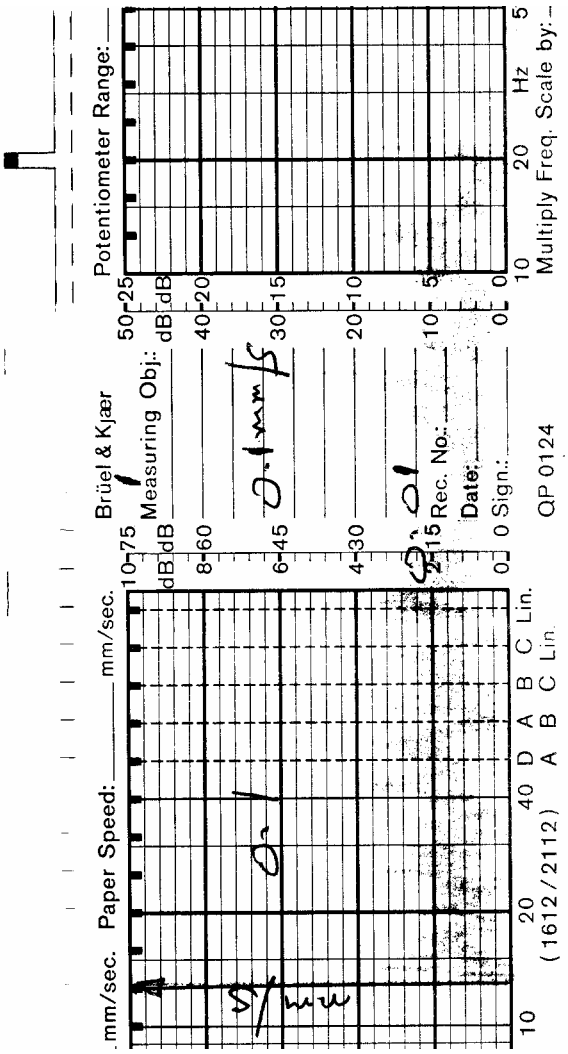


FIGURE 6.8
VIBRATION AT LOCATION 8, 10 Gladiator Road

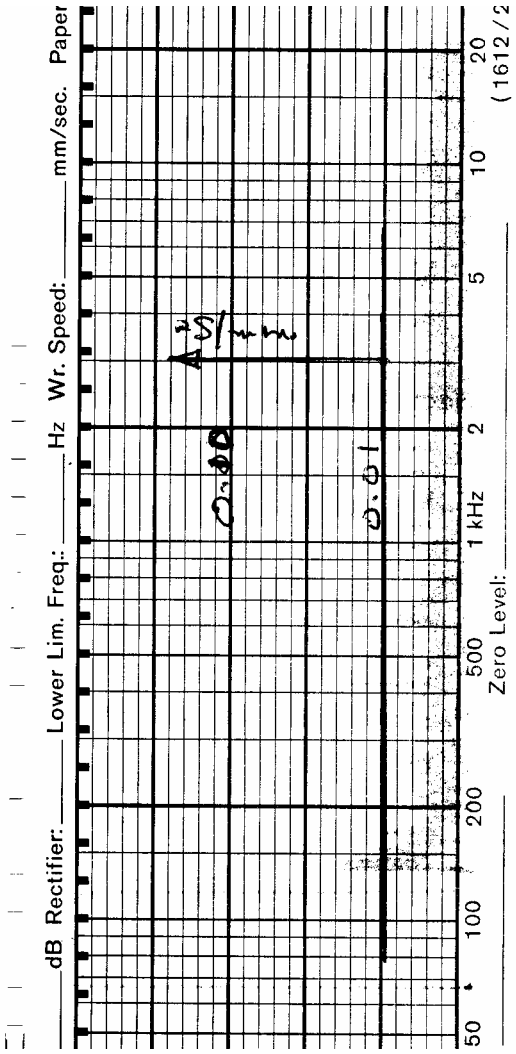


FIGURE 6.9
VIBRATION AT LOCATION 9, 6921 Highway 7

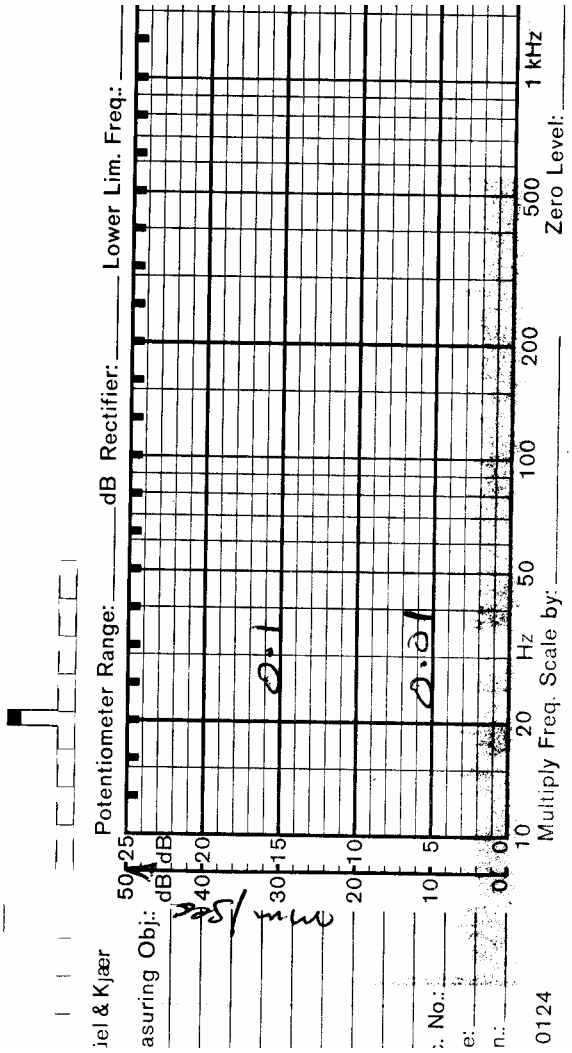


FIGURE 6.10
VIBRATION AT LOCATION 10, 154 Thornway Avenue

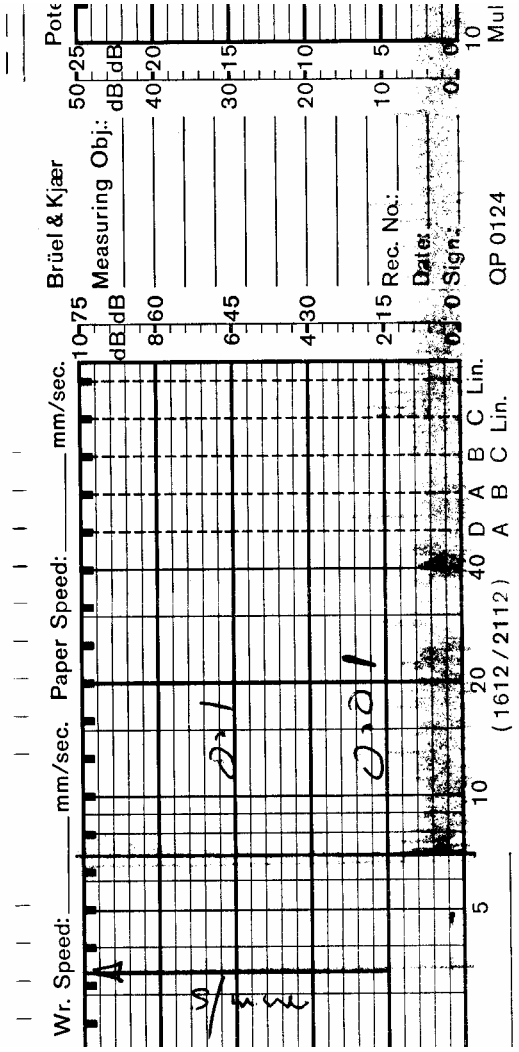


FIGURE 6.11
VIBRATION AT LOCATION 11, 79 Chilmar Crescent

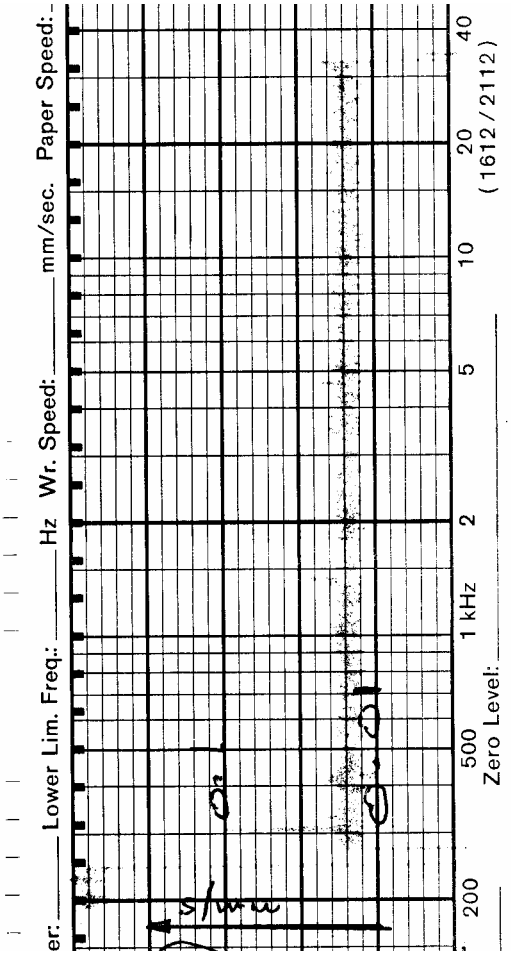


FIGURE 6.12
VIBRATION AT LOCATION 12, Future Markham Centre

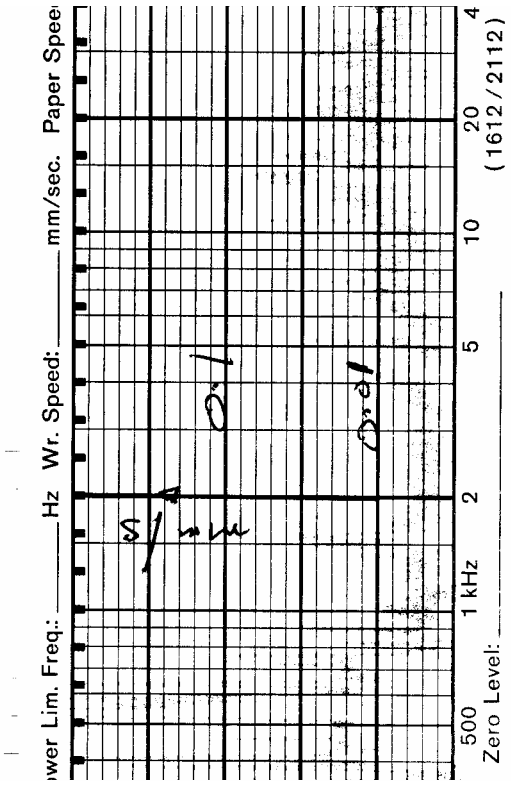
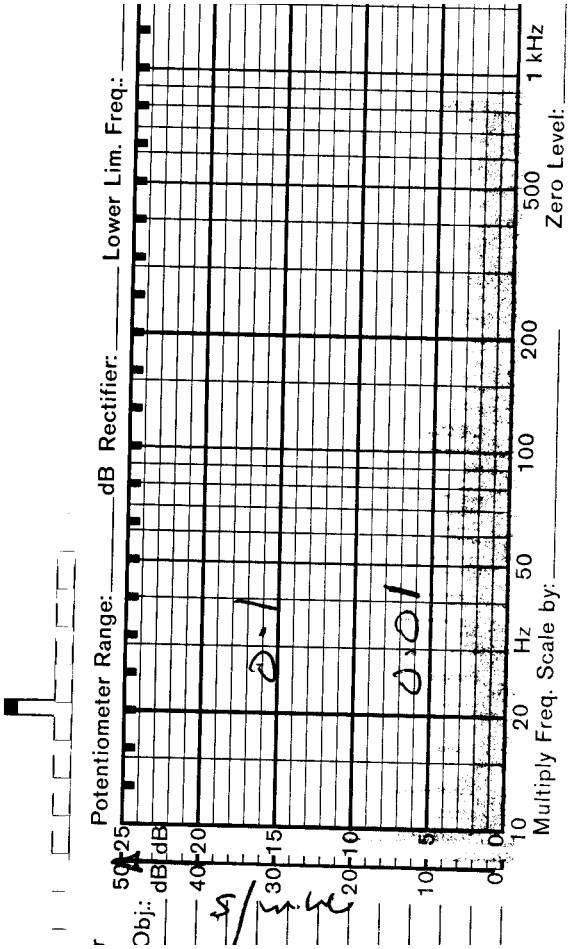


FIGURE 6.13
VIBRATION AT LOCATION 13, 231 Valentina Drive



6.3 VIBRATION IMPACT FROM PROPOSED TRANSITWAY ALONG HIGHWAY 7 CORRIDOR

The vibration impacts are developed by applying the guidelines contained in US Federal Transit Administration's guideline manual for Transit Noise and Vibration Impact Assessment. The process and results are summarized below.

The procedure for the evaluation is based on using the basic level at a particular distance and then adjusting for various conditions. The impact for rubber tired vehicles is negligible and hence the assessment is undertaken only for light rail vehicles. The vehicles will be traveling at three different speeds along different sections of the proposed route: i) 60 km/h (37.5 mph); ii) 70 km/h (43.75 mph); and iii) i) 80 km/h (50 mph). The results for rail vehicles are summarized in Tables 6.1, 6.2 and 6.3 below.

TABLE 6.1
VIBRATION IMPACT EVALUATION FOR LIGHT-RAIL VEHICLES
Speed = 60 kmph (37.5 mph)

Condition	Continuous Track	Cross Over joints
Receptor @ 10 m from track centerline	77 dB	77 dB
Speed adjustment for 37.5 mph	-2.5	-2.5
Vehicles with soft suspension and resilient wheels	0	0
Cross-overs	0	+10
Floating Slab for cross-overs	0	-15
High resilient fasteners	-5	-5
Overall Level @ 10 metre	**69.5 dB**	**64.5 dB**
Final Vibration Velocity @ 10 metre	**0.076 mm/sec**	**0.043 mm/sec**

The results in Table 6.1 show that the impact from the light-rail vehicle is below the limit of 0.1 mm/sec at a distance of 10 from the track center line for a vehicle speed of 60 kmph. The values would further diminish as one moves further away from the track.

TABLE 6.2
VIBRATION IMPACT EVALUATION FOR LIGHT-RAIL VEHICLES
Speed = 70 kmph (43.75 mph)

Condition	Continuous Track	Cross Over joints
Receptor @ 10 m from track centerline	77 dB	77 dB
Speed adjustment for 43.75 mph	-1.2	-1.2
Vehicles with soft suspension and resilient wheels	0	0
Cross-overs	0	+10
Floating Slab for cross-overs	0	-15
High resilient fasteners	-5	-5
Overall Level @ 10 metre	**70.8 dB**	**65.8 dB**
Final Vibration Velocity @ 10 metre	**0.088 mm/sec**	**0.0495 mm/sec**

The results in Table 6.2 show that the impact from the light-rail vehicle is below the limit of 0.1 mm/sec at a distance of 10 from the track center line for a vehicle speed of 70 kmph. The values would further diminish as one moves further away from the track.

TABLE 6.3
VIBRATION IMPACT EVALUATION FOR LIGHT-RAIL VEHICLES
Speed = 80 kmph (50 mph)

Condition	Continuous Track	Cross Over joints
Receptor @ 10 m from track centerline	77 dB	77 dB
Speed adjustment for 43.75 mph	0	0
Vehicles with soft suspension and resilient wheels	0	0
Cross-overs	0	+10
Floating Slab for cross-overs	0	-15
High resilient fasteners	-5	-5
Overall Level @ 10 metre	**72.0 dB**	**67.0 dB**
Final Vibration Velocity @ 10 metre	**0.1 mm/sec**	**0.057 mm/sec**

The results in Table 6.2 show that the impact from the light-rail vehicle is 0.1 mm/sec or below the limit of 0.1 mm/sec at a distance of 10 from the track center line for a vehicle speed of 80 kmph. The values would further diminish as one moves further away from the track.

7.0 NOISE AND VIBRATION IMPACT OF SPADINA SUBWAY EXTENSION

YRTP proposes to extend the Spadina Subway from York University to Highway 7 in the City of Vaughn along Jane Street. The current investigation focussed on the ground-borne vibration from the underground subway and the resulting noise and vibration levels were evaluated at potential adjacent receptors, located along the subway alignment.

This report presents the results of the above evaluation. The assessment was conducted as per the guidelines generally applied for evaluating the noise and vibration levels from rail transit trains and outlined in USDOT, 1995.

Similar assessment techniques were applied in other Toronto Transit Commission (TTC) subway projects (Wilson, Ihrig & Associates, Inc., March 1990 and October 1992). These procedures were accepted by the regulatory bodies.

Section 7.1 presents the acceptable noise and vibration criteria used for this assessment. The groundborne noise and vibration levels, expected from the subway operations along the proposed alignment, were estimated and presented in Section 7.2. Section 7.2 also attempts to identify any vibration sensitive areas and individual structures along the alignment that may require mitigation measures to assure acceptable ground-borne vibration and noise levels. The alignment is in a tunnel (underground) for the entire distance, 6+415.416 (Point of transfer from TTC to YRTP) until 9+838.677 (point of Termination of the route). There are three stations with two of the stations with 172 m of cross-over track, within the proposed alignment of the YRTP plans.

7.1 NOISE AND VIBRATION CRITERIA

7.1.1 General

The noise and vibration criteria that were developed to regulate new rail transit line have the following goals:

1) minimize the adverse impact of system operations and construction on the community by controlling transmission of noise and vibration to adjacent properties, and
2) provide noise and vibration controls that are economically feasible and use appropriate technology.

The community noise and vibration impact criteria provide a basis from which to assess impact and to determine the type and extent of noise and vibration attenuation measures necessary to

avoid annoyance in the general community and minimize interference with any particularly sensitive activity. The appropriate criteria are determined based on the type of land use or occupancy as well as existing ambient noise and vibration levels. Obviously, a noise of a given magnitude is more objectionable in a quiet residential area at night than in a busy commercial area during the night.

YRTP's Spadina Subway Extension Project is situated, basically, in a virgin area with minimal land use. The adjacent land use is primarily commercial and industrial properties with no existing residential usage.

In areas where the transit line is in subway, both ground-borne noise and ground-borne vibration might be perceptible. Ground-borne noise is a rumbling noise perceived inside a building which is due to the radiation of noise from the vibration floor and sometimes walls during a train passby. For at-grade operations, airborne noise will usually mask ground-borne noise.

Two basic types of noise criteria, a) based on an allowable maximum passby noise level and b) on noise exposure limit, are usually applied in determining the noise impact. Generally, the Ontario Ministry of Environment Publication LU-131, "Guidelines for Noise Control in Land-Use Planning", addresses the noise exposure type of metric, not specifically addressing transit system noise, while transit industry guidelines address the maximum passby noise level. Noise exposure criteria are not directly applicable to the Spadina Extension train operations. Also, because of the averaging over time which is characteristics of the noise exposure criteria, a maximum passby noise limit is more appropriate for transit and other types of periodically recurring noise.

YRTP's proposed expansion alignment is basically in a subway tunnel with three stations.

These criteria are outlined in USDOT, 1995. The noise and vibration limits, contained in this reference are based on the following two standards: ANSI 53.29-1983 and ISO-2361-2, 1989.

7.1.2 Ground-borne Noise Criteria

Table 7.1 indicates the pertinent criteria for maximum ground-borne noise due to transit train operations applicable to the land uses and types of buildings and occupancies located along the YRTP's Spadina Subway Extension route. Ground-borne noise which complies with the applicable criteria will not be inaudible in all cases, but should be low enough that no significant intrusion or annoyance will occur.

A range for the maximum ground-borne noise limit is given in some cases to permit the designer to adjust the design criterion to be suitable for the environment and location of the building.

7.1.3 Ground-borne Vibration Criteria

Rail transit vehicles also create ground-borne vibration. And hence, in addition to noise criteria, limits defining acceptable levels of vibration have been developed. Vibration criteria stated in terms of overall vibration velocity level have been found to be adequate and appropriate for application to new rail transportation systems and provide a basis for assessing potential impact or complaints relative to perceptible or audible ground-borne vibration.

Table 7.1 presents the appropriate criteria for the maximum ground-borne vibration for various types of buildings and occupancies in terms of vibration velocity re 1.0 micro in/sec. The criteria apply to the vertical vibration of the ground surface or floor surfaces within the buildings.

Ground-borne vibration which complies with these design criteria will not be imperceptible in all cases; however, the level will be sufficiently low so that no significant intrusion or annoyance should occur. In most cases, there will be vibration from street traffic, other occupants of a building, or other sources, which will create vibration that is equivalent or greater in level than vibration from the transit train pass-bys.

TABLE 7.1
GROUND-BORNE NOISE AND VIBRATION CRITERIA [USDOT, 1995]

Land Use Category	Ground-Borne Vibration Impact Levels, VdB re. 1 µin.	Ground-Borne Noise Impact Levels, dB re. 20 µPa.
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 dB[1]	---[2]
Category 2: Residences and buildings where people normally sleep.	72	35 dBA
Category 3: Institutional land uses with primarily daytime use.	75	40 dBA

Notes:

1. This limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
2. Vibration-sensitive equipment is not sensitive to ground-borne noise.

7.2 NOISE AND VIBRATION IMPACT OF YRTP'S PROPSOED SUBWAY PROJECT

Subway transit systems generate ground-borne vibration which is transmitted from the track structure to the adjacent buildings via the intervening soil/rock strata. The wheel/rail interface is the source, where wheels rolling on rails cause the ground-borne vibrations. The level of vibrations is strongly dependent on:

a) degree of roughness or smoothness of the wheels and rails;
b) the stiffness of the transit vehicle primary suspension;
c) the train speed;
d) track fixation type; and
e) geologic strata that supports the track support.

The ground-borne noise produced by the vibrations can be perceived inside buildings as a low-pitched rumbling sound. This is primarily due to the excitation of the building's walls, floors and ceilings by the ground-borne vibrations. It must also be pointed out that the ground-borne vibration level is usually of very low amplitude and hence the potential for structural damage is not possible.

The current analysis is based on a 6-car subway train travelling at a speed of 80 kph on standard track with standard TTC resilient direct fixation fasteners in a concrete single or-double-box tunnel. The maximum speed at station areas is assumed to be 56 kph. The floating slab track (i.e, double tie trackbed system) is considered as a possible control method if necessary.

The subway alignment was obtained from Figure 7.1 prepared by YRTP. The subway extension runs westward from York University along Steeles Avenue to Jane Street and travels north along Jane Street past Highway 7 in the City of Vaughn. There are three stations along the proposed route and two of the stations are equipped with 172 m cross-over track. There are no existing residential receptors along the proposed route.

The procedure outlined in USDOT, 1995 was used to predict the ground-borne noise and vibration levels at five (5) selected locations. The results are outlined in Table 7.2 below.

The results of Table 7.2 indicate that with standard fasteners, the ground-borne vibration levels are exceeded at two locations (7+350 and 7+950). The vibration levels are satisfied at all locations if the proposal allows for a double tie trackbed system.

A similar result was seen for ground-borne noise levels. However, even with a double tie trackbed system, the noise level is marginally exceeded at the 7+950 location.

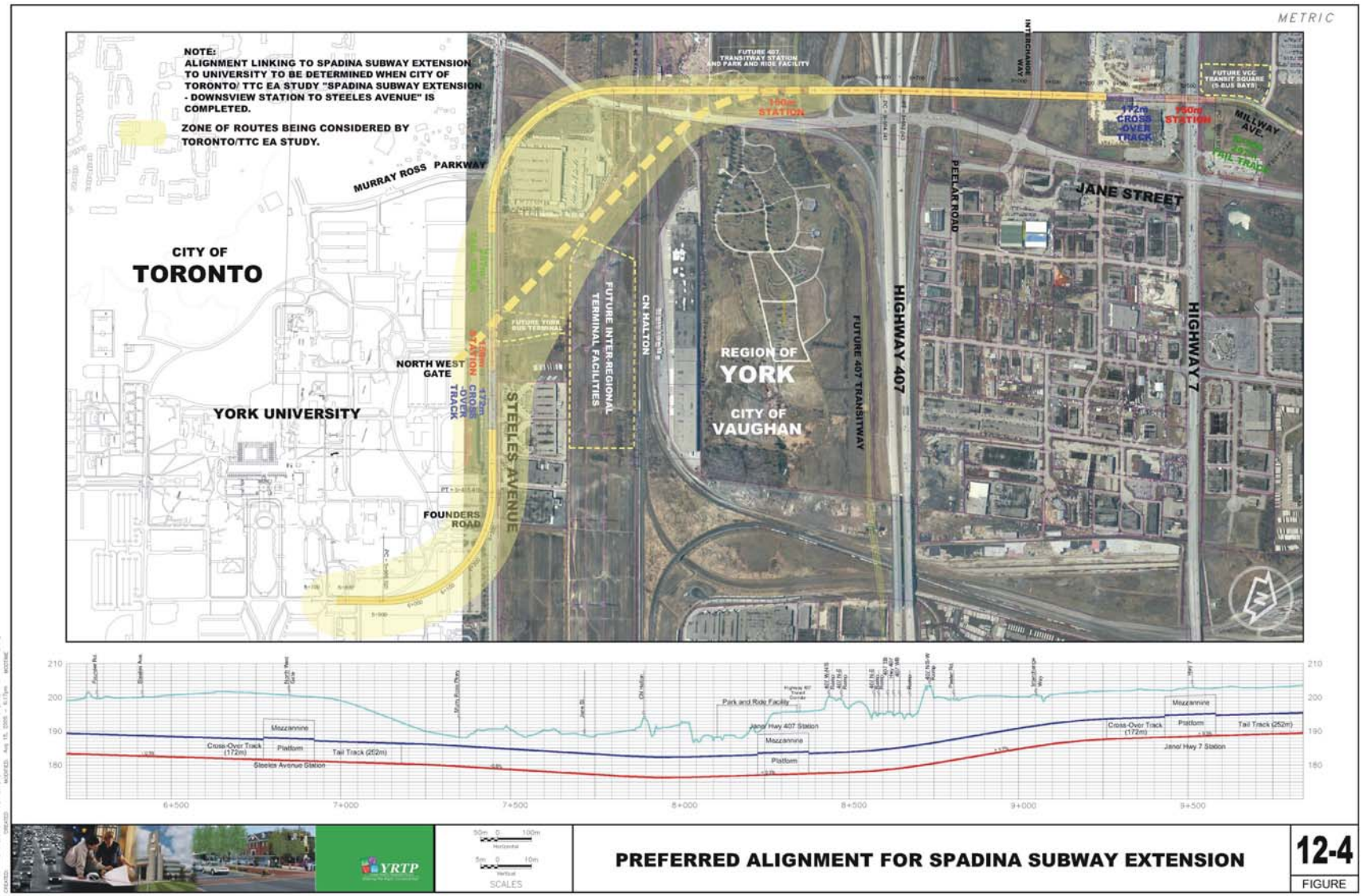

METRIC
NOTE:
ALIGNMENT LINKING TO SPADINA SUBWAY EXTENSION TO UNIVERSITY TO BE DETERMINED WHEN CITY OF TORONTO/ TTC EA STUDY "SPADINA SUBWAY EXTENSION - DOWNSVIEW STATION TO STEELES AVENUE" IS COMPLETED.
ZONE OF ROUTES BEING CONSIDERED BY TORONTO/TTC EA STUDY.
MURRAY ROSS PARKWAY
CITY OF TORONTO
YORK UNIVERSITY
NORTH WEST GATE
FUTURE YORK RUG TERMINAL
FUTURE INTER-REGIONAL TERMINAL FACILITIES
CN HALTON
STEELES AVENUE
FOUNDERS ROAD
FUTURE 407 TRANSITWAY STATION AND PARK AND RIDE FACILITY
INTERCHANGE WAY
FUTURE VCC TRANSIT SQUARE (5 BUS BAYS)
MILLWAY AVE.
PEELAR ROAD
JANE STREET
HIGHWAY 407
HIGHWAY 7
REGION OF YORK
CITY OF VAUGHAN
FUTURE 407 TRANSITWAY
Park and Ride Facility
Mezzanine
Platform
Cross-Over Track (172m)
Tail Track (252m)
Steeles Avenue Station
Jane/ Hwy 407 Station
Jane/ Hwy 7 Station
6+500
7+000
7+500
8+000
8+500
9+000
9+500
210
200
190
180
YRTP
SCALES
PREFERRED ALIGNMENT FOR SPADINA SUBWAY EXTENSION
12-4
FIGURE

TABLE 7.2
SUMMARY OF PREDICTED MAXIMUM GROUND-BORNE NOISE AND VIBRATION LEVELS

Location	Type of Structure	Distance from Track, (m)	Train Speed, kph	Ground-borne Vibration, VdB re 1 µin			Ground-borne Noise, dBA re. 20 µPa		
				Allowable	With Standard ties	With Double tie system	Allowable	With Standard ties	With Double tie system
6+500	Commercial	201	80	75	62	52	40	30.0	20.0
6+650	Commercial	177	56	75	57	47	40	24.9	14.9
7+350	Commercial	10	80	75	82	72	40	50.0	40
7+950	Commercial	29	80	75	76	66	40	52.0	42
9+350	Commercial	15	56	75	75	65	40	43.4	33.4

7.3 CONCLUSIONS

The projected ground-borne noise and vibration levels were evaluated along the proposed YRTP Spadina Subway extension project.

Allowable limits for noise and vibration were established following conventional procedures. Standard procedures were applied using USDOT, 1995 to evaluate the projected levels. The impact assessment shows that with double tie track bed system, the vibration levels are within the allowable criteria, but the noise level exceeded the allowable limit at a single location.

8.0 CONCLUSIONS

The following key conclusions are drawn from the preceding information:

- the Highway 7 Corridor is a heavily travelled route;
- a comparison of sound levels predicted from traffic with measured sound levels indicate that traffic noise is the dominant source of sound throughout most of the route;
- the increase in future traffic on the Highway 7 Corridor due to the YRTP is expected to be small in most instances based on the predicted traffic volumes for buses and LRT;
- the increase in sound levels due to YRTP related vehicles is expected to be marginal to none, that is, between 0 and 1 dB at the closest receptors for both bus and LRT options for all segments, except for the area of the future Markham Centre, where the exceedance may be as high as 8 dB;
- noise mitigation measures are required in the Markham Centre area as the increases in sound levels are higher than the 5 dB increase required for the consideration of mitigation, as specified in the MOE approved protocol;
- there is no perceptible vibration levels from existing traffic at the closest receptor locations along the Highway 7 Corridor;
- vibration impacts from rubber tired vehicles are expected to be neglible;
- modelling of vibration levels from proposed LRT vehicles indicate that the predicted impact is expected to be below the protocol limit of 0.1 mm/sec at the receptor locations;
- the land use adjacent to the proposed Spadina Subway Extension is primarily commercial and industrial with no existing residential usage; and
- the analysis for the Spadina Subway Extension shows that with a double tie trackbed system the vibration levels are within the allowable criteria, but the noise level marginally exceeded the allowable limit, by 2 dB, at a single location.

9.0 REFERENCES

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USDOT, Washington DC 1995. *Transit Noise and Vibration Impact Assessment.* Federal Transit Administration. April.

Wilson, Ihrig & Associates, Inc. 1990. *Assessment of Noise and Vibration Impact for the Spadina Subway Extension Project*. March.

Wilson, Ihrig & Associates, Inc. 1992. *TTC Yonge-Spadina Subway Loop Environmental Assessment - Assessment of Noise and Vibration Impact*. October.

APPENDIX A

- **NOISE GUIDELINES**
- **SOUND LEVEL TERMINOLOGY**

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29 April 2003

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M4V IL5

RE: Noise and Vibration Protocols for York Region Transit Study

Dear Mr. Krawczyniuk:

Further to our discussion today on my letter dated 17 April, 2003, we are pleased to provide the revised protocols for guiding the noise and vibration work related to the above mentioned project. As we have already attached copies of the relevant protocols to the 17 April letter, these are not included again. The following table summarizes the key aspects of the protocols/methodologies we discussed.

We are proposing that for assessing the impacts of this project, the following approach be adopted:

1. for existing/future noise, the impact be established based on the higher of either a daytime limit of 50 dBA or existing levels, and that nighttime limits be based on the higher of either 45 dBA or existing levels, determined either by traffic noise predictions and/or measurements;
2. that mitigation be considered if the existing established sound levels at the closest receptor be exceeded by > 5 dBA;
3. stationary noise sources be assessed in accordance with NPC-205;
4. construction noise be assessed in accordance with NPC-115; and
5. vibration impact be assessed in accordance with the MOEE/TTC Protocol.

We trust that these revisions are acceptable to you.

Yours very truly

SENES Consultants Limited

Frederick D. Bernard

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Senior Environmental Specialist

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29 April 2003
Letter to Mr. Roman Krawczyniuk (Continued)

Component	Protocol	Procedure	Receptor Criteria	Mitigation
Existing/Future Noise	MTO/MOE	Prediction and measurements	Objective for outdoor sound levels is the higher of the Leq 55 dBA or existing ambient	Considered when the ambient is exceeded by > 5 dBA
	MOEE/TTC	Prediction is preferred to individual measurements	55 dBA or the ambient for daytime and 50 dBA for nighttime. 80 dBA for single train passby	Will be Incorporated when limits are exceeded by more than 5 dBA
	Cumberland Transitway	STAMSON predictions	Maximum desirable levels are: 55 dBA for daytime and 50 dBA for nighttime	0-5 dba (no action); > 5 dBA increase (consider mitigation).
	NPC-205	Existing measured background or traffic	Level established through measurement or prediction	
Stationary Noise Sources	MTO/MOE	Not addressed	Not addressed	Not addressed
	MOEE/TTC	Predicted in accordance with NPC-205	As per NPC-205	
	Cumberland Transitway	Not specified	Not specified	Not specified
	NPC-205	Measurements and/or predictions	For an urban area, For daytime, 50 dBA or resulting noise from road traffic and industry; for nighttime, 45 dBA or noise resulting from traffic and industry	Any exceedance above the limit must be mitigated
Construction Noise	MTO/MOE	Commitments to be included in E.A. documents; sound level criteria for construction equipment outlined in NPC-115	NPC-115 limits	
	MOEE/TTC	To be based on Noise Control Guideline for Class Environmental Assessment of Undertakings	To be based on Noise Control Guideline for Class Environmental Assessment of Undertakings	To be based on Noise Control Guideline for Class Environmental Assessment of Undertakings

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29 April 2003
Letter to Mr. Roman Krawczyniuk (Continued) ***Page 3***

Component	Protocol	Procedure	Receptor Criteria	Mitigation
	Cumberland Transitway	Not specifically stated	Not specifically stated	
	NPC-115	Noise emission measurements or manufacturers data	Sound Emission Standards for specific equipment	
Ground Vibration	MTO/MOE	Not Addressed	Not Addressed	Not Addressed
	MOEE/TTC	Predicted during design		If the vertical vibrations exceeds 0.1 mm/sec, mitigation measured shall be applied during the detailed design phase to meet this criterion to the extent technologically, economically and administratively feasible
	Cumberland Transitway	Field measurements	For human perception and tolerance, an equivalent ppv level of up to 5 mm/s would be suitable for common vibrations from roadway traffic (note: MOEE/TTC will be applied to the current study)	

APPENDIX A: Noise Pollution Control Document 205 (NPC-205)

Definitions

Publication NPC-205 of the Model By-Law sets Sound Level Limits for Stationary Sources in Class 1 and 2 Areas (Urban).

NPC-205 defines a "Class 1 Area" as:

> *an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the urban hum.*

The urban hum is defined as the aggregate sound of many unidentifiable, mostly road traffic related noise sources.

A "Class 2 Area" is defined as:

> *an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas, and in which a low background sound level, normally occurring only between 23:00 and 07:00 hours in Class 1 Areas, will typically be realized as early as 19:00 hours.*
>
> *Other characteristics which may indicate the presence of a Class 2 Areas include:*
>
> - *absence of urban hum between 19:00 and 23:00 hours;*
> - *evening background sound level defined by natural environment and infrequent human activity; and*
> - *no clearly audible sound from stationary sources other than from those under assessment.*

A "Class 3 Area" is defined as:

> a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:
>
> - *a small community with less than 1000 population;*
> - *agricultural area;*
> - *a rural recreational area such as a cottage or a resort area; or*
> - *a wilderness.*

Sound Level Limits

NPC-205 states that the sound level limit must be established based on the principle of "predictable worst case" noise impact. Generally, the limit is based on the background sound level at the receptors and must represent the minimum background sound level that occurs or is likely to occur during the operation of the stationary source under assessment.

Sound levels from steady stationary noise sources (such as the proposed facility) are quantified using the energy equivalent sound level, L_{eq}, in dBA. During daytime hours, the limit at a critical receptor for steady noise from a stationary source is the higher of either the one-hour L_{eq} resulting from existing volumes of road traffic and any industry which is not under investigation for noise excess, or 50 dBA. During night-time hours, the limit is the higher of either the ambient (road traffic plus industry) L_{eq} noise level or 45 dBA. If the stationary source contains any noticeable features such as tonal components or buzzing, a 5 dB tonal penalty must be added to the noise level of the source.

No restrictions apply to a stationary source resulting in a one hour L_{eq} lower than the minimum values for the time periods specified in Table A.1.

TABLE A.1
MINIMUM VALUES OF ONE HOUR L_{eq} OR L_{LM} BY TIME OF DAY

Time of Day	One Hour L_{eq} (dBA)	
	Class 1 Area	Class 2 Area
08:00 - 19:00	50	50
19:00 - 23:00	47	45
23:00 - 07:00	45	45

NPC 115

Sound Level Terminology

This section provides a brief description of sound level terminology to assist the reader in understanding the sound level monitoring results reported later.

The behaviour of sound can be described by accepted acoustic principles. The balance of this section discusses "*sound*"; however, the same principles apply to "*noise*".

Units of Sound Measurement

Because the human ear can detect a wide range of sound levels, a measurement unit was developed to quantify the sounds produced. The unit developed is the decibel (*dB*), based on a logarithmic scale which relates the pressure produced by a sound wave (P in Pascal=s, Pa) to a reference pressure level (P_{ref} = 20 x 10^{-6} Pa) according to the equation:

$$L = 20 * \log\left[\frac{P}{P_{ref}}\right]$$

where:

L = the sound level in decibels (dB)

In simple terms, equation (1) indicates that the greater the sound pressure, the higher the volume and the higher the decibel count. It shows that more than a doubling in the sound pressure is needed to double the decibel count. For example, an increase from 20 dB to 40 dB represents a ten-fold increase in sound pressure.

Sound Weighting Scales

Sound is usually described in terms of two characteristics, volume, as discussed above, and frequency (conventionally measured in Hertz) [the number of cycles/second]. The human ear does not respond to all frequencies in the same way. This frequency-dependent response is the reason that dogs can hear a high-frequency whistle while people cannot. Instruments used to measure sound do not have any of these limitations. To better reflect a human receptor's response to sounds measured by instruments, "*weighting scales*" are used. The *"A weighted scale"* is used to duplicate the human response to the audible frequency range. Sound levels so adjusted are referred to as *"A weighted decibels"* and assigned the unit abbreviation *dBA*. Table 2.1 below shows typical sound levels for various common sources.

TABLE A.2
SOUND LEVELS OF COMMON SOURCES

Sound Source	Sound Level (dBA)	Reference Distance (m)	Comments
Leaves rustling in wind	55-58		
Single duck/goose	63-68	9	
Summer nighttime insects	50-54		In open field
Food blender	76-81	1	
Microwave oven	56-58	1	
Portable hair dryer	77-86	0.3	
Hand-held vacuum cleaner	82-87	1	
Hand-pushed lawn mower	81-86	1.5	
Lawn edger	89-93	1.5	
Freight train	85-88	9	Exterior sound level
Subway train	98-103	9	Exterior sound level
Automobile, 88.5 km/h	69-78		Interior sound level
Airplane (long range)	70-80		Interior sound level
Airplane – Boeing 727	112.5	305	
Airplane – Boeing 747	102.5	305	
Playground at recess	68-77		Crowd size of 100-500, 15-30 min.
Hockey game	90		Crowd size of 17,400, 3 hr.
Rock concert	109 (Max.)		Crowd size of 19,000, 3 hr.
Typical mall fountain	72-74	3	

Source: Cowan 1994.

Sound Descriptors

Sound is an instantaneous phenomenon and cannot be readily described unless statistical measures are used. The statistical descriptors commonly used to describe measured sound levels are briefly explained below:

- L_{eq} - the energy equivalent continuous sound level;
- L_5 - the sound level exceeded 5% of the time;
- L_{10} - the sound level exceeded 10% of the time or the *"average"* level of intrusive noises;
- L_{90} - the sound level exceeded 90% of the time or the *"ambient"* sound level; and
- L_{99} - the sound level exceeded 99% of the time.

The statistical descriptor which has been selected for environmental noise impact assessments is the L_{eq}. However, the adoption of the L_{eq} does not necessarily preclude the use of other descriptors. The L_{eq} provides a method of describing time-varying sounds by a single number rather than by the entire cumulative distribution.

In order to assess time-varying noises, the unsteady sound level (measured in dBA) could be averaged in some way to provide a steady level, which would be "equivalent" to the original varying sound. Considerable research has been done to determine how this averaging should be performed.

Simple averaging of the time-varying pressure of the sound is not a good method of assessing the annoyance of unsteady, intrusive value. This method tends to underestimate the annoyance value. It has been found that if the energy (which is proportional to the square of the pressure) of a time-varying sound is averaged, then the resulting equivalent energy continuous level, L_{eq}, has good correlation with the annoyance of that sound (MOE, 1990).

The Definition of L_{eq}

The equivalent energy level is that constant sound level which has the same energy as a time-varying noise level for a specified time duration. In order to understand fully the concept of L_{eq}

$$L_{eq} = 10 * \log (1/T) \int_0^T [\, P_A^2(t) / P_0^2 \,]\, dt$$

it is also necessary to consider the mathematical definition.

where:

P_0	=	the standard reference pressure;
$P_A^{(t)}$	=	the A-weighted time-varying pressure; and
T	=	duration of measurement.

Other Technical Definitions

"Ambient sound level":

- means background sound level.

"Background sound level":

is the sound level that is present in the environment, produced by noise sources other than the source under impact assessment. Highly intrusive short duration noise caused by a source such as an aircraft flyover or a train pass-by is excluded from the determination of background sound level.

A PROTOCOL FOR DEALING WITH DEALING WITH NOISE CONCERNS DURING THE PREPARATION, REVIEW AND EVALUATION OF PROVINCIAL HIGHWAYS ENVIRONMENTAL ASSESSMENTS

ISBN 0-7778-6311-1
February, 1996

MINISTRY
OF
TRANSPORTATION

ONTARIO

MINISTRY
OF
ENVIRONMENT

To all users of the: **NOISE PROTOCOL**

Enquiries regarding the purchase and distribution of this manual should be directed to :

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This Protocol contains ares of policy agreement between the Ministries of Transportation and Communications, and Environment for dealing with noise concerns during the preparation, review and evaluation of environmental assessments for Provincial Highway undertakings.

As common understandings are resolved for any outstanding issues, these will be added to the Protocol by formal agreement.

D.P. Caplice
Assistant Deputy Minister
Operations Division
Ministry of Environment

J.R. Barr
Assistant Deputy Minister
Engineering and Construction
Ministry of Transportation
and Communications

FEBRUARY
1986

1. Retrofit

   The MTC policy for retrofit of existing freeways with sound barriers will remain in effect and unchanged.

2. Scope of Protocol

   This protocol applies to the MTC Capital Construction Program for all classes of MTC Provincial roads, both urban and rural. The policy for each situation may require different noise control measures and further, that an assessment of the feasibility of providing noise control measures includes technical and economic considerations.

3. Definition of Noise Sensitive Areas

   To be clearly defined, as guided by the One-Stage Procedural Guidelines and the specific definitions of "residential areas" and "quiet zones" found in municipal noise control by-laws, approved by MOE under the Environmental Protection Act.

4. Establishing Existing and Future Noise Levels

   Presently used prediction methodologies and measurement procedures are satisfactory. Any further changes, in noise prediction methodologies or measurement procedures, shall be compatible with those of both MOE and MTC.

   Staff of MTC and MOE together shall set a standard for ambient noise levels in rural areas where predictions can not be done.

5. Impact Assessment

   Noise impacts for all MTC Provincial roads will be predicted based on traffic projections ten years after completion, or best available data when 10-year projections are not available.

   The study area shall be defined using the smaller of one of two following methods; Using 5 dccibel contour lines extending from the source to the

point where there is no increase above the ambient level, or a distance of 600 m from the source.

The noise impact on noise-sensitive land uses will be determined for outdoor spaces.

All reference to 65 dBA as a "target" and 70 dBA as a "maximum" will be removed from MTC directives A-1 and B-94. Further, reference to a 70 dBA maximum should be removed from Provincial Policy. The objective for outdoor sound levels is the higher of the Leq 55 dBA or the existing ambient. The significance of a noise impact will be quantified by using this objective in addition to the change in noise level above the ambient.

mitigation will attempt to achieve levels as close to, or lower than, the objective level as is technically, economically, and administratively feasible.

6. Noise Control Measures

The attached Table summarizes the degree of mitigation effort to be applied for various noise level increases.

On right-of-way mitigation measures will be identified, considered and implemented where warranted.

Mitigation measures within the right-of-way include: barriers, berms, vertical and horizontal alignments, pavement surfaces, etc.

Where noise increases above the ambient do not exceed 5 dBA no mitigation is required.

Where noise increases above the ambient exceed 5 dBA MTC will:

- investigate noise control measures within the right-of-way.
- if projects costs are not significantly affected and where averaged over first row receivers, a minimum attenuation of 5 dBA can be achieved, MTC will introduce the selected measures within the right-of-way.

Where a freeway is to be expanded through an existing residential area that has been included on the retrofit priority list, noise attenuation measures should be considered as part of the freeway expansion project when the MTC policy for Retrofit of Existing Freeways can be satisfied.

7. Documentation

MTC will increase its E.A. documentation with respect to the feasibility of all potential mitigation measures within the right-of way. The feasibility of each measure would be evaluated by such factors as effectiveness and technical and economic feasibility.

8. Construction Notes

The following is a brief outline of the procedures to be followed in handling construction noise during the Environmental Assessment process and during the construction phase. Commitment to the following shall be made in all E.A. documents:

(a) Noise Sensitive areas will be identified;

(b) Applicable municipal noise control by-laws will be identified and obeyed. Where timing constraints, or other municipal by-law cause hardship to MTC, an explanation of this will be outlined in the E.A. document, and an exemption from such by-law will be sought directly from the municipality in question;

(c) General noise control measures (not sound level criteria) will be referred to, or placed into MTC documents;

(d) Any initial complaint from the public will require verification by MTC that the general noise control measures agreed to are in effect; MTC will investigate any noise concerns, warn the contractor of any problems, and enforce its contract;

(e) Not withstanding compliance with the "general noise control measures", a persistent complaint will require a contractor to comply

with MOE sound level criteria for construction equipment contained in the MOE Model Municipal Noise Control By-law. Subject to the results of field investigation, alternative noise control measures will be required, where these are reasonably available; and

(f) In selecting the appropriate construction noise control and mitigation measures, MTC will give consideration to the technical, administrative, and economic feasibility of the various alternatives.

9. Miscellaneous

(a) All future technical documents referred to in this agreement and prepared to become part of the Protocol shall be jointly approved by MOE and MTC. These include:

- ambient levels in rural areas where predictions cannot be done;
- general construction noise control measures; and
- any other alterations to this Protocol

(b) As the intent of this Protocol will be followed during their preparation, joint MOE/MTC approval is not required for MOE or MTC procedural/operational documents such as:

- internal directives;
- contract documents; and
- E.A. procedural/technical guidelines.

Table 1: SUMMARY OF MITIGATION EFFORT

CHANGE IN NOISE LEVEL ABOVE AMBIENT	MITIGATION EFFORT
0 - 5 dBA	-None
> 5 dBA	- Invesigate noise control measures on R.O.W. - If project cost is not significantly affected introduce noise control measures within R.O.W. - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row recievers. - Mitigate to ambient, as administartively, economically, and technically feasible.

June 15, 1993

Rcvd EA Branch
June 18, 1993

Mr. L. Kende
Head - Noise Unit
Ministry of Environment and Energy
250 Davisville Avenue
3rd Floor
Toronto, Ontario
M4S 1H2

Dear Mr. Kende:

Re: Sheppard Subway Environmental Assessment -
Noise and Vibration Protocol

With reference to the Environmental Assessment Report for the Sheppard Subway, submitted to MOEE on October 5, 1992, attached for your approval is a copy of the Noise and Vibration Protocol for this project.

This protocol is the end result of extensive consultation with staff of your Ministry and with staff of the Commission's Engineering, Plant, Legal and Equipment Departments. We wish to thank the representatives of your Ministry who have worked cooperatively and effectively to reach consensus on this protocol.

If you have any questions or issues related to this protocol, please contact me at your earliest convenience.

Yours very truly,

D.R. Callan, P. Eng.
Manager -
Rapid Transit Expansion Program

84-JJ-GWM
T2003/1438

Attachment

Copy to: Mr. S. Bastien - MOEE E.A. Branch
Mr. S. Skelton - MTO
Mr. M.D. Harmelink - MTO
Mr. D. Birnbaum - MOEE Approvals Branch

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MOEE/TTC PROTOCOL FOR NOISE AND VIBRATION ASSESSMENT FOR THE PROPOSED SHEPPARD SUBWAY

JUNE 15, 1993

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RTEP Profile #1405

PROTOCOL FOR NOISE AND VIBRATION ASSESSMENT

PART A. PURPOSE

The Toronto Transit Commission (TTC) and the Ministry of the Environment and Energy (MOEE) recognize that transit facilities produce noise and vibration which may affect neighbouring properties within urbanized areas. This document identifies the framework within which criteria will be applied for limiting wayside air-borne noise, ground-borne noise and vibration from the TTC's proposed Sheppard Subway Line (the "Line"). The framework presented in this document is to be applied for planning purposes in order to address the requirements of the Environmental Assessment Act and is to be utilized during implementation of the Line.

The passby sound levels and vibration velocities in this protocol have been developed specifically for the Line and this protocol is not to be applied retroactively to existing TTC transit lines, routes or facilities nor to transit authorities other than TTC. Further, the criteria specified for this project are not precedent setting for future projects.

Prediction and measurement methods are being developed by the TTC. This will be done in consultation with MOEE and the Ministry of Transportation (MTO). Studies pertaining to noise and vibration levels are also being conducted by TTC. Upon completion of these studies, the TTC may revisit the assessment criteria and methods in this protocol to modify them as required in consultation with MOEE and the Ministry of Transportation (MTO).

PART B. GENERAL

During design of the Line, predicted wayside sound levels and vibration velocities are to be compared to criteria given in this protocol. This will permit an impact assessment and help determine the type or extent of mitigation measures to reduce that impact. Sound levels and vibration velocities will be predicted from sound levels and velocities of TTC's existing rail technologies.

The criteria presented in this document are based on good operating conditions and the impact assessment assumes this condition. Good operating conditions exist when well maintained vehicles operate on well maintained continuous welded rail without significant rail corrugation. It is recognised that wheel flats or rail corrugations will inevitably occur and will temporarily increase sound and vibration levels until they are corrected. Levels in this protocol do not reflect these occasional events, nor do they apply to maintenance activities on the Line. TTC recognizes that wheel rail squeal is a potential source of noise which may pose a concern to the community. TTC is investigating and will continue to investigate measures to mitigate wheel rail squeal and will endeavour to mitigate this noise source. TTC endeavours to minimize the noise and vibration impacts associated with its transit operations and is committed to providing good operating conditions to the extent technologically, economically and administratively feasible.

It is recognised that levels of sound and vibration at special trackwork, such as at crossovers and turnouts, are inevitably higher than along tangent track. Also, there is a limit to the degree of mitigation that is feasible at special trackwork areas. This is to be taken into

account in predicting sound and vibration levels near these features and in applying the levels in this protocol. Special trackwork, such as at crossovers and turnouts, is encompassed within the framework of this document.

This protocol applies to existing and proposed residential development having municipal approval on the date of this protocol. The protocol also applies to existing and municipally approved proposed nursing homes, group homes, hospitals and other such institutional land uses where people reside. This protocol does not apply to commercial and industrial land uses.

This protocol does not apply closer than 15 m to the centreline of the nearest track. Any such cases shall be assessed on a case by case basis.

Part D of this document deals with air-borne noise from the Line and its construction. Part E deals with ground-borne noise and vibration from the Line.

PART C. DEFINITIONS

The following definitions apply to both parts D and E of this document.

Ancillary Facilities:

Subsidiary locations associated with either the housing of personnel or equipment engaged in TTC activities or associated with mainline revenue operations. Examples of ancillary facilities include, but are not limited to, subway stations, bus terminals, emergency services buildings, fans, fan and vent shafts, substations, mechanical equipment plants, maintenance and storage facilities, and vehicle storage and maintenance facilities.

Passby Time Interval:

The passby time interval of a vehicle or train is given by its total length and its speed. The start of the pass-by is defined as that point in time when the leading wheels pass a reference point. The end of the pass-by is defined as that point in time when the last wheels of the vehicle or train pass the same reference point. The reference point is to be chosen to give the highest level at the point of reception or point of assessment, i.e. usually at the point of closest approach. From a signal processing perspective, the passby time interval will be defined in the prediction and measurement methods being developed.

PART D. AIR-BORNE NOISE

1.0 DEFINITIONS

The following definitions are to be used only within the context of Part D of this document.

Ambient:

The ambient is the sound existing at the point of reception in the absence of all noise from the Line. In this protocol the ambient is taken to be the noise from road traffic and existing industry. The ambient specifically excludes transient noise from aircraft and railways, except for pre-existing TTC rail operations.

Daytime Equivalent Sound Level:

$L_{eq,16h}$ is the daytime equivalent sound level..The definition of equivalent sound level is provided in Reference 2. The applicable time period is from 07:00 to 23:00 hours.

Nighttime Equivalent Sound Level:

$L_{eq,8h}$ is the nighttime equivalent sound level. The applicable time period is from 23:00 to 07:00 hours.

Point of Reception:

Daytime: 07:00 - 23:00 hours

Any outdoor point on residential property, 15 m or more from the nearest track's centreline, where sound originating from the Line is received.

Nighttime: 23:00 - 07:00 hours

The plane of any bedroom window, 15 m or more from the nearest track's centreline, where sound originating from the Line is received. At the planning stage, this is usually assessed at the nearest facade of the premises.

Passby Sound Level, L_{passby} :

Within the context of this document, the passby sound level is defined as the A-weighted equivalent sound level, L_{eq} [Reference 2] over the passby time interval.

2.0 RAIL TRANSIT

In the assessment of noise impact, rail transit is considered to include the movement of trains between stations, the movement and idling of trains inside stations as well as the movement of trains between the mainline and ancillary facilities. Ancillary facilities are not considered part of the rail transit and are assessed as stationary

sources. Trains idling in maintenance yards and storage facilitities are part of the stationary source.

The assessment of noise impact resulting from Line is to be performed in terms of the following sound level descriptors:

1) Daytime equivalent sound level, $L_{eq,16h}$,
2) Nighttime equivalent sound level, $L_{eq,8h}$,
3) Passby Sound Level, L_{passby}.

The predicted daytime and nighttime equivalent sound levels include the effects of both passby sound level and frequency of operation and are used to assess the noise impact of the Line. The Passby Sound Level criterion is used to assess the sound levels received during a single train passby. The criteria and methods to be used are discussed in Sections 2.1 and 2.2.

2.1 Criteria

Noise impact shall be predicted and assessed during design of the Line using the following sound level criteria:

DAYTIME EQUIVALENT SOUND LEVEL:

The limit at a point of reception for the predicted daytime equivalent sound levels for rail transit operating alone (excluding contributions from the ambient) is 55 dBA or the ambient $L_{eq,16h}$, whichever is higher.

NIGHTTIME EQUIVALENT SOUND LEVEL:

The limit at a point of reception for the predicted nighttime equivalent sound levels for rail transit operating alone (excluding contributions from the ambient) is 50 dBA or the ambient $L_{eq,8h}$, whichever is higher.

PASSBY SOUND LEVEL:

The limit at a point of reception for predicted L_{passby} for a single train operating alone and excluding contributions from other sources is 80 dBA. This limit is based on vehicles operating on tangent track. It does not apply within 100m of special trackwork and excludes wheel rail squeal.

Mitigating measures will be incorporated in the design of the Line when predictions show that any of the above limits are exceeded by more than 5 dB. All mitigating measures shall ensure that the predicted sound levels are as close to, or lower than, the respective limits as is technologically, economically, and administratively feasible.

2.2 Prediction

In most cases, a reasonable estimate of the ambient sound level can be made using a road traffic noise prediction method such as that described in Reference 9, and the minimum sound levels in Table 106-2 of Reference 6. Prediction of road traffic L_{eq} is preferred to individual measurements in establishing the ambient. Prediction techniques for the L_{eq} from road traffic and the L_{eq} or L_{passby} from transit shall be compatible with one another. Any impact assessment following this protocol shall include a description of the prediction method and the assumptions and sound level data inherent in it. Prediction and measurement methods compatible with MOEE guidelines and procedures are being developed by the TTC at the date of this protocol in consultation with MTO and MOEE.

3.0 ANCILLARY FACILITIES

Predicted noise impacts from ancillary facilities shall be assessed during the design of the Line in accordance with the stationary source guidelines detailed in Reference 5. The predictions used shall be compatible with and at least as accurate as CSA Standard Z107.55.

4.0 BUSES IN MIXED TRAFFIC

Where buses are part of the road traffic there are no additional criteria requirements beyond those presented in the Ministry of Transportation of Ontario Protocol for dealing with noise concerns during the preparation, review and evaluation of Provincial Highways Environmental Assessments [Reference 1]. Buses should be considered as medium trucks in the traffic noise prediction models.

5.0 CONSTRUCTION

Noise impacts from the construction of the Line are to be examined. For the purposes of impact assessment and identifying the need for mitigation, the Ministry of the Environment and Energy guidelines for construction presented in Reference 7 are to be referred to.

PART E. GROUND-BORNE VIBRATION

The assessment of ground-borne vibration impact is confined to the vibration that is produced by the operation of the Line and excludes vibration due to maintenance activities.

In recognition of the fact that the actual vibration response of a building is affected by its own structural characteristics, this document deals with the assessment of ground-borne vibration only on the outside premises. Structural characteristics of buildings are beyond the scope of this protocol and beyond the control of the TTC.

It is recognised that ground-borne vibration can produce air-borne noise inside a structure and there is a direct correlation between the two. The TTC can only control ground-borne noise by controlling ground-borne vibration. Accordingly, ground-borne noise will be predicted and assessed in terms of vibration measured at a point of assessment using the limit in Section 2.0, Vibration Assessment.

1.0 DEFINITIONS

The following definitions are to be used only within the context of Part E of this document.

Point of Assessment:

A point of assessment is any outdoor point on residential property, 15 m or more from the nearest track's centreline, where vibration originating from the Line is received.

Vibration Velocity:

Vibration Velocity is the root-mean-square (rms) vibration velocity assessed during a train pass-by. The unit of measure is metres per second (m/s) or millimetres per second (mm/s). For the purposes of this protocol only vertical vibration is assessed. The vertical component of transit vibration is usually higher than the horizontal. Human sensitivity to horizontal vibration at the frequencies of interest is significantly less than the sensitivity to vertical vibration.

2.0 VIBRATION ASSESSMENT

Vibration velocities at points of assessment shall be predicted during design of the Line. If the predicted rms vertical vibration velocity from the Line exceeds 0.1 mm/sec, mitigation methods shall be applied during the detailed design to meet this criterion to the extent technologically, economically, and administratively feasible. Where it is suitable, a double tie system or its equivalent will be the mitigation method of choice. This is a state of the art vibration isolation system developed by TTC and used where vibration isolation is required on new underground lines (see Reference 8).

Any impact assessment following this protocol shall include a description of the prediction method and the assumptions and data inherent in it. Prediction and measurement methods are being developed by the TTC at the date of this protocol in cooperation with MTO and MOEE.

References

1)**A Protocol for Dealing With Noise Concerns During the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments**, Ministry of Transportation, February 1986.

2)**Model Municipal Noise Control By-Law, Final Report, Publication NPC-101 Technical Definitions**, Ministry of the Environment, August 1978.

3)**Model Municipal Noise Control By-Law, Final Report, Publication NPC-103 Procedures**, Ministry of the Environment, August 1978.

4)**Model Municipal Noise Control By-Law, Final Report, Publication NPC-104 Sound Level Adjustments**, Ministry of the Environment, August 1978.

5)**Model Municipal Noise Control By-Law, Final Report, Publication NPC-105 Stationary Sources**, Ministry of the Environment, August 1978.

6)**Model Municipal Noise Control By-Law, Final Report, Publication NPC-106 Sound Levels of Road Traffic**, Ministry of the Environment, August 1978.

7)**Noise Control Guideline For Class Environmental Assessment of Undertakings**, February 1980, Ministry of the Environment.

8)**Toronto Subway System Track Vibration Isolation System (Double Tie) - Technical Report**, TTC Engineering Department, June 1982.

9)**STAMSON 4.1**, Ontario Ministry of the Environment Road and Rail Noise Prediction Software

Publication 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 NPC-101 - 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 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 as measured using Publication NPC-103 - Procedures, section 7 dBA
Quiet Zone Sound Emission Standard	Jan. 1, 1979 and after	85
Residential Area Sound Emission Standard	Jan. 1, 1979 to Dec. 31 1980	90
	Jan. 1, 1981 and after	85

TABLE 115-3

Sound Emission Standards for Portable Air Compressors

Standard	Date of Manufacture	Maximum Sound Level as measured using Publication NPC-103 - Procedures, section 7 dBA
Quiet Zone Sound Emission Standard	Jan. 1, 1979 to Dec. 31, 1980	76
	Jan. 1, 1981 and after	70
Residential Area Sound Emission Standard	Jan. 1, 1979 and after	76

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NPC-115

TABLE 115-4

Sound Emission Standard for Tracked Drills

Standard	Date of Manufacture	Maximum Sound Level as measured using Publication NPC-103 - Procedures, section 6. dBA
Quiet Zone and Residential Area Sound Emission Standard	Jan. 1, 1981 and after	100

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Ontario

MINISTRY OF ENVIRONMENT AND ENERGY

Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban) Publication NPC-205

October 1995

This Publication establishes sound level limits for stationary sources such as industrial and commercial establishments or ancillary transportation facilities, affecting points of reception in Class 1 and 2 Areas (Urban). It replaces Publication NPC-105 "Stationary Sources" of the "Model Municipal Noise Control By-Law, Final Report, August 1978".

TABLE OF CONTENTS

1. SCOPE

This Publication establishes sound level limits for stationary sources such as industrial and commercial establishments or ancillary transportation facilities, affecting points of reception in Class 1 and 2 Areas (Urban). The limits apply to noise complaint investigations carried out in order to determine potential violation of Section 14 of the Environmental Protection Act. The limits also apply to the assessment of planned stationary sources of sound in compliance with Section 9 of the Environmental Protection Act, and under the provisions of the Aggregate Resources Act and the Environmental Assessment Act.

This Publication does not address sound and vibration produced by blasting; blasting in quarries and surface mines is considered in Reference [7].

The Publication includes an Annex, which provides additional details, definitions and rationale for the sound level limits.

2. REFERENCES

Reference is made to the following publications:

[1] NPC-101 - Technical Definitions

[2] NPC-102 - Instrumentation

[3] NPC-103 - Procedures

[4] NPC-104 - Sound Level Adjustments

[6] NPC-206 - Sound Levels due to Road Traffic

[7] NPC-119 - Blasting

[8] NPC-216 - Residential Air Conditioning Devices

[9] NPC-232 - Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)

[10] NPC-233 - Information to be Submitted for Approval of Stationary Sources of Sound

[12] ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document, Ontario Ministry of the Environment, ISBN 0-7729-6376, 1989

References [1] to [4] and [7] can be found in the
Model Municipal Noise Control By-Law, Ontario Ministry of the Environment, Final Report, August 1978.

3. TECHNICAL DEFINITIONS

"Ambient sound level"
means Background sound level.

"Background sound level"
is the sound level that is present in the environment, produced by noise sources other than the source under impact assessment. Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train pass-by is excluded from the determination of the background sound level.

"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.

"Class 2 Area"

means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas, and in which a low ambient sound level, normally occurring only between 23:00 and 07:00 hours in Class 1 Areas, will typically be realized as early as 19:00 hours.

Other characteristics which may indicate the presence of a Class 2 Area include:

- absence of urban hum between 19:00 and 23:00 hours;
- evening background sound level defined by natural environment and infrequent human activity; and
- no clearly audible sound from stationary sources other than from those under impact assessment.

"Class 3 Area"

means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:

- a small community with less than 1000 population;
- agricultural area;
- a rural recreational area such as a cottage or a resort area; or
- a wilderness area.

Other technical terms are defined in Reference [1] and in the Annex to Publication NPC-205.

4. ESTABLISHMENT OF LIMITS - OBJECTIVE

The sound level limit at a point of reception must be established based on the principle of "predictable worst case" noise impact. In general, the limit is given by the background sound level at the point of reception. The sound level limit must represent the minimum background sound level that occurs or is likely to occur during the operation of the stationary source under impact assessment.

5. BACKGROUND SOUND LEVELS

The time interval between the background sound level measurement and the measurement of the sound level produced by the stationary source under impact assessment should be minimized as much as possible. Preferably, the two measurements should be carried out within one hour of each other.

6. SOUND LEVELS DUE TO STATIONARY SOURCES

(1) Complaint Investigation of Stationary Sources

The One Hour Equivalent Sound Level (L_{eq}) and/or the Logarithmic Mean Impulse Sound Level (L_{LM}) produced by the stationary sources shall be obtained by measurement performed in accordance with Section 7.

(2) Approval of Stationary Sources

The One Hour Equivalent Sound Level (L_{eq}) and/or the Logarithmic Mean Impulse Sound Level (L_{LM}) produced by the stationary sources shall be obtained by measurement or prediction. The estimation of the L_{eq} and/or L_{LM} of the stationary source under impact assessment shall reflect the principle of "predictable worst case" noise impact. The "predictable worst case" noise impact occurs during the hour when the difference between the predicted sound level produced by the stationary source and the background sound level of the natural environment is at a maximum.

Ontario

MINISTRY OF ENVIRONMENT AND ENERGY

7. PROCEDURES

All sound level measurements and calculations shall be made in accordance with References [3], [6]and [12].

Sound from existing adjacent stationary sources may be included in the determination of the background One Hour Equivalent Sound Level (L_{eq}) if such stationary sources of sound are not under consideration for noise abatement by the Municipality or the Ministry of Environment and Energy.

8. SOUND LEVEL LIMITS - GENERAL

(1) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, the sound level limit expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is the background One Hour Equivalent Sound Level (L_{eq}) typically caused by road traffic as obtained pursuant to Section 6 for that point of reception.

(2) For sound from a stationary source, including Quasi-Steady Impulsive Sound but not including other impulsive sound, the sound level limit expressed in terms of the One Hour Equivalent Sound Level (L_{eq}) is the background One Hour Equivalent Sound Level (L_{eq}) typically caused by road traffic as obtained pursuant to Section 6 for that point of reception.

9. SOUND LEVEL LIMITS - SPECIFIC IMPULSIVE SOUNDS

(1) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source which is an industrial metal working operation (including but not limited to forging, hammering, punching, stamping, cutting, forming and moulding), the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is 60 dBAI, if the stationary source were operating before January 1, 1980, and otherwise is 50 dBAI.

(2) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source which is the discharge of firearms on the premises of a licensed gun club, the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is:

- 70 dBAI if the gun club were operating before January 1, 1980; or
- 50 dBAI if the gun club began to operate after January 1, 1980, or
- the L_{LM} prior to expansion, alteration or conversion.

(3) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source which is not a blasting operation in a surface mine or quarry, characterized by impulses which are so infrequent that they cannot normally be measured using the procedure for frequent impulses of Reference [3] the sound level limit at a point of reception expressed in terms of the impulse sound level is 100 dBAI.

10. SOUND LEVEL LIMITS - PEST CONTROL DEVICES

(1) For impulsive sound, other than Quasi-Steady Impulsive Sound, from a pest control device employed solely to protect growing crops, the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is 70 dBAI.

(2) For sound, including Quasi-Steady Impulsive Sound but not including other impulsive sound, from a pest control device employed solely to protect growing crops, the sound level limit at a point of reception expressed in terms of the One Hour Equivalent Sound Level (L_{eq}) is 60 dBA.

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11. PROHIBITION - PEST CONTROL DEVICES

The operation of a pest control device employed solely to protect growing crops outdoors during the hours of darkness, sunset to sunrise, is prohibited.

12. PRE-EMPTION

The least restrictive sound level limit of Sections 8, 9 and 10 applies.

13. EXCLUSION

No restrictions apply to a stationary source resulting in a One Hour Equivalent Sound Level (L_{eq}) or a Logarithmic Mean Impulse Sound Level (L_{LM}) lower than the minimum values for that time period specified in Table 205-1.

TABLE 205-1

Minimum Values of One Hour L_{eq} or L_{LM} by Time of Day

	One Hour L_{eq} (dBA) or L_{LM} (dBAI)	
Time of Day	Class 1 Area	Class 2 Area
0700 - 1900	50	50
1900 - 2300	47	45
2300 - 0700	45	45

APPENDIX B

STAMSON DATA SHEETS
PREDICTED EXISTING (2003)
TRAFFIC SOUND LEVELS

```
STAMSON 5.0        NORMAL REPORT        Date: 18-11-2003 16:56:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 83button.te          Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 83 Button Rd (day/night)
-----------------------------------------------
Car traffic volume  : 32572/3619  veh/TimePeriod  *
Medium truck volume :  1894/210   veh/TimePeriod  *
Heavy truck volume  :  3409/379   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):  42083
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 83 Button Rd (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  :  18.50 / 18.50  m
Receiver height           :   1.70 / 1.70   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 83 Button Rd (day)
---------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.70 !        1.70 !         1.70

ROAD (0.00 + 66.27 + 0.00) = 66.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.50  77.00   0.00  -1.37  -1.18   0.00   0.00  -8.19  66.27
-------------------------------------------------------------------------------

Segment Leq : 66.27 dBA

Total Leq All Segments: 66.27 dBA

Results segment # 1: 83 Button Rd (night)
-----------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.70 !        1.70 !         1.70

ROAD (0.00 + 59.73 + 0.00) = 59.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.50  70.47   0.00  -1.37  -1.18   0.00   0.00  -8.19  59.73
-------------------------------------------------------------------------------

Segment Leq : 59.73 dBA

Total Leq All Segments: 59.73 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.27
                           (NIGHT): 59.73
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-11-2003 10:41:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 59embass.te          Time Period: Day/Night 16/8 hours
Description:  Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 59 Embassdor Court (day/night)
-------------------------------------------------
Car traffic volume  : 37845/4205  veh/TimePeriod  *
Medium truck volume :  2200/244   veh/TimePeriod  *
Heavy truck volume  :  3960/440   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):  48895
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 59 Embassdor (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  :  19.00 / 19.00  m
Receiver height           :   1.80 / 1.83   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.83 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 59 Embassdor (day)
---------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.80 !        1.80 !         1.80

ROAD (0.00 + 69.81 + 0.00) = 69.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.53  77.65   0.00  -1.58  -1.24   0.00   0.00  -5.03  69.81
-------------------------------------------------------------------------------

Segment Leq : 69.81 dBA

Total Leq All Segments: 69.81 dBA

Results segment # 1: 59 Embassdor (night)
-----------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.83 !        1.83 !         1.83

ROAD (0.00 + 63.31 + 0.00) = 63.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.53  71.12   0.00  -1.57  -1.24   0.00   0.00  -5.00  63.31
-------------------------------------------------------------------------------

Segment Leq : 63.31 dBA

Total Leq All Segments: 63.31 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 69.81
                           (NIGHT): 63.31
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 11:30:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 7651keel.te          Time Period: Day/Night 16/8 hours
Description:  Predicted baseline traffic sound levels (using 2002 AADT volume)
```

Keele Street Alignment

```
Road data, segment # 1: 7651 Keele St (day/night)
-------------------------------------------------
Car traffic volume  : 30061/3340  veh/TimePeriod  *
Medium truck volume :  1708/190   veh/TimePeriod  *
Heavy truck volume  :  2391/266   veh/TimePeriod  *
Posted speed limit  :    60 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):  37956
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 7651Keele St (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  :  28.50 / 28.50  m
Receiver height           :   1.83 / 1.83   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 7651Keele St (day)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 68.57 + 0.00) = 68.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.65  74.60   0.00  -4.59  -1.43   0.00   0.00   0.00  68.57
-------------------------------------------------------------------------------

Segment Leq : 68.57 dBA

Total Leq All Segments: 68.57 dBA
```

```
Results segment # 1: 7651Keele St (night)
------------------------------------------

Source height = 1.63 m

ROAD (0.00 + 62.05 + 0.00) = 62.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.65  68.07   0.00  -4.59  -1.43   0.00   0.00   0.00  62.05
-------------------------------------------------------------------------------

Segment Leq : 62.05 dBA

Total Leq All Segments: 62.05 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 68.57
                           (NIGHT): 62.05
```

```
TAMSON 5.0        NORMAL REPORT        Date: 10-12-2003 17:28:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 104suger.te          Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 104 Suger Crescent(day/night)
-----------------------------------------------
Car traffic volume  : 24299/2700  veh/TimePeriod  *
Medium truck volume :  1381/153   veh/TimePeriod  *
Heavy truck volume  :  1933/215   veh/TimePeriod  *
Posted speed limit  :    80 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):  30681
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 104 Suger Crescent (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  :  46.50 / 46.50  m
Receiver height           :   1.83 / 1.83   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 104 Suger Crescent (day)
---------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.83 !        1.76 !         1.76

ROAD (0.00 + 61.77 + 0.00) = 61.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.50  76.01   0.00  -7.37  -1.17   0.00   0.00  -5.69  61.77
-------------------------------------------------------------------------------

Segment Leq : 61.77 dBA

Total Leq All Segments: 61.77 dBA


Results segment # 1: 104 Suger Crescent (night)
-----------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.83 !        1.76 !         1.76

ROAD (0.00 + 55.24 + 0.00) = 55.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.50  69.48   0.00  -7.37  -1.17   0.00   0.00  -5.69  55.24
-------------------------------------------------------------------------------

Segment Leq : 55.24 dBA

Total Leq All Segments: 55.24 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.77
                           (NIGHT): 55.24
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-11-2003 10:46:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 364hwy7.te           Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 364 Hwy 7 (day/night)
----------------------------------------------
Car traffic volume  : 47316/5257  veh/TimePeriod  *
Medium truck volume :  2103/234   veh/TimePeriod  *
Heavy truck volume  :  3154/350   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):  58415
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   4.00
    Heavy Truck  % of Total Volume     :   6.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 364 Hwy 7 (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  :  30.50 / 30.50  m
Receiver height           :   1.52 / 1.52   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 364 Hwy 7 (day)
-----------------------------------

Source height = 1.57 m

ROAD (0.00 + 70.60 + 0.00) = 70.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  77.16   0.00  -5.11  -1.45   0.00   0.00   0.00  70.60
-------------------------------------------------------------------------------

Segment Leq : 70.60 dBA

Total Leq All Segments: 70.60 dBA
```

```
Results segment # 1: 364 Hwy 7 (night)
---------------------------------------

Source height = 1.56 m

ROAD (0.00 + 64.07 + 0.00) = 64.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  70.63   0.00  -5.11  -1.45   0.00   0.00   0.00  64.07
-------------------------------------------------------------------------------

Segment Leq : 64.07 dBA

Total Leq All Segments: 64.07 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 70.60
                           (NIGHT): 64.07
```

```
STAMSON 5.0        NORMAL REPORT        Date: 18-11-2003 11:51:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mntgomry.te          Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 2 Montgomery Court (day/night)
-------------------------------------------------
Car traffic volume  : 36023/4003  veh/TimePeriod  *
Medium truck volume :  1356/151   veh/TimePeriod  *
Heavy truck volume  :  1356/151   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):  43038
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 2 Montgomery (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  :  50.00 / 50.00  m
Receiver height           :   1.83 / 1.83   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 2 Montgomery (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 64.37 + 0.00) = 64.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.65  74.47   0.00  -8.65  -1.45   0.00   0.00   0.00  64.37
-------------------------------------------------------------------------------

Segment Leq : 64.37 dBA

Total Leq All Segments: 64.37 dBA
```

```
Results segment # 1: 2 Montgomery (night)
-----------------------------------------

Source height = 1.37 m

ROAD (0.00 + 57.85 + 0.00) = 57.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.65  67.94   0.00  -8.65  -1.45   0.00   0.00   0.00  57.85
-------------------------------------------------------------------------------

Segment Leq : 57.85 dBA

Total Leq All Segments: 57.85 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 64.37
                           (NIGHT): 57.85
```

```
STAMSON 5.0        NORMAL REPORT        Date: 18-11-2003 11:23:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: lichfeld.te          Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 73 Lichfield Road (day/night)
-------------------------------------------------
Car traffic volume  : 32643/3627  veh/TimePeriod  *
Medium truck volume :  1229/137   veh/TimePeriod  *
Heavy truck volume  :  1229/137   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):  39000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Lichfield Rd (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  :  15.00 / 15.00  m
Receiver height           :   0.76 / 0.76   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Lichfield Rd (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 72.58 + 0.00) = 72.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  74.04   0.00   0.00  -1.46   0.00   0.00   0.00  72.58
-------------------------------------------------------------------------------

Segment Leq : 72.58 dBA

Total Leq All Segments: 72.58 dBA
```

```
Results segment # 1: Lichfield Rd (night)
-----------------------------------------

Source height = 1.37 m

ROAD (0.00 + 66.06 + 0.00) = 66.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  67.52   0.00   0.00  -1.46   0.00   0.00   0.00  66.06
-------------------------------------------------------------------------------

Segment Leq : 66.06 dBA

Total Leq All Segments: 66.06 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 72.58
                           (NIGHT): 66.06
```

```
STAMSON 5.0        NORMAL REPORT        Date: 18-11-2003 11:11:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: gldiator.te          Time Period: Day/Night 16/8 hours
Description:  Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 10 Gladiator Rd (day/night)
-------------------------------------------------
Car traffic volume  : 23332/2592  veh/TimePeriod  *
Medium truck volume :   878/98    veh/TimePeriod  *
Heavy truck volume  :   878/98    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):  27876
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Gladiator Rd (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  :  15.00 / 15.00  m
Receiver height           :   1.83 / 1.83   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Gladiator Rd (day)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.83 !        1.80 !         1.80

ROAD (0.00 + 62.44 + 0.00) = 62.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  72.58   0.00   0.00  -1.19   0.00   0.00  -8.95  62.44
-------------------------------------------------------------------------------

Segment Leq : 62.44 dBA

Total Leq All Segments: 62.44 dBA

Results segment # 1: Gladiator Rd (night)
-----------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.83 !        1.80 !         1.80

ROAD (0.00 + 55.93 + 0.00) = 55.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  66.06   0.00   0.00  -1.19   0.00   0.00  -8.95  55.93
-------------------------------------------------------------------------------

Segment Leq : 55.93 dBA

Total Leq All Segments: 55.93 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 62.44
                           (NIGHT): 55.93
```

```
STAMSON 5.0        NORMAL REPORT        Date: 18-11-2003 10:15:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 6921hwy7.te          Time Period: Day/Night 16/8 hours
Description:  Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 6921 Hwy 7 (day/night)
----------------------------------------------
Car traffic volume  :  6918/769   veh/TimePeriod  *
Medium truck volume :   260/29    veh/TimePeriod  *
Heavy truck volume  :   260/29    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):   8265
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 6921 Hwy 7 (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  :  40.00 / 40.00  m
Receiver height           :   1.70 / 1.70   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 6921 Hwy 7 (day)
-------------------------------------

Source height = 1.37 m

ROAD (0.00 + 58.78 + 0.00) = 58.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  67.30   0.00  -7.06  -1.45   0.00   0.00   0.00  58.78
-------------------------------------------------------------------------------

Segment Leq : 58.78 dBA

Total Leq All Segments: 58.78 dBA

Results segment # 1: 6921 Hwy 7 (night)
---------------------------------------
```

```
Source height = 1.37 m

ROAD (0.00 + 52.26 + 0.00) = 52.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  60.78   0.00  -7.06  -1.45   0.00   0.00   0.00  52.26
-------------------------------------------------------------------------------

Segment Leq : 52.26 dBA

Total Leq All Segments: 52.26 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 58.78
                           (NIGHT): 52.26
```

```
STAMSON 5.0        NORMAL REPORT        Date: 19-11-2003 15:57:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 154thorn.te          Time Period: Day/Night 16/8 hours
Description:  Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 154 Thornway Avenue (day/night)
-------------------------------------------------
Car traffic volume  : 21761/2418  veh/TimePeriod  *
Medium truck volume :   222/25    veh/TimePeriod  *
Heavy truck volume  :   222/25    veh/TimePeriod  *
Posted speed limit  :    60 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):  24672
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 154 Thornway (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  :  18.00 / 18.00  m
Receiver height           :   1.83 / 1.83   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 154 Thornway (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 65.03 + 0.00) = 65.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  67.80   0.00  -1.31  -1.46   0.00   0.00   0.00  65.03
-------------------------------------------------------------------------------

Segment Leq : 65.03 dBA

Total Leq All Segments: 65.03 dBA
```

```
Results segment # 1: 154 Thornway (night)
------------------------------------------

Source height = 1.00 m

ROAD (0.00 + 58.52 + 0.00) = 58.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  61.30   0.00  -1.31  -1.46   0.00   0.00   0.00  58.52
-------------------------------------------------------------------------------

Segment Leq : 58.52 dBA

Total Leq All Segments: 58.52 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 65.03
                           (NIGHT): 58.52
```

```
STAMSON 5.0        NORMAL REPORT        Date: 19-11-2003 16:00:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 79chilmr.te          Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: 79 Chilmar Crescent (day/night)
-----------------------------------------------
Car traffic volume  : 35999/4000  veh/TimePeriod  *
Medium truck volume :  1149/128   veh/TimePeriod  *
Heavy truck volume  :  1149/128   veh/TimePeriod  *
Posted speed limit  :    60 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):  42552
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 79 Chilmar (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  :  22.50 / 22.50  m
Receiver height           :   2.44 / 2.44   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 79 Chilmar (day)
-------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        2.44 !        2.24 !         2.24

ROAD (0.00 + 63.65 + 0.00) = 63.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.49  72.61   0.00  -2.63  -1.16   0.00   0.00  -5.18  63.65
-------------------------------------------------------------------------------


Segment Leq : 63.65 dBA

Total Leq All Segments: 63.65 dBA

Results segment # 1: 79 Chilmar (night)
---------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        2.44 !        2.24 !         2.24

ROAD (0.00 + 57.12 + 0.00) = 57.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.49  66.09   0.00  -2.63  -1.16   0.00   0.00  -5.18  57.12
-------------------------------------------------------------------------------

Segment Leq : 57.12 dBA

Total Leq All Segments: 57.12 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.65
                           (NIGHT): 57.12
```

```
STAMSON 5.0        NORMAL REPORT        Date: 11-12-2003 15:25:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: warden.te            Time Period: Day/Night 16/8 hours
Description: Predicted baseline traffic sound levels (using 2002 AADT volume)


Road data, segment # 1: Future Markham Centre (on Warden Avenue between Town
centre Blvd. S. to Main Street Unionville) (day/night)
-----------------------------------------------
Car traffic volume  : 28311/3146  veh/TimePeriod  *
Medium truck volume :   289/32    veh/TimePeriod  *
Heavy truck volume  :   289/32    veh/TimePeriod  *
Posted speed limit  :    60 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):  32099
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Future Markham Centre (on Warden Avenue between Town
centre Blvd. S. to Main Street Unionville) (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  : 147.00 / 147.00 m
Receiver height           :   1.00 / 1.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Future Markham Centre (on Warden Avenue between Town
centre Blvd. S. to Main Street Unionville) (day)
-------------------------------------

Source height = 1.00 m

ROAD (0.00 + 51.04 + 0.00) = 51.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  68.95   0.00 -16.45  -1.46   0.00   0.00   0.00  51.04
-------------------------------------------------------------------------------

Segment Leq : 51.04 dBA

Total Leq All Segments: 51.04 dBA
```

```
Results segment # 1: Future Markham Centre (on Warden Avenue between Town
centre Blvd. S. to Main Street Unionville) (night)
----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 44.50 + 0.00) = 44.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  62.41   0.00 -16.45  -1.46   0.00   0.00   0.00  44.50
-------------------------------------------------------------------------------

Segment Leq : 44.50 dBA

Total Leq All Segments: 44.50 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 51.04
                           (NIGHT): 44.50
```

```
STAMSON 5.0        NORMAL REPORT        Date: 11-12-2003 14:21:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 231valen.te          Time Period: Day/Night 16/8 hours
Description:     Predicted baseline traffic sound levels (using 2002 AADT
volume)


Road data, segment # 1: 231 Valentina Drive  (day/night)
-----------------------------------------------
Car traffic volume  : 28546/3172  veh/TimePeriod  *
Medium truck volume :  1074/119   veh/TimePeriod  *
Heavy truck volume  :  1074/119   veh/TimePeriod  *
Posted speed limit  :    60 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):  34105
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 231 Valentina Drive  (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  :  21.00 / 21.00  m
Receiver height           :   1.00 / 1.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 231 Valentina Drive  (day)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.00 !        1.14 !         1.14

ROAD (0.00 + 58.42 + 0.00) = 58.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.50  72.09   0.00  -2.19  -1.17   0.00   0.00 -10.31  58.42
-------------------------------------------------------------------------------

Segment Leq : 58.42 dBA

Total Leq All Segments: 58.42 dBA

Results segment # 1: 231 Valentina Drive  (night)
-----------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.00 !        1.14 !         1.14

ROAD (0.00 + 51.88 + 0.00) = 51.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.50  65.55   0.00  -2.19  -1.17   0.00   0.00 -10.31  51.88
-------------------------------------------------------------------------------

Segment Leq : 51.88 dBA

Total Leq All Segments: 51.88 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 58.42
                           (NIGHT): 51.88
```

APPENDIX C

CONTINUOUS NOISE MONITORING RESULTS AT EIGHT RECEPTOR LOCATIONS

TABLE C-1
LOCATION 1 – 83 BUTTON ROAD

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	14-Nov-03	15:00:01	60	53.5	56	42	40	38
2	14-Nov-03	16:00:01	60	71.5	65.5	61.5	53	38
3	14-Nov-03	17:00:01	60	65.5	69	66	63.5	59
4	14-Nov-03	18:00:01	60	65	68.5	65.5	62.5	58
5	14-Nov-03	19:00:01	60	63	65.5	63	61.5	57
6	14-Nov-03	20:00:01	60	63.5	65	63	62	57.5
7	14-Nov-03	21:00:01	60	62.5	65	63	61.5	57
8	14-Nov-03	22:00:01	60	62	65	62.5	61	55
9	14-Nov-03	23:00:01	60	61.5	64.5	62	60.5	54.5
10	15-Nov-03	0:00:01	60	62.5	66	62	59.5	52.5
11	15-Nov-03	1:00:01	60	60.5	64	60	58	49.5
12	15-Nov-03	2:00:01	60	59	63	59	56.5	48.5
13	15-Nov-03	3:00:01	60	58.5	61.5	57	54	46
14	15-Nov-03	4:00:01	60	55.5	59.5	54	49.5	42.5
15	15-Nov-03	5:00:01	60	58	62	57	54	44.5
16	15-Nov-03	6:00:01	60	61.5	65.5	61.5	60	54
17	15-Nov-03	7:00:01	60	62.5	66	62.5	61	54.5
18	15-Nov-03	8:00:01	60	61.5	64.5	62.5	61	55
19	15-Nov-03	9:00:01	60	63	65.5	63.5	62	57
20	15-Nov-03	10:00:01	60	63	65.5	63.5	62	57.5
21	15-Nov-03	11:00:01	60	64	66.5	64	63	58.5
22	15-Nov-03	12:00:01	60	65.5	66	63.5	62	58.5
23	15-Nov-03	13:00:01	60	63.5	66	63.5	62.5	58.5
24	15-Nov-03	14:00:01	60	63	65.5	63	62	58
25	15-Nov-03	15:00:02	60	63	65.5	63.5	62.5	58
26	15-Nov-03	16:00:02	60	63	65.5	63.5	62	58
27	15-Nov-03	17:00:02	60	62.5	65.5	63.5	62	58
28	15-Nov-03	18:00:02	60	62.5	65	63	62	58
29	15-Nov-03	19:00:02	60	62	64.5	62.5	61.5	56
30	15-Nov-03	20:00:02	60	60.5	63.5	61.5	60	53
31	15-Nov-03	21:00:02	60	60.5	63.5	61.5	59.5	53.5
32	15-Nov-03	22:00:02	60	61	64	61.5	60	53.5
33	15-Nov-03	23:00:02	60	60.5	63.5	61	59.5	52.5
34	16-Nov-03	0:00:02	60	60.5	64	61	59	51.5
35	16-Nov-03	1:00:02	60	60	64	60.5	58	51

TABLE C-1 (Cont'd)
LOCATION 1 – 83 BUTTON ROAD

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
36	16-Nov-03	2:00:02	60	59.5	63	59.5	57	49
37	16-Nov-03	3:00:02	60	58	62	58	55.5	47
38	16-Nov-03	4:00:02	60	56.5	60.5	55	51	44
39	16-Nov-03	5:00:02	60	55.5	59.5	54	50	43.5
40	16-Nov-03	6:00:02	60	58.5	61.5	57	53.5	45.5
41	16-Nov-03	7:00:02	60	59	63	58.5	55.5	46.5
42	16-Nov-03	8:00:02	60	60	64	60.5	58	49
43	16-Nov-03	9:00:02	60	61	64	61.5	59.5	52
44	16-Nov-03	10:00:02	60	61.5	64	62	61	54.5
45	16-Nov-03	11:00:02	60	62	64.5	62.5	61.5	55.5
46	16-Nov-03	12:00:02	60	62.5	65	63	62	57
47	16-Nov-03	13:00:02	60	63	65	63.5	62	57.5
48	16-Nov-03	14:00:02	60	62.5	65	63	62	57
49	16-Nov-03	15:00:03	60	62.5	65	63	61.5	57
50	16-Nov-03	16:00:03	60	62	64.5	62.5	61.5	57
51	16-Nov-03	17:00:03	60	62.5	65	63	61.5	56.5
52	16-Nov-03	18:00:03	60	61.5	64	62	60.5	55
53	16-Nov-03	19:00:03	60	61	64	61.5	60	53.5
54	16-Nov-03	20:00:03	60	61	64	61.5	60	53.5
55	16-Nov-03	21:00:03	60	61.5	64	61.5	59.5	52.5
56	16-Nov-03	22:00:03	60	60	63.5	60	58	50.5
57	16-Nov-03	23:00:03	60	59.5	63	59.5	57.5	49.5
58	17-Nov-03	0:00:03	60	60.5	64	60	58	50.5
59	17-Nov-03	1:00:03	60	62	65.5	61	58.5	51.5
60	17-Nov-03	2:00:03	60	57	61	55	51.5	45
61	17-Nov-03	3:00:03	60	56	60	53	49	44.5
62	17-Nov-03	4:00:03	60	58	62	56	51	44
63	17-Nov-03	5:00:03	60	62	66	61.5	59	49
64	17-Nov-03	6:00:03	60	65	69	66	63.5	56.5
65	17-Nov-03	7:00:03	60	65.5	68.5	66	63.5	57.5
66	17-Nov-03	8:00:03	60	65.5	68.5	65.5	63.5	59
67	17-Nov-03	9:00:03	60	65	68	65	63.5	58
68	17-Nov-03	10:00:03	60	64.5	67.5	65	63.5	59
69	17-Nov-03	11:00:03	60	64	67	64.5	63	58.5

TABLE C-2
LOCATION 2 – 59 EMBASSADOR CRE.

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	10-Oct-03	20:11:01	60	67.5	69	66	64.5	58.5
2	10-Oct-03	21:11:01	60	65.5	68.5	65.5	64	58.5
3	10-Oct-03	22:11:01	60	65	67.5	65	63.5	58
4	10-Oct-03	23:11:01	60	65.5	68	65	63	57.5
5	11-Oct-03	0:11:01	60	64	66.5	64	62	56.5
6	11-Oct-03	1:11:01	60	64	66	62	60	55
7	11-Oct-03	2:11:01	60	62	64	60.5	58	53.5
8	11-Oct-03	3:11:01	60	60	63	59	56.5	52
9	11-Oct-03	4:11:01	60	59	62.5	58.5	56.5	52
10	11-Oct-03	5:11:01	60	59.5	63	59	57	52
11	11-Oct-03	6:11:01	60	63	66	62.5	60.5	56
12	11-Oct-03	7:11:01	60	64	67	64	62.5	57.5
13	11-Oct-03	8:11:01	60	65	68	65	63.5	57
14	11-Oct-03	9:11:01	60	65	68	65.5	63.5	57.5
15	11-Oct-03	10:11:01	60	67.5	68	65.5	64	57.5
16	11-Oct-03	11:11:01	60	65	68	65.5	63.5	57.5
17	11-Oct-03	12:11:01	60	64.5	67.5	65.5	63.5	57.5
18	11-Oct-03	13:11:01	60	65.5	68	66	64.5	58
19	11-Oct-03	14:11:01	60	66.5	68.5	66	64.5	58.5
20	11-Oct-03	15:11:01	60	66	68.5	66	64.5	58.5
21	11-Oct-03	16:11:01	60	67	69	67	65.5	59
22	11-Oct-03	17:11:01	60	66	68.5	66.5	65	58
23	11-Oct-03	18:11:01	60	66	68.5	66	64.5	58.5
24	11-Oct-03	19:11:01	60	64.5	67	64.5	63.5	57.5
25	11-Oct-03	20:11:02	60	64	66.5	64	62	57
26	11-Oct-03	21:11:02	60	64	67	64	62.5	57
27	11-Oct-03	22:11:02	60	64	66.5	64.5	63	57
28	11-Oct-03	23:11:02	60	64.5	66.5	64	62.5	56.5
29	12-Oct-03	0:11:02	60	63.5	66	63.5	61.5	56.5
30	12-Oct-03	1:11:02	60	63	66	62.5	60.5	55
31	12-Oct-03	2:11:02	60	61	64.5	61	59	52.5
32	12-Oct-03	3:11:02	60	60	63.5	59.5	57.5	51
33	12-Oct-03	4:11:02	60	58	62	57	54.5	49
34	12-Oct-03	5:11:02	60	56.5	60	55	52	48
35	12-Oct-03	6:11:02	60	57	61	56.5	53.5	49.5
36	12-Oct-03	7:11:02	60	60	63.5	59.5	57.5	52.5
37	12-Oct-03	8:11:02	60	62	64	61	59	53
38	12-Oct-03	9:11:02	60	62.5	65.5	63	61.5	56
39	12-Oct-03	10:11:02	60	63.5	66.5	64	62	56
40	12-Oct-03	11:11:02	60	63.5	66.5	64	63	57
41	12-Oct-03	12:11:02	60	64	67	64.5	63	57
42	12-Oct-03	13:11:02	60	63.5	66	64	63	57
43	12-Oct-03	14:11:02	60	65	66.5	64	62.5	57
44	12-Oct-03	15:11:02	60	64.5	66.5	64.5	63	57
45	12-Oct-03	16:11:02	60	64	67	64.5	63	57
46	12-Oct-03	17:11:02	60	64	66.5	64.5	63	56.5

TABLE C-2 (Cont'd)
LOCATION 2 – 59 EMBASSADOR CRE.

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
47	12-Oct-03	18:11:02	60	64	66.5	64	62.5	56.5
48	12-Oct-03	19:11:02	60	63	65.5	63.5	62	56
49	12-Oct-03	20:11:03	60	63.5	66	64	62	56.5
50	12-Oct-03	21:11:03	60	64	66.5	64	63	57
51	12-Oct-03	22:11:03	60	64	67	64.5	63	57
52	12-Oct-03	23:11:03	60	64	67	64	62.5	57
53	13-Oct-03	0:11:03	60	63	66	63	61.5	56.5
54	13-Oct-03	1:11:03	60	62.5	65	62	60	54
55	13-Oct-03	2:11:03	60	61.5	63.5	59	56.5	49.5
56	13-Oct-03	3:11:03	60	57.5	61	56	53.5	47.5
57	13-Oct-03	4:11:03	60	57.5	61	55	52.5	46
58	13-Oct-03	5:11:03	60	55	59	54	51	46.5
59	13-Oct-03	6:11:03	60	59	62	58	55.5	50
60	13-Oct-03	7:11:03	60	60	63.5	59.5	57.5	51.5
61	13-Oct-03	8:11:03	60	60.5	64	60.5	58.5	53
62	13-Oct-03	9:11:03	60	61.5	65	61.5	59.5	53.5
63	13-Oct-03	10:11:03	60	63.5	66	63.5	62	54
64	13-Oct-03	11:11:03	60	63.5	66.5	64	62	55
65	13-Oct-03	12:11:03	60	64.5	66.5	64.5	62.5	56
66	13-Oct-03	13:11:03	60	64.5	67	64.5	63	56
67	13-Oct-03	14:11:03	60	64	66.5	64	62	55.5
68	13-Oct-03	15:11:03	60	64	66	63.5	62	56.5
69	13-Oct-03	16:11:03	60	63	66	63.5	62	57
70	13-Oct-03	17:11:03	60	64	66	63.5	62	57
71	13-Oct-03	18:11:03	60	64.5	66.5	64	62.5	57.5
72	13-Oct-03	19:11:03	60	64.5	67	64.5	63	58
73	13-Oct-03	20:11:04	60	64	67	64.5	63	57.5
74	13-Oct-03	21:11:04	60	64	66.5	64	62.5	57
75	13-Oct-03	22:11:04	60	63.5	66	63	61.5	55.5
76	13-Oct-03	23:11:04	60	61.5	65	62	60	53.5
77	14-Oct-03	0:11:04	60	59.5	63	59	56.5	50
78	14-Oct-03	1:11:04	60	57	60.5	55.5	53	48
79	14-Oct-03	2:11:04	60	56.5	60	54.5	51.5	47
80	14-Oct-03	3:11:04	60	57	59.5	54	51.5	47
81	14-Oct-03	4:11:04	60	59	62.5	58	56	51
82	14-Oct-03	5:11:04	60	63	66.5	63	61	55
83	14-Oct-03	6:11:04	60	66.5	69.5	66.5	65.5	61.5
84	14-Oct-03	7:11:04	60	66.5	69.5	66.5	64.5	60.5
85	14-Oct-03	8:11:04	60	66.5	70	67	65	60.5
86	14-Oct-03	9:11:04	60	66.5	70	66.5	64.5	59
87	14-Oct-03	10:11:04	60	66	70	66.5	64.5	58
88	14-Oct-03	11:11:04	60	66	69.5	66.5	64.5	58.5
89	14-Oct-03	12:11:04	60	66	69	66.5	64.5	59
90	14-Oct-03	13:11:04	60	66	69.5	66.5	64.5	59
91	14-Oct-03	14:11:04	60	66.5	69.5	66.5	64.5	58.5
92	14-Oct-03	15:11:04	60	66.5	69	66.5	65	60.5
93	14-Oct-03	16:11:04	60	67	69.5	67.5	66	61.5
94	14-Oct-03	17:11:04	60	67	69.5	67.5	66	62
95	14-Oct-03	18:11:04	60	68.5	71	68	66.5	59.5

TABLE C-3

LOCATION 3 – 7651 KEELE STREET

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	5-Nov-03	18:00	60	68	70	68	67	64.5
2	5-Nov-03	19:00	60	68.5	71.5	68.5	67.5	64.5
3	5-Nov-03	20:00	60	68	70.5	68	67	63.5
4	5-Nov-03	21:00	60	67.5	70	67	66	63
5	5-Nov-03	22:00	60	68	69.5	66.5	65	61.5
6	5-Nov-03	23:00	60	66	69	65.5	64	60.5
7	6-Nov-03	0:00	60	65	68	64.5	63	59.5
8	6-Nov-03	1:00	60	64.5	67.5	63	61	58
9	6-Nov-03	2:00	60	63.5	66.5	62.5	61	57.5
10	6-Nov-03	3:00	60	62.5	65	61	59.5	57.5
11	6-Nov-03	4:00	60	62.5	65.5	61	59.5	57.5
12	6-Nov-03	5:00	60	64.5	67	63	61.5	59
13	6-Nov-03	6:00	60	67.5	70.5	66.5	65	62
14	6-Nov-03	7:00	60	69	71.5	68.5	67.5	64
15	6-Nov-03	8:00	60	70	73	70.5	69	66
16	6-Nov-03	9:00	60	69.5	72.5	69.5	68.5	64.5
17	6-Nov-03	10:00	60	69	72	69	67.5	63
18	6-Nov-03	11:00	60	67	70	66.5	64.5	60.5
19	6-Nov-03	12:00	60	66.5	69.5	67	65.5	62
20	6-Nov-03	13:00	60	66.5	69	67	65.5	62.5
21	6-Nov-03	14:00	60	67.5	70	68	66.5	63.5
22	6-Nov-03	15:00	60	67	70	67.5	66	62
23	6-Nov-03	16:00	60	67.5	70	67	65.5	62.5
24	6-Nov-03	17:00	60	70	73	69	67	62
25	6-Nov-03	18:00	60	66.5	70	66	64.5	61
26	6-Nov-03	19:00	60	67	70	67	65.5	61.5
27	6-Nov-03	20:00	60	67	70.5	67	65	60.5
28	6-Nov-03	21:00	60	66.5	69.5	66	64	58.5
29	6-Nov-03	22:00	60	66.5	69.5	66	64	59
30	6-Nov-03	23:00	60	66	69.5	66	64	60
31	7-Nov-03	0:00	60	66	69	65.5	64	60
32	7-Nov-03	1:00	60	65	67.5	64	62.5	59
33	7-Nov-03	2:00	60	63	66	61.5	60	57.5
34	7-Nov-03	3:00	60	62.5	65.5	60	58.5	57
35	7-Nov-03	4:00	60	63.5	66	63	61	58
36	7-Nov-03	5:00	60	65.5	68	64	62.5	59.5
37	7-Nov-03	6:00	60	68	71.5	68	66.5	63.5
38	7-Nov-03	7:00	60	71	74	70.5	69	65.5
39	7-Nov-03	8:00	60	73	76	73	71.5	67
40	7-Nov-03	9:00	60	70.5	73	70	68.5	66

TABLE C-3 (Cont'd)
LOCATION 3 – 7651 KEELE STREET

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
41	7-Nov-03	10:00	60	71.5	73.5	71	69.5	66
42	7-Nov-03	11:00	60	75.5	76	71.5	70	66.5
43	7-Nov-03	12:00	60	73.5	74.5	71	69.5	66.5
44	7-Nov-03	13:00	60	72	74	71	69.5	67
45	7-Nov-03	14:00	60	70.5	73.5	70.5	69.5	67
46	7-Nov-03	15:00	60	71	74	71	70	67
47	7-Nov-03	16:00	60	71	73.5	71	70	67
48	7-Nov-03	17:00	60	71	73	69.5	68	64.5
49	7-Nov-03	18:00	60	69	72	69	67.5	64.5
50	7-Nov-03	19:00	60	69.5	72	69.5	68	64.5
51	7-Nov-03	20:00	60	69.5	72	69.5	68	64.5
52	7-Nov-03	21:00	60	68	71	68	67	63
53	7-Nov-03	22:00	60	67.5	71	67.5	65.5	61.5
54	7-Nov-03	23:00	60	67	70	67	65.5	62
55	8-Nov-03	0:00	60	67	70	67	65.5	62
56	8-Nov-03	1:00	60	66	69	66	64	60
57	8-Nov-03	2:00	60	64.5	68	64	61.5	57.5
58	8-Nov-03	3:00	60	63.5	67	61.5	59	55.5
59	8-Nov-03	4:00	60	62	65.5	59.5	57	54
60	8-Nov-03	5:00	60	61	64.5	58	55.5	53
61	8-Nov-03	6:00	60	63	66.5	61	58.5	54.5
62	8-Nov-03	7:00	60	69.5	72.5	67	64.5	57.5
63	8-Nov-03	8:00	60	72.5	74.5	69.5	67.5	62
64	8-Nov-03	9:00	60	69.5	73	69.5	67.5	61.5
65	8-Nov-03	10:00	60	73.5	73.5	69.5	68	63
66	8-Nov-03	11:00	60	71	73.5	69.5	68	63.5
67	8-Nov-03	12:00	60	69.5	73	69	67.5	63
68	8-Nov-03	13:00	60	69.5	72	69.5	68	64.5
69	8-Nov-03	14:00	60	68.5	72	68	66.5	61.5
70	8-Nov-03	15:00	60	66.5	69.5	67	65.5	60.5
71	8-Nov-03	16:00	60	66.5	69.5	66.5	65	59.5
72	8-Nov-03	17:00	60	66	69	66.5	65	60
73	8-Nov-03	18:00	60	65	68	65.5	64	58.5
74	8-Nov-03	19:00	60	65	67.5	65.5	64	58
75	8-Nov-03	20:00	60	63.5	67	64	62	57
76	8-Nov-03	21:00	60	63.5	66.5	63.5	61.5	57.5
77	8-Nov-03	22:00	60	62.5	66	62.5	60.5	56.5
78	8-Nov-03	23:00	60	62.5	66	62.5	60.5	56
79	9-Nov-03	0:00	60	63.5	66.5	63	61.5	57
80	9-Nov-03	1:00	60	63	66.5	63	61	56.5
81	9-Nov-03	2:00	60	63	65.5	62	60	55.5

TABLE C-3 (Cont'd)
LOCATION 3 – 7651 KEELE STREET

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
82	9-Nov-03	3:00	60	61.5	65	60.5	58.5	54
83	9-Nov-03	4:00	60	58.5	62.5	57	55	51.5
84	9-Nov-03	5:00	60	60.5	62.5	58	56.5	53
85	9-Nov-03	6:00	60	58.5	61.5	55.5	53.5	50.5
86	9-Nov-03	7:00	60	60.5	64	59	57	52.5
87	9-Nov-03	8:00	60	62	65	61	58.5	54
88	9-Nov-03	9:00	60	62.5	66	62	58.5	53
89	9-Nov-03	10:00	60	63	66.5	62	59.5	53.5
90	9-Nov-03	11:00	60	64.5	67.5	64	62	55.5
91	9-Nov-03	12:00	60	65.5	68	64.5	63	56
92	9-Nov-03	13:00	60	65	68	65	63	57.5
93	9-Nov-03	14:00	60	64.5	68	65	63	57
94	9-Nov-03	15:00	60	64.5	67.5	64.5	63	56.5
95	9-Nov-03	16:00	60	64.5	67.5	65	63.5	58.5
96	9-Nov-03	17:00	60	64.5	67.5	65	63.5	58
97	9-Nov-03	18:00	60	64	67.5	64.5	62.5	57
98	9-Nov-03	19:00	60	63.5	67	64	62	56.5
99	9-Nov-03	20:00	60	62.5	66	62.5	60.5	55
100	9-Nov-03	21:00	60	62.5	66	62.5	60.5	55
101	9-Nov-03	22:00	60	62.5	66	62.5	60.5	55.5
102	9-Nov-03	23:00	60	62	65.5	62	60	55.5
103	10-Nov-03	0:00	60	62	65.5	61.5	59.5	57
104	10-Nov-03	1:00	60	61.5	64	59.5	58	55.5
105	10-Nov-03	2:00	60	61	63.5	58.5	57.5	55.5
106	10-Nov-03	3:00	60	61	63.5	58	56.5	54.5
107	10-Nov-03	4:00	60	61	64	57.5	56	53.5
108	10-Nov-03	5:00	60	63.5	66.5	61	59	56
109	10-Nov-03	6:00	60	68	71	67.5	66	62.5
110	10-Nov-03	7:00	60	71	73.5	70	69	66
111	10-Nov-03	8:00	60	70.5	73.5	70.5	69.5	66.5
112	10-Nov-03	9:00	60	69.5	72.5	70	68.5	65.5
113	10-Nov-03	10:00	60	71.5	75.5	71	69	65
114	10-Nov-03	11:00	60	71.5	74.5	72	70.5	66
115	10-Nov-03	12:00	60	74	78	73.5	71.5	67.5
116	10-Nov-03	13:00	60	70	73	70	68.5	65
117	10-Nov-03	14:00	60	75.5	79	75.5	74	69.5
118	10-Nov-03	15:00	60	74	78	73.5	71	65.5

TABLE C-4
LOCATION 4 – 104 SUGER CREST

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	5-Sep-03	20:00	60	58.4	60.8	58.7	57.5	55
2	5-Sep-03	21:00	60	57.1	59.7	57.5	56.1	53.1
3	5-Sep-03	22:00	60	56.5	59.2	56.8	55.2	51.1
4	5-Sep-03	23:00	60	56.3	59.2	56.7	55	50.6
5	6-Sep-03	0:00	60	55.4	58.3	55.3	53.6	48.7
6	6-Sep-03	1:00	60	54.6	56.9	53.5	51.5	45.6
7	6-Sep-03	2:00	60	53.2	56.5	52.6	50.4	45.6
8	6-Sep-03	3:00	60	53.8	54.8	51.6	49.8	45.5
9	6-Sep-03	4:00	60	50.5	53.7	49.7	48	44.2
10	6-Sep-03	5:00	60	52.6	55.7	52	50.3	46.8
11	6-Sep-03	6:00	60	57.3	60.4	57.5	56.2	52.3
12	6-Sep-03	7:00	60	58	60.4	58.1	56.9	54.1
13	6-Sep-03	8:00	60	57	59.5	56.9	55.7	52.8
14	6-Sep-03	9:00	60	56.8	59.4	57.1	55.9	52.8
15	6-Sep-03	10:00	60	56.9	59.3	56.9	55.6	51.8
16	6-Sep-03	11:00	60	57.9	60.5	57.7	56.4	52.3
17	6-Sep-03	12:00	60	58.5	61	58.8	57.8	54
18	6-Sep-03	13:00	60	59.5	61.6	59.4	58.3	55.1
19	6-Sep-03	14:00	60	59.7	62.1	60.1	59.2	56
20	6-Sep-03	15:00	60	60.2	62.4	60.3	59.3	56
21	6-Sep-03	16:00	60	61.3	64.3	61.5	60.2	56.9
22	6-Sep-03	17:00	60	59.7	61.9	59.9	59	56.6
23	6-Sep-03	18:00	60	59.7	61.8	59.9	59	56.4
24	6-Sep-03	19:00	60	59.8	62.2	60.2	59.1	55.3
25	6-Sep-03	20:00	60	60.4	63	60.7	59.5	55.8
26	6-Sep-03	21:00	60	61	63.5	61.4	60.2	56.7
27	6-Sep-03	22:00	60	58.6	60.9	58.8	57.6	54.2
28	6-Sep-03	23:00	60	57.9	60.4	58.2	57	53.5
29	7-Sep-03	0:00	60	56.2	58.8	56.5	55.4	52.3
30	7-Sep-03	1:00	60	55.1	57.8	55.5	54.2	50.4
31	7-Sep-03	2:00	60	52.4	55.6	52.5	51	46.2
32	7-Sep-03	3:00	60	51.2	54.5	51	49.3	45.4
33	7-Sep-03	4:00	60	49.5	52.7	49.3	47.6	42.1
34	7-Sep-03	5:00	60	51.2	54.1	51.2	49.6	44.1
35	7-Sep-03	6:00	60	52.5	55.6	52.4	50.9	46.1
36	7-Sep-03	7:00	60	52.7	55.9	52.8	51.2	47.5
37	7-Sep-03	8:00	60	54	56.5	53.1	51.2	47
38	7-Sep-03	9:00	60	53	56.3	53.1	51.2	47.1
39	7-Sep-03	10:00	60	72	76.2	56	54.2	49
40	7-Sep-03	11:00	60	55.9	58.5	55.9	54.7	50.1
41	7-Sep-03	12:00	60	56	58.6	56.6	55.3	51.1
42	7-Sep-03	13:00	60	56.9	58.9	57.1	56	53.2
43	7-Sep-03	14:00	60	56.5	58.8	56.5	55.2	51.2
44	7-Sep-03	15:00	60	57.4	59.8	57.4	56.1	52.4
45	7-Sep-03	16:00	60	56.4	58.8	56.8	55.8	52.8
46	7-Sep-03	17:00	60	57.2	59.3	57.2	56.2	54.1
47	7-Sep-03	18:00	60	56.7	59.3	57	55.8	52.3

TABLE C-4 (Cont'd)
LOCATION 4 – 104 SUGER CREST

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
48	7-Sep-03	19:00	60	57.4	59.2	57	55.8	52.5
49	7-Sep-03	20:00	60	56.1	58.7	56.4	55.1	51.9
50	7-Sep-03	21:00	60	57.2	59.7	57.3	56.1	53
51	7-Sep-03	22:00	60	60.1	62.7	60.5	59.3	55.7
52	7-Sep-03	23:00	60	58.4	61	58.6	57.3	52.9
53	8-Sep-03	0:00	60	56.2	59.1	56.5	55	50.2
54	8-Sep-03	1:00	60	54.4	57.6	54.2	52.5	46.5
55	8-Sep-03	2:00	60	51.8	55.2	51.6	49.8	44.2
56	8-Sep-03	3:00	60	51.8	55.1	51.7	50	44.9
57	8-Sep-03	4:00	60	54.3	57.8	54.2	52.3	46.6
58	8-Sep-03	5:00	60	59	61.7	59.5	58.2	53.8
59	8-Sep-03	6:00	60	63.5	65.6	64.2	63.2	60
60	8-Sep-03	7:00	60	63.8	65.7	64.3	63.6	61.1
61	8-Sep-03	8:00	60	62.1	64.3	62.8	61.9	58.4
62	8-Sep-03	9:00	60	65.5	67.3	65.9	65.2	62.8
63	8-Sep-03	10:00	60	64.5	66.8	65.1	64	61
64	8-Sep-03	11:00	60	62.8	65.3	63.3	62.2	59.1
65	8-Sep-03	12:00	60	62.9	65.3	63.3	62.2	59.3
66	8-Sep-03	13:00	60	62.1	64.3	62.2	61.1	57.5
67	8-Sep-03	14:00	60	62.1	64.5	62.5	61.4	58.3
68	8-Sep-03	15:00	60	63.3	65.5	63.8	62.8	59.5
69	8-Sep-03	16:00	60	64.1	65.7	64.4	63.8	62.1
70	8-Sep-03	17:00	60	64.2	65.8	64.5	63.9	62.3
71	8-Sep-03	18:00	60	64.6	66.3	65	64.3	62.1
72	8-Sep-03	19:00	60	62.3	64.3	62.7	61.8	59.1
73	8-Sep-03	20:00	60	60.7	62	59.8	58.8	56
74	8-Sep-03	21:00	60	59	61.4	59.3	58	54.9
75	8-Sep-03	22:00	60	59.4	61.8	59.7	58.5	55.2
76	8-Sep-03	23:00	60	58	60.7	58.4	57.2	53.9
77	9-Sep-03	0:00	60	55.7	58.6	55.7	54.3	50.2
78	9-Sep-03	1:00	60	53.5	56.3	53.3	51.8	47.6
79	9-Sep-03	2:00	60	53.5	56.8	53.2	51.3	46
80	9-Sep-03	3:00	60	53.9	57.1	53.8	51.9	45.4
81	9-Sep-03	4:00	60	56.1	59.4	55.8	54	48.9
82	9-Sep-03	5:00	60	60.5	63.4	61.2	59.9	55.1
83	9-Sep-03	6:00	60	64.1	66	64.7	63.9	61.4
84	9-Sep-03	7:00	60	64.1	65.8	64.7	64	61.4
85	9-Sep-03	8:00	60	62.9	64.9	63.5	62.5	59.4
86	9-Sep-03	9:00	60	65.6	67.7	66.1	65.3	62.3
87	9-Sep-03	10:00	60	65.1	67.2	65.7	64.8	62.3
88	9-Sep-03	11:00	60	63.7	66.1	64.3	63.2	59.9
89	9-Sep-03	12:00	60	63.2	65.7	63.7	62.6	58.9
90	9-Sep-03	13:00	60	64.1	66.5	64.5	63.6	60.6
91	9-Sep-03	14:00	60	64.3	66.4	64.7	63.8	61.3
92	9-Sep-03	15:00	60	64.6	66.7	65	64.2	61.6
93	9-Sep-03	16:00	60	66	67.8	66.5	65.8	64
94	9-Sep-03	17:00	60	66.4	67.8	66.8	66.2	64.4
95	9-Sep-03	18:00	60	65	66.8	65.5	64.8	62.6

TABLE C-5
LOCATION 5 – 364 HIGHWAY 7

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	5-Nov-03	16:50	60	63.5	63.5	61.5	60	54.5
2	5-Nov-03	17:50	60	59.5	62	60.5	59	51.5
3	5-Nov-03	18:50	60	59	62	60	58	51.5
4	5-Nov-03	19:50	60	58.5	61.5	59	57	51
5	5-Nov-03	20:50	60	58.5	61.5	59	56.5	49
6	5-Nov-03	21:50	60	57.5	61	58	55.5	47.5
7	5-Nov-03	22:50	60	56.5	60	56.5	54	47
8	5-Nov-03	23:50	60	55	58.5	55.5	53	46.5
9	6-Nov-03	0:50	60	54	58	53.5	51	44.5
10	6-Nov-03	1:50	60	53	56.5	52.5	49.5	44
11	6-Nov-03	2:50	60	53	55.5	50	47	43
12	6-Nov-03	3:50	60	52	55.5	50.5	48	43
13	6-Nov-03	4:50	60	54.5	59	53.5	51	44.5
14	6-Nov-03	5:50	60	59.5	63	60	57.5	51
15	6-Nov-03	6:50	60	61	64	62	60	54.5
16	6-Nov-03	7:50	60	61	64	61.5	60	55
17	6-Nov-03	8:50	60	61.5	64.5	62	60	56
18	6-Nov-03	9:50	60	61.5	64.5	62	60.5	55
19	6-Nov-03	10:50	60	62	63.5	60.5	58.5	51.5
20	6-Nov-03	11:50	60	61	64	61	59.5	54.5
21	6-Nov-03	12:50	60	60.5	63.5	60.5	58.5	53.5
22	6-Nov-03	13:50	60	60	63.5	60.5	59	52.5
23	6-Nov-03	14:50	60	60.5	63.5	61	59.5	54
24	6-Nov-03	15:50	60	60.5	63.5	61.5	60	53.5
25	6-Nov-03	16:50	60	60	62.5	60.5	59.5	53.5
26	6-Nov-03	17:50	60	59.5	62.5	60.5	59	51
27	6-Nov-03	18:50	60	59	62	59.5	58	50
28	6-Nov-03	19:50	60	59	61	58.5	57	50.5
29	6-Nov-03	20:50	60	58	61	58.5	56.5	50
30	6-Nov-03	21:50	60	58	61	58	56.5	51
31	6-Nov-03	22:50	60	57	60.5	57	55	48
32	6-Nov-03	23:50	60	55.5	59	55.5	53.5	47
33	7-Nov-03	0:50	60	55	59	55	53	47.5
34	7-Nov-03	1:50	60	54	57.5	53.5	51	46
35	7-Nov-03	2:50	60	53	56.5	52	50	45
36	7-Nov-03	3:50	60	53.5	56.5	52	50	45.5
37	7-Nov-03	4:50	60	55	59	54	52	46.5
38	7-Nov-03	5:50	60	60	63.5	60.5	58.5	53.5
39	7-Nov-03	6:50	60	62.5	65	63	61.5	58.5
40	7-Nov-03	7:50	60	61.5	64	62	60.5	58

TABLE C-5 (Cont'd)
LOCATION 5 – 364 HIGHWAY 7

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
41	7-Nov-03	8:50	60	62.5	65.5	62.5	61.5	57.5
42	7-Nov-03	9:50	60	62	64.5	62	60.5	57
43	7-Nov-03	10:50	60	62	64.5	62	60.5	56.5
44	7-Nov-03	11:50	60	62	64.5	62	61	57.5
45	7-Nov-03	12:50	60	61.5	64	61.5	60	56.5
46	7-Nov-03	13:50	60	61.5	64	62	60.5	57
47	7-Nov-03	14:50	60	61.5	64	62	61	57.5
48	7-Nov-03	15:50	60	61.5	64	62	61	57
49	7-Nov-03	16:50	60	60.5	63	61.5	60	55.5
50	7-Nov-03	17:50	60	60	62	60.5	59.5	55
51	7-Nov-03	18:50	60	59.5	62	60	58.5	53.5
52	7-Nov-03	19:50	60	58.5	61	59	57	51.5
53	7-Nov-03	20:50	60	58	60.5	58.5	57	51
54	7-Nov-03	21:50	60	57	60	58	56	50.5
55	7-Nov-03	22:50	60	57	60	57.5	55.5	50
56	7-Nov-03	23:50	60	56.5	60	57	55	49.5
57	8-Nov-03	0:50	60	54.5	58	55	52.5	45.5
58	8-Nov-03	1:50	60	54	58	53.5	51	43
59	8-Nov-03	2:50	60	54	57.5	53	50.5	43
60	8-Nov-03	3:50	60	51.5	55.5	50	47	41.5
61	8-Nov-03	4:50	60	51	55	49	45.5	41
62	8-Nov-03	5:50	60	55	59	54.5	52	43.5
63	8-Nov-03	6:50	60	58.5	61	57	55	48
64	8-Nov-03	7:50	60	57	60.5	57.5	55	47.5
65	8-Nov-03	8:50	60	58	61	58	56	49.5
66	8-Nov-03	9:50	60	57	60	57	55	48
67	8-Nov-03	10:50	60	57	60	57.5	55.5	49
68	8-Nov-03	11:50	60	56.5	59.5	57	55	49
69	8-Nov-03	12:50	60	57	60	57.5	56	50
70	8-Nov-03	13:50	60	58.5	61.5	59.5	58	52
71	8-Nov-03	14:50	60	57.5	60	58	56	48
72	8-Nov-03	15:50	60	57	60	58.5	56	47
73	8-Nov-03	16:50	60	57.5	60.5	58.5	56.5	46.5
74	8-Nov-03	17:50	60	58	61	59	57	50
75	8-Nov-03	18:50	60	57.5	60.5	58.5	57	50.5
76	8-Nov-03	19:50	60	57	60.5	57.5	55.5	48.5
77	8-Nov-03	20:50	60	57	60.5	57.5	55.5	49.5
78	8-Nov-03	21:50	60	57.5	61	58.5	56.5	49.5
79	8-Nov-03	22:50	60	57	60.5	58	55.5	49
80	8-Nov-03	23:50	60	56	59.5	56.5	54.5	49

TABLE C-5 (Cont'd)
LOCATION 5 – 364 HIGHWAY 7

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
81	9-Nov-03	0:50	60	56	59	56	54.5	49
82	9-Nov-03	1:50	60	54.5	58	54.5	52	47
83	9-Nov-03	2:50	60	53.5	57	53	50.5	45.5
84	9-Nov-03	3:50	60	51	55	49.5	47.5	42.5
85	9-Nov-03	4:50	60	51	54.5	48.5	45.5	42
86	9-Nov-03	5:50	60	52.5	56.5	51	48	43
87	9-Nov-03	6:50	60	54	57.5	53.5	51	46
88	9-Nov-03	7:50	60	54.5	58	54.5	52	46.5
89	9-Nov-03	8:50	60	55	58.5	55.5	53	47.5
90	9-Nov-03	9:50	60	56	59	56	54.5	48.5
91	9-Nov-03	10:50	60	56.5	59.5	57	55	48.5
92	9-Nov-03	11:50	60	57	60	57.5	56	51
93	9-Nov-03	12:50	60	57	59.5	58	56	50.5
94	9-Nov-03	13:50	60	57.5	60.5	58.5	57	50.5
95	9-Nov-03	14:50	60	58	60.5	58.5	56.5	50.5
96	9-Nov-03	15:50	60	58	60.5	58	56.5	50.5
97	9-Nov-03	16:50	60	58	60.5	58.5	56.5	51.5
98	9-Nov-03	17:50	60	59.5	60.5	58.5	57	52.5
99	9-Nov-03	18:50	60	58	60.5	58.5	56.5	52
100	9-Nov-03	19:50	60	57.5	60.5	58	56.5	51.5
101	9-Nov-03	20:49	60	57.5	60.5	58	56	51.5
102	9-Nov-03	21:49	60	57	60	57.5	56	51
103	9-Nov-03	22:49	60	55.5	59	55.5	54	49
104	9-Nov-03	23:49	60	55	58.5	55	53	47.5
105	10-Nov-03	0:49	60	53.5	56.5	53	51	46
106	10-Nov-03	1:49	60	52.5	55.5	50	47.5	43
107	10-Nov-03	2:49	60	51.5	55	51	49	44
108	10-Nov-03	3:49	60	53	56	51	48.5	43
109	10-Nov-03	4:49	60	55.5	59.5	54.5	52	46
110	10-Nov-03	5:49	60	61	64	61.5	59.5	54.5
111	10-Nov-03	6:49	60	63	66	64	62.5	59
112	10-Nov-03	7:49	60	62.5	64.5	62.5	61.5	58.5
113	10-Nov-03	8:49	60	61	64	61.5	60	56
114	10-Nov-03	9:49	60	61	64	61.5	59.5	55.5
115	10-Nov-03	10:49	60	60.5	63.5	61	59	55.5
116	10-Nov-03	11:49	60	60.5	63.5	60.5	58.5	54.5
117	10-Nov-03	12:49	60	60.5	63	60.5	59	55
118	10-Nov-03	13:49	60	60.5	63.5	61	59.5	55
119	10-Nov-03	14:49	60	61	63.5	61	60	55.5

TABLE C-6

LOCATION 6 – 2 MONTGOMERY COURT

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	11-Sep-03	20:00	60	60.6	62.6	60.8	60	57.4
2	11-Sep-03	21:00	60	60.4	62.5	60.7	59.5	56.6
3	11-Sep-03	22:00	60	60.5	62.9	60.6	59.2	56.1
4	11-Sep-03	23:00	60	58.7	61.7	58.5	56.6	53.3
5	12-Sep-03	0:00	60	56.6	59.8	56.5	55	52.1
6	12-Sep-03	1:00	60	55.4	58.7	54.6	53.2	50.2
7	12-Sep-03	2:00	60	53.6	57	52.9	51.1	48.4
8	12-Sep-03	3:00	60	52.6	56	50.9	49.2	46.7
9	12-Sep-03	4:00	60	52.8	56.2	51.7	49.7	46.8
10	12-Sep-03	5:00	60	55.3	58.8	54.9	52.6	48.7
11	12-Sep-03	6:00	60	60.3	63.9	60.4	58.4	53.7
12	12-Sep-03	7:00	60	61.8	64.4	62	60.4	55.7
13	12-Sep-03	8:00	60	62	64.9	62.4	60.9	54
14	12-Sep-03	9:00	60	62.6	64.9	62	60.4	54.2
15	12-Sep-03	10:00	60	60.8	63.7	60.6	59.2	54.9
16	12-Sep-03	11:00	60	64.7	66.4	61.7	60	55.6
17	12-Sep-03	12:00	60	62.5	65.4	60.9	59.3	55.7
18	12-Sep-03	13:00	60	64.6	66.4	61.4	59.5	55.6
19	12-Sep-03	14:00	60	63.2	65.1	60.6	59.1	55.3
20	12-Sep-03	15:00	60	63.6	64.3	60.6	59.2	55.7
21	12-Sep-03	16:00	60	63	64.4	60.7	59.3	55.8
22	12-Sep-03	17:00	60	60.9	63.7	60.2	58.8	55.4
23	12-Sep-03	18:00	60	62.5	63.8	60.2	58.9	55.2
24	12-Sep-03	19:00	60	59.4	61.7	59	58	55.2
25	12-Sep-03	20:00	60	59.1	61.1	58.7	57.7	55.3
26	12-Sep-03	21:00	60	60.5	61.7	58.8	57.9	55.2
27	12-Sep-03	22:00	60	60.2	62.9	60.2	58.7	54.8
28	12-Sep-03	23:00	60	60.2	62.9	60.7	59.2	55.3
29	13-Sep-03	0:00	60	59.9	62.5	59.4	57.8	54.8
30	13-Sep-03	1:00	60	58	61	57.7	56	53.2
31	13-Sep-03	2:00	60	57.7	60.7	57.2	55.6	53.2
32	13-Sep-03	3:00	60	55.8	59.4	55.3	53.5	50.8
33	13-Sep-03	4:00	60	55	58.2	54.6	53.2	49.9
34	13-Sep-03	5:00	60	54.8	58.3	54	52.4	49.5
35	13-Sep-03	6:00	60	59.1	62.2	59.2	57.5	53
36	13-Sep-03	7:00	60	61.1	63.4	60.8	59.3	55.8
37	13-Sep-03	8:00	60	60.3	63	59.9	58.1	53.1
38	13-Sep-03	9:00	60	60.8	63.8	60.5	58.7	52.9
39	13-Sep-03	10:00	60	60.9	63.6	60.8	59.2	53.5
40	13-Sep-03	11:00	60	61.8	64.4	60.7	59	54.3
41	13-Sep-03	12:00	60	61.8	63.2	60.5	59.2	55.3
42	13-Sep-03	13:00	60	62.9	64.9	61.5	60.2	56.5

TABLE C-6 (Cont'd)
LOCATION 6 – 2 MONTGOMERY COURT

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
43	13-Sep-03	14:00	60	60.9	62.8	60.6	59.5	55.9
44	13-Sep-03	15:00	60	60.2	62.8	60.4	59.1	55.6
45	13-Sep-03	16:00	60	61.1	63.8	61	59.7	56.1
46	13-Sep-03	17:00	60	60.8	62.9	60.8	59.7	56.1
47	13-Sep-03	18:00	60	60.8	62.2	60.4	59.2	55.6
48	13-Sep-03	19:00	60	60.6	62.6	60.7	59.6	56.3
49	13-Sep-03	20:00	60	60	62	60.2	59.1	55.4
50	13-Sep-03	21:00	60	59.4	62.1	59.8	58.5	54.5
51	13-Sep-03	22:00	60	59.5	62.4	59.9	58.4	54.3
52	13-Sep-03	23:00	60	60.4	62.4	59.4	57.7	53.3
53	14-Sep-03	0:00	60	59.1	62.1	59.1	57.3	53.6
54	14-Sep-03	1:00	60	57.6	60.8	57.2	55.1	51.9
55	14-Sep-03	2:00	60	57.2	60.2	57.2	55.9	52.7
56	14-Sep-03	3:00	60	56.4	59.9	56.1	54.5	50
57	14-Sep-03	4:00	60	52.9	56.3	52.3	50.2	48.2
58	14-Sep-03	5:00	60	51.9	55.5	51	48.8	46.8
59	14-Sep-03	6:00	60	53.1	57.4	51.9	48.5	43.3
60	14-Sep-03	7:00	60	54.7	59.1	54.1	50.4	43.9
61	14-Sep-03	8:00	60	56.2	60	56	53.7	46.9
62	14-Sep-03	9:00	60	57.8	61.5	57.9	55.7	49.6
63	14-Sep-03	10:00	60	58.4	61.6	58.9	57.1	51.1
64	14-Sep-03	11:00	60	59.5	62	60.1	58.8	54.7
65	14-Sep-03	12:00	60	60.6	62.7	61	60	57
66	14-Sep-03	13:00	60	61.5	63	61.3	60.4	57.6
67	14-Sep-03	14:00	60	61	62.8	61.1	60.2	57.1
68	14-Sep-03	15:00	60	60.9	62.9	61.2	60.3	57.1
69	14-Sep-03	16:00	60	60.4	62.5	60.9	59.8	57.1
70	14-Sep-03	17:00	60	61.3	63.4	61.7	60.7	57.3
71	14-Sep-03	18:00	60	62.1	63.5	61.5	60.5	56.4
72	14-Sep-03	19:00	60	61.2	62.2	60.2	59	55.1
73	14-Sep-03	20:00	60	60.4	62.7	60.6	59.5	56.2
74	14-Sep-03	21:00	60	60.3	62.9	60.2	58.9	55.5
75	14-Sep-03	22:00	60	59.3	62.1	59.3	58	54.7
76	14-Sep-03	23:00	60	58.1	61	58.4	57	53.3
77	15-Sep-03	0:00	60	55.9	59.2	56	53.9	50.6
78	15-Sep-03	1:00	60	54.9	57.8	54.3	52.7	50.1
79	15-Sep-03	2:00	60	53.6	56.3	52.4	50.8	48.4
80	15-Sep-03	3:00	60	52	54.6	51.1	50.1	48.3
81	15-Sep-03	4:00	60	53.2	56	52.5	51.4	49.2
82	15-Sep-03	5:00	60	57.3	60.2	56.4	54.7	52.2
83	15-Sep-03	6:00	60	61.7	64.7	61.5	59.6	55.4
84	15-Sep-03	7:00	60	63.6	66.2	63.8	62.4	58.3
85	15-Sep-03	8:00	60	63.9	66.2	64	62.7	57.5
86	15-Sep-03	9:00	60	63.8	66.2	63.9	62.4	57.2

TABLE C-7

LOCATION 7 – 73 LICHFIELD ROAD

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	11-Sep-03	19:00	60	71.5	72.5	67	61.5	38.5
2	11-Sep-03	20:00	60	69	72	70	68.5	62.5
3	11-Sep-03	21:00	60	69.5	72	70	68.5	62.5
4	11-Sep-03	22:00	60	68	71.5	68.5	66.5	59.5
5	11-Sep-03	23:00	60	66.5	70	67	65	55.5
6	12-Sep-03	0:00	60	64	68	64.5	61	51.5
7	12-Sep-03	1:00	60	62	66.5	61	57.5	52.5
8	12-Sep-03	2:00	60	61.5	65.5	59	55	51.5
9	12-Sep-03	3:00	60	60.5	64.5	57	53.5	50
10	12-Sep-03	4:00	60	59	63.5	55	51.5	45.5
11	12-Sep-03	5:00	60	63.5	68	62.5	58	49.5
12	12-Sep-03	6:00	60	69	73.5	69.5	67	57
13	12-Sep-03	7:00	60	71.5	74	72.5	71	64
14	12-Sep-03	8:00	60	70	73	70.5	69	62.5
15	12-Sep-03	9:00	60	70	73	71	69.5	64.5
16	12-Sep-03	10:00	60	70	73	71	69	63
17	12-Sep-03	11:00	60	71.5	72.5	71	69.5	64
18	12-Sep-03	12:00	60	70.5	72.5	71	69.5	65
19	12-Sep-03	13:00	60	70	72.5	71	70	66
20	12-Sep-03	14:00	60	71	73	71	70	66.5
21	12-Sep-03	15:00	60	70.5	72.5	71	70	66
22	12-Sep-03	16:00	60	71	73	71.5	70.5	67.5
23	12-Sep-03	17:00	60	71.5	73	71.5	71	68
24	12-Sep-03	18:00	60	71	73	71.5	71	68
25	12-Sep-03	19:00	60	71.5	73	72	71	68
26	12-Sep-03	20:00	60	71	73	71.5	70.5	67

TABLE C-7 (Cont'd)
LOCATION 7 – 73 LICHFIELD ROAD

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
27	12-Sep-03	21:00	60	70.5	73	71.5	70.5	66
28	12-Sep-03	22:00	60	70	72.5	71	69.5	65
29	12-Sep-03	23:00	60	69	71.5	69.5	68.5	64.5
30	13-Sep-03	0:00	60	68	71	68.5	67	63.5
31	13-Sep-03	1:00	60	67	70	67	65	62.5
32	13-Sep-03	2:00	60	65.5	68.5	65.5	64	62
33	13-Sep-03	3:00	60	64.5	68	64.5	62.5	61.5
34	13-Sep-03	4:00	60	64	66.5	62.5	61.5	61
35	13-Sep-03	5:00	60	64	67.5	63	61.5	60.5
36	13-Sep-03	6:00	60	66.5	70	66.5	64	60.5
37	13-Sep-03	7:00	60	68	71.5	68.5	67	62.5
38	13-Sep-03	8:00	60	69	72	70	68.5	63.5
39	13-Sep-03	9:00	60	70	72	70.5	69.5	66.5
40	13-Sep-03	10:00	60	70.5	72.5	71	70	67
41	13-Sep-03	11:00	60	70	72	70.5	70	66.5
42	13-Sep-03	12:00	60	70	72	70.5	70	67
43	13-Sep-03	13:00	60	70	71.5	70.5	70	67
44	13-Sep-03	14:00	60	70	71.5	70.5	70	66.5
45	13-Sep-03	15:00	60	70	72	70.5	69.5	66.5
46	13-Sep-03	16:00	60	71.5	73	72	71.5	69
47	13-Sep-03	17:00	60	72.5	73.5	73	72.5	71
48	13-Sep-03	18:00	60	73	74	73	73	71.5
49	13-Sep-03	19:00	60	73	74	73	73	71.5
50	13-Sep-03	20:00	60	72.5	73.5	73	72.5	71
51	13-Sep-03	21:00	60	72.5	74	73	72.5	71.5
52	13-Sep-03	22:00	56	73	74	73	72.5	71.5

TABLE C-8
LOCATION 8 – 10 GLADIATOR ROAD

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	11-Sep-03	20:00	60	65	68	65.5	63	56
2	11-Sep-03	21:00	60	64.5	68	64.5	62.5	55
3	11-Sep-03	22:00	60	64	67	64	62	54
4	11-Sep-03	23:00	60	61	65	61.5	58	49
5	12-Sep-03	0:00	60	58	63	56.5	52	45
6	12-Sep-03	1:00	60	56	60.5	51.5	48	43.5
7	12-Sep-03	2:00	60	55.5	60.5	51	46.5	41.5
8	12-Sep-03	3:00	60	55	59.5	49.5	45	41
9	12-Sep-03	4:00	60	55	59	49.5	46	41.5
10	12-Sep-03	5:00	60	59.5	64	57.5	53	43.5
11	12-Sep-03	6:00	60	65	68.5	65	62.5	54
12	12-Sep-03	7:00	60	66	69.5	67.5	65.5	57.5
13	12-Sep-03	8:00	60	66	68.5	66.5	65	59
14	12-Sep-03	9:00	60	65	68.5	65.5	63.5	57.5
15	12-Sep-03	10:00	60	64.5	68	65	63	55.5
16	12-Sep-03	11:00	60	64.5	67.5	65	63	55.5
17	12-Sep-03	12:00	60	64	67.5	64.5	62.5	56
18	12-Sep-03	13:00	60	64	67.5	65	63	56.5
19	12-Sep-03	14:00	60	64.5	67.5	65	63	56
20	12-Sep-03	15:00	60	64.5	67.5	65.5	63.5	57
21	12-Sep-03	16:00	60	64.5	68	65.5	63	57.5
22	12-Sep-03	17:00	60	65.5	68	66	64	58
23	12-Sep-03	18:00	60	65	68.5	66	64	57
24	12-Sep-03	19:00	60	65.5	68	66	64.5	56
25	12-Sep-03	20:00	60	64.5	67.5	65	63.5	56.5
26	12-Sep-03	21:00	60	64.5	68	65	63	54.5
27	12-Sep-03	22:00	60	63	67	63.5	61	51.5
28	12-Sep-03	23:00	60	62.5	66.5	62.5	60	50.5
29	13-Sep-03	0:00	60	61	65.5	61	57.5	48.5
30	13-Sep-03	1:00	60	59.5	64	58.5	54	46
31	13-Sep-03	2:00	60	58	63	55	50	42.5
32	13-Sep-03	3:00	60	56.5	61.5	53.5	48.5	42
33	13-Sep-03	4:00	60	55.5	60.5	50.5	46	42
34	13-Sep-03	5:00	60	57.5	62	54	49.5	43.5
35	13-Sep-03	6:00	60	61	65	60	56	47
36	13-Sep-03	7:00	60	63	66.5	63	60	51
37	13-Sep-03	8:00	60	63	67	63.5	61	52.5
38	13-Sep-03	9:00	60	63.5	67	64.5	62	54
39	13-Sep-03	10:00	60	63.5	67	64.5	62.5	55.5
40	13-Sep-03	11:00	60	63.5	67	64.5	62.5	54.5
41	13-Sep-03	12:00	60	64	67.5	65	63	55
42	13-Sep-03	13:00	60	63.5	66.5	64.5	62.5	56
43	13-Sep-03	14:00	60	65	67	64.5	62.5	55.5

TABLE C-8 (Cont'd)

LOCATION 8 – 10 GLADIATOR ROAD

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
44	13-Sep-03	15:00	60	64	67	64.5	62.5	55.5
45	13-Sep-03	16:00	60	64	67	65	63	56
46	13-Sep-03	17:00	60	64	67.5	65	63	56.5
47	13-Sep-03	18:00	60	65	68	65.5	63.5	56.5
48	13-Sep-03	19:00	60	64	67	64.5	63	55
49	13-Sep-03	20:00	60	64	67	64	61.5	53.5
50	13-Sep-03	21:00	60	62.5	66.5	63.5	61.5	52.5
51	13-Sep-03	22:00	60	62	65.5	62.5	60	51.5
52	13-Sep-03	23:00	60	61.5	65.5	61.5	59	50
53	14-Sep-03	0:00	60	61	65	61	58	49
54	14-Sep-03	1:00	60	59	63	58	53	45.5
55	14-Sep-03	2:00	60	57	62	54.5	49.5	44.5
56	14-Sep-03	3:00	60	56	61.5	53.5	48	42.5
57	14-Sep-03	4:00	60	53.5	57.5	46.5	44.5	42.5
58	14-Sep-03	5:00	60	54	58.5	49	46	43
59	14-Sep-03	6:00	60	57	61.5	54	49	41
60	14-Sep-03	7:00	60	58.5	63.5	58	53.5	43.5
61	14-Sep-03	8:00	60	60	64	60	57	48
62	14-Sep-03	9:00	60	61.5	65.5	61.5	59	50
63	14-Sep-03	10:00	60	62.5	66.5	63.5	61	52.5
64	14-Sep-03	11:00	60	62.5	66.5	63.5	61.5	51
65	14-Sep-03	12:00	60	63	66.5	64	62	53.5
66	14-Sep-03	13:00	60	63.5	66.5	64.5	62.5	53.5
67	14-Sep-03	14:00	60	63.5	67	64.5	62.5	54.5
68	14-Sep-03	15:00	60	63.5	66.5	64.5	62	53
69	14-Sep-03	16:00	60	63.5	67	64.5	62.5	55
70	14-Sep-03	17:00	60	63	66.5	64	61.5	52.5
71	14-Sep-03	18:00	60	64	67.5	65	63	54
72	14-Sep-03	19:00	60	63	66.5	64	61.5	52.5
73	14-Sep-03	20:00	60	62.5	66	63.5	61.5	53
74	14-Sep-03	21:00	60	61.5	65.5	62.5	59.5	50
75	14-Sep-03	22:00	60	60.5	64.5	60.5	57.5	48.5
76	14-Sep-03	23:00	60	59	63.5	58.5	54.5	46.5
77	15-Sep-03	0:00	60	57	62	54	49	43.5
78	15-Sep-03	1:00	60	55	59	51	46.5	42.5
79	15-Sep-03	2:00	60	52.5	56.5	48	45	42
80	15-Sep-03	3:00	60	52	55.5	45.5	43.5	41.5
81	15-Sep-03	4:00	60	53.5	58	48	45	41.5
82	15-Sep-03	5:00	60	58	62.5	57	52.5	43.5
83	15-Sep-03	6:00	60	64	67.5	64	61.5	51.5
84	15-Sep-03	7:00	60	65.5	68.5	66.5	65	57.5
85	15-Sep-03	8:00	60	65.5	68.5	66	64.5	58
86	15-Sep-03	9:00	60	64.5	68	65	62.5	54.5

TABLE C-9
LOCATION 9 – 6921 HIGHWAY 7 EAST

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	7-Nov-03	9:00	60	60	63.5	60.5	58	53
2	7-Nov-03	10:00	60	60	63.5	60	58	53
3	7-Nov-03	11:00	60	60	63	60	57.5	53
4	7-Nov-03	12:00	60	61.5	65	61	59	53.5
5	7-Nov-03	13:00	60	62	65.5	62	60	54
6	7-Nov-03	14:00	60	63	66.5	63	60.5	54.5
7	7-Nov-03	15:00	60	64	68	64.5	62	56
8	7-Nov-03	16:00	60	65	69	65	63	56.5
9	7-Nov-03	17:00	60	64.5	68.5	65	62.5	55.5
10	7-Nov-03	18:00	60	62.5	66.5	63	60	52.5
11	7-Nov-03	19:00	60	61	65	61	58	50.5
12	7-Nov-03	20:00	60	59	63.5	59	55.5	49
13	7-Nov-03	21:00	60	58.5	63.5	58	53.5	47.5
14	7-Nov-03	22:00	60	57	62	55	50.5	46.5
15	7-Nov-03	23:00	60	57	61.5	55.5	51	46
16	8-Nov-03	0:00	60	55.5	60.5	50.5	47	43.5
17	8-Nov-03	1:00	60	50.5	55.5	44.5	42.5	40
18	8-Nov-03	2:00	60	50.5	55	43	41.5	39.5
19	8-Nov-03	3:00	60	47.5	47	41.5	40.5	39
20	8-Nov-03	4:00	60	50	52.5	41.5	40	38.5
21	8-Nov-03	5:00	60	50.5	55	43	41	39
22	8-Nov-03	6:00	60	55.5	59.5	51	47.5	43
23	8-Nov-03	7:00	60	58.5	62.5	57.5	52	47
24	8-Nov-03	8:00	60	59	63	59	55	46
25	8-Nov-03	9:00	60	59	63	58.5	55	45.5
26	8-Nov-03	10:00	60	59	63	58.5	55	45
27	8-Nov-03	11:00	60	59.5	63.5	59.5	56.5	45.5
28	8-Nov-03	12:00	60	60.5	64.5	60	57.5	47.5
29	8-Nov-03	13:00	60	60	64	60	57	47.5
30	8-Nov-03	14:00	60	60.5	64.5	61	57.5	47
31	8-Nov-03	15:00	60	60.5	64.5	61	58	47
32	8-Nov-03	16:00	60	61	65	61.5	58.5	48.5
33	8-Nov-03	17:00	60	60	64.5	60	57	48
34	8-Nov-03	18:00	60	59.5	63.5	60	56.5	47
35	8-Nov-03	19:00	60	58.5	63	58.5	53	46.5
36	8-Nov-03	20:00	60	57.5	62	58	52.5	46
37	8-Nov-03	21:00	60	58	62.5	57	51.5	46.5
38	8-Nov-03	22:00	60	58	62.5	58	53.5	47.5
39	8-Nov-03	23:00	60	57.5	62	57	51.5	45.5
40	9-Nov-03	0:00	60	55.5	60.5	52	48.5	44.5
41	9-Nov-03	1:00	60	54.5	59.5	49	47	43.5
42	9-Nov-03	2:00	60	53	58	47.5	45.5	42

TABLE C-9 (Cont'd)
LOCATION 9 – 6921 HIGHWAY 7 EAST

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
43	9-Nov-03	3:00	60	49.5	51.5	46	44.5	41
44	9-Nov-03	4:00	60	49	51.5	45	43.5	39.5
45	9-Nov-03	5:00	60	52	55.5	44.5	42.5	39.5
46	9-Nov-03	6:00	60	54.5	59.5	50	47	42.5
47	9-Nov-03	7:00	60	56	60.5	53.5	50	46
48	9-Nov-03	8:00	60	55.5	60	54	50	45.5
49	9-Nov-03	9:00	60	56	60.5	55	50.5	45.5
50	9-Nov-03	10:00	60	57	60.5	56	51.5	46.5
51	9-Nov-03	11:00	60	60	62.5	58.5	54.5	47.5
52	9-Nov-03	12:00	60	59	63	59.5	57	48.5
53	9-Nov-03	13:00	60	59	63.5	59.5	56.5	47.5
54	9-Nov-03	14:00	60	58	62	58	55	47
55	9-Nov-03	15:00	60	58.5	63	58	55	47
56	9-Nov-03	16:00	60	59.5	63	59.5	56.5	48
57	9-Nov-03	17:00	60	60	64.5	60	57.5	50.5
58	9-Nov-03	18:00	60	59	63.5	59	55	49.5
59	9-Nov-03	19:00	60	59	63.5	58.5	54.5	49
60	9-Nov-03	20:00	60	57	62	56.5	51.5	47.5
61	9-Nov-03	21:00	60	56.5	61	55	50.5	46.5
62	9-Nov-03	22:00	60	55	59.5	52	49.5	46
63	9-Nov-03	23:00	60	56	61	50.5	48	44
64	10-Nov-03	0:00	60	54	59	48.5	46	41.5
65	10-Nov-03	1:00	60	52	54	44.5	43	40
66	10-Nov-03	2:00	60	50.5	48.5	44.5	42.5	40
67	10-Nov-03	3:00	60	50.5	49	43.5	41.5	39.5
68	10-Nov-03	4:00	60	55.5	60	47.5	45.5	41
69	10-Nov-03	5:00	60	59	64	57	51.5	44.5
70	10-Nov-03	6:00	60	63.5	67.5	64	61.5	53.5
71	10-Nov-03	7:00	60	66.5	69	67.5	66	60
72	10-Nov-03	8:00	60	64	67	64.5	62.5	55.5
73	10-Nov-03	9:00	60	62.5	65.5	62.5	61	54.5
74	10-Nov-03	10:00	60	63.5	67.5	63	60.5	54
75	10-Nov-03	11:00	60	67	70.5	67.5	65.5	60.5
76	10-Nov-03	12:00	60	62	66	62	59.5	50.5
77	10-Nov-03	13:00	60	64	67	64	62.5	58
78	10-Nov-03	14:00	60	62.5	66	62.5	61	56.5
79	10-Nov-03	15:00	60	65	68.5	66.5	64.5	55
80	10-Nov-03	16:00	60	64.5	67.5	65	63.5	58
81	10-Nov-03	17:00	60	64.5	68	65	63	55.5
82	10-Nov-03	18:00	60	63	67	63.5	61	54
83	10-Nov-03	19:00	60	61	65	61	58.5	49.5
84	10-Nov-03	20:00	60	59.5	64	60	56.5	48

TABLE C-9 (Cont'd)
LOCATION 9 – 6921 HIGHWAY 7 EAST

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
85	10-Nov-03	21:00	60	59.5	64	59.5	55.5	47
86	10-Nov-03	22:00	60	58	63	56.5	50.5	45
87	10-Nov-03	23:00	60	56.5	61.5	54	48.5	44.5
88	11-Nov-03	0:00	60	53.5	59	48.5	46	42.5
89	11-Nov-03	1:00	60	51.5	53.5	45	43	40.5
90	11-Nov-03	2:00	60	50.5	54.5	43.5	42	40.5
91	11-Nov-03	3:00	60	49.5	53	44	41.5	40
92	11-Nov-03	4:00	60	53	56.5	48	44.5	41
93	11-Nov-03	5:00	60	58.5	63.5	57	51	42.5
94	11-Nov-03	6:00	60	63.5	67.5	64	61	51
95	11-Nov-03	7:00	60	65	68	66	64.5	57
96	11-Nov-03	8:00	60	64	67	65	63.5	56.5
97	11-Nov-03	9:00	52	61	64.5	61	59	52.5

TABLE C-10
LOCATION 10 – 154 THORNWAY AVENUE

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	10-Oct-03	18:45	60	60	66.5	38	38	37.5
2	10-Oct-03	19:45	60	64.5	70.5	53.5	38	38
3	10-Oct-03	20:45	60	66.5	71.5	62	39	38.5
4	10-Oct-03	21:45	60	44	44.5	44	43.5	43
5	10-Oct-03	22:45	60	43	44.5	43.5	42.5	41.5
6	10-Oct-03	23:45	60	70	42	41	40.5	40
7	11-Oct-03	0:45	60	38	38	38	73.5	37.5
8	11-Oct-03	1:45	60	38.5	38.5	38.5	38	38
9	11-Oct-03	2:45	60	38.5	39	38.5	38.5	38.5
10	11-Oct-03	3:45	60	38.5	39	39	38.5	38.5
11	11-Oct-03	4:45	60	39	39	39	39	38.5
12	11-Oct-03	5:45	60	44.5	39.5	39	39	39
13	11-Oct-03	6:45	60	44	41	40	39.5	39
14	11-Oct-03	7:45	60	47.5	42	40.5	40	39.5
15	11-Oct-03	8:45	60	44	41.5	40	40	39.5
16	11-Oct-03	9:45	60	72	46.5	41	40	39.5
17	11-Oct-03	10:45	60	75.5	66	62.5	61	56.5
18	11-Oct-03	11:45	60	61	64.5	61	59	54.5
19	11-Oct-03	12:45	60	61	63.5	60	58	53
20	11-Oct-03	13:45	60	57	60.5	56	54	49
21	11-Oct-03	14:45	60	52	55.5	49	46.5	43.5
22	11-Oct-03	15:45	60	53.5	57.5	50.5	48	44.5
23	11-Oct-03	16:45	60	57	61	56	53.5	48.5
24	11-Oct-03	17:45	60	60.5	11	59.5	57.5	52.5
25	11-Oct-03	18:45	60	61.5	64.5	61.5	59	54.5
26	11-Oct-03	19:45	60	62	65	62	60.5	57
27	11-Oct-03	20:45	60	63	65	62	60.5	56
28	11-Oct-03	21:45	60	62	65	62	60	56.5
29	11-Oct-03	22:45	60	61.5	64.5	61.5	60	56
30	11-Oct-03	23:45	60	67.5	69.5	63.5	61.5	56.5
31	12-Oct-03	0:45	60	62.5	11	62	60	56.5
32	12-Oct-03	1:45	60	63	65	63	60	56.5
33	12-Oct-03	2:45	60	62.5	65	62	60	56.5

34	12-Oct-03	3:45	60	61	64.5	60.5	58.5	54.5

TABLE C-10 (Cont'd)
LOCATION 10 – 154 THORNWAY AVENUE

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
35	12-Oct-03	4:45	60	60.5	64	60.5	58.5	54
36	12-Oct-03	5:45	60	60	63.5	59.5	58	53
37	12-Oct-03	6:45	60	60.5	63	59.5	57.5	1
38	12-Oct-03	7:45	60	59	62.5	59	57	52.5
39	12-Oct-03	8:45	60	56.5	60	55	53	1
40	12-Oct-03	9:45	60	55	59	53.5	51.5	47
41	12-Oct-03	10:45	60	54	57.5	52.5	50	1
42	12-Oct-03	11:45	60	54	57.5	52	49.5	45
43	12-Oct-03	12:45	60	57.5	61	56.5	54	49.5
44	12-Oct-03	13:45	60	61	64	60.5	58.5	54
45	12-Oct-03	14:45	60	61.5	64.5	61.5	60.5	56
46	12-Oct-03	15:45	60	65.5	66	63	61.5	57.5
47	12-Oct-03	16:45	60	63.5	66.5	63.5	62	58.5
48	12-Oct-03	17:45	60	63	65.5	63	98.5	58
49	12-Oct-03	18:45	60	63	66	63	61.5	58
50	12-Oct-03	19:45	60	62.5	65.5	62.5	60.5	57
51	12-Oct-03	20:45	60	61.5	64.5	61	59.5	55.5
52	12-Oct-03	21:45	60	61.5	64.5	61.5	60	56
53	12-Oct-03	22:45	60	61.5	64.5	61.5	60	56.5
54	12-Oct-03	23:45	60	61.5	64.5	61	59	55.5
55	13-Oct-03	0:45	60	59.5	62.5	59	57.5	52.5
56	13-Oct-03	1:45	60	57.5	61	56.5	54.5	50
57	13-Oct-03	2:45	60	57	60.5	56	53	48.5
58	13-Oct-03	3:45	60	55	58.5	53	50.5	47
59	13-Oct-03	4:45	60	53.5	57	50.5	48.5	46
60	13-Oct-03	5:45	60	54	57.5	51.5	49.5	46.5
61	13-Oct-03	6:45	60	56	59.5	53.5	51.5	48.5
62	13-Oct-03	7:45	60	60.5	63.5	60	58	53
63	13-Oct-03	8:45	60	60.5	64	60.5	59	54
64	13-Oct-03	9:45	60	61	64.5	61.5	59.5	55.5
65	13-Oct-03	10:45	60	61	64.5	61	59	54.5

TABLE C-10 (Cont'd)
LOCATION 10 – 154 THORNWAY AVENUE

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
66	13-Oct-03	11:45	60	61.5	65	61	59	54
67	13-Oct-03	12:45	60	62	65.5	61.5	60	54
68	13-Oct-03	13:45	60	62	65	62	60	54.5
69	13-Oct-03	14:45	60	62	65	61	59.5	55
70	13-Oct-03	15:45	60	61.5	65	61	59	54.5
71	13-Oct-03	16:45	60	60.5	63.5	60	58	53.5
72	13-Oct-03	17:45	60	58.5	62	57.5	55.5	51
73	13-Oct-03	18:45	60	54.5	57.5	52	50	46.5
74	13-Oct-03	19:45	60	52.5	55	49	47	45.5
75	13-Oct-03	20:45	60	51	52	47.5	46.5	44.5
76	13-Oct-03	21:45	60	53	55	49	47.5	45
77	13-Oct-03	22:45	60	58	61.5	56	53.5	48.5
78	13-Oct-03	23:45	60	61.5	64.5	61	59	54
79	14-Oct-03	0:45	60	63.5	66	63	61.5	58
80	14-Oct-03	1:45	60	64.5	67	64	62.5	59
81	14-Oct-03	2:45	60	63.5	66.5	63	61.5	57.5
82	14-Oct-03	3:45	60	62.5	65.5	62.5	60.5	56
83	14-Oct-03	4:45	60	63.5	66	62.5	61	56
84	14-Oct-03	5:45	60	63.5	66	63.5	62	58.5
85	14-Oct-03	6:45	60	65.5	68	64.5	63	60
86	14-Oct-03	7:45	60	66.5	69.5	67	65.5	61.5

TABLE C-11
LOCATION 11 – 79 CHILMAR CRESCENT

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	10-Oct-03	18:15	60	74.5	71	64	59.5	56
2	10-Oct-03	19:15	60	64.5	66	65	64	63
3	10-Oct-03	20:15	60	64	66	64.5	63.5	62.5
4	10-Oct-03	21:15	60	64	65.5	64	63.5	62
5	10-Oct-03	22:15	60	63	65	63.5	62.5	61.5
6	11-Oct-03	0:15	60	62	63.5	62	61.5	60.5
7	11-Oct-03	2:15	60	61	62.5	60.5	60	59.5
8	11-Oct-03	3:15	60	60	61.5	59.5	59	58
9	11-Oct-03	4:15	60	59	60.5	58.5	58	57.5
10	11-Oct-03	6:15	60	60.5	63	60	59	57
11	11-Oct-03	7:15	60	62	11	62	60	57.5
12	11-Oct-03	9:15	60	62	64.5	62.5	60.5	57.5
13	11-Oct-03	10:15	60	62.5	65	63	61.5	58.5
14	11-Oct-03	11:15	60	64.5	64.5	62.5	61.5	60
15	11-Oct-03	13:15	60	62	11	62.5	61.5	60
16	11-Oct-03	14:15	60	63.5	64.5	63	62.5	61
17	11-Oct-03	15:15	60	63.5	64.5	63.5	63	61.5
18	11-Oct-03	17:15	60	64.5	66	64.5	64.5	63
19	11-Oct-03	18:15	60	64.5	66	65	64	63
20	11-Oct-03	19:15	60	64	65.5	64	63.5	63
21	11-Oct-03	21:15	60	64	65.5	64	63.5	63
22	11-Oct-03	23:15	60	63	65	63.5	62.5	62
23	12-Oct-03	0:15	60	63.5	65	63.5	62.5	61.5
24	12-Oct-03	1:15	60	62.5	64	62.5	62	60.5
25	12-Oct-03	2:15	60	61	62.5	61	60	59.5
26	12-Oct-03	3:15	60	60	62	60	59.5	58.5
27	12-Oct-03	4:15	60	59.5	61	59	58.5	58
28	12-Oct-03	5:15	60	58.5	60	58	58	57.5
29	12-Oct-03	6:15	60	59.5	61.5	58.5	58	57.5
30	12-Oct-03	7:15	60	60	62.5	60	58.5	58
31	12-Oct-03	8:15	60	61.5	64	61.5	60	59
32	12-Oct-03	9:15	60	62	64	62	61	59
33	12-Oct-03	10:15	60	62.5	65	63	62	59.5
35	12-Oct-03	13:15	60	64.5	66.5	65	64	62
36	12-Oct-03	14:15	60	65	66.5	65.5	64.5	63

37	12-Oct-03	15:15	60	65	66.5	65.5	65	63

TABLE C-11 (Cont'd)
LOCATION 11 – 79 CHILMAR CRESCENT

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
38	12-Oct-03	16:15	60	66	67.5	66.5	65.5	64
39	12-Oct-03	19:15	60	65.5	66.5	66	65.5	64.5
40	12-Oct-03	20:15	60	66	67	66	65.5	65
41	12-Oct-03	22:15	60	65.5	66.5	65.5	65.5	64.5
42	12-Oct-03	23:15	60	65.5	66.5	65.5	64.5	64
43	13-Oct-03	0:15	60	64.5	65.5	64.5	100	63.5
44	13-Oct-03	1:15	60	64	65	64	63.5	63
45	13-Oct-03	2:15	60	63.5	64.5	63	63	62.5
46	13-Oct-03	3:15	60	59	63.5	62.5	62.5	62
47	13-Oct-03	5:15	60	62	63	62	61.5	61.5
48	13-Oct-03	6:15	60	62.5	63.5	62	61.5	61
49	13-Oct-03	7:15	60	63	64.5	62.5	62	61.5
50	13-Oct-03	8:15	60	63.5	65.5	63.5	62.5	61.5
51	13-Oct-03	9:15	60	63.5	65.5	64	99.5	62
52	13-Oct-03	10:15	60	63.5	65.5	64	63	62
53	13-Oct-03	11:15	60	64	65.5	64	63.5	62
54	13-Oct-03	12:15	60	68	65.5	64.5	64	62.5
55	13-Oct-03	14:15	60	64.5	13	64.5	64	63
56	13-Oct-03	16:15	60	65.5	66.5	65.5	64.5	63.5
57	13-Oct-03	17:15	60	66	67.5	66	65.5	64.5
58	13-Oct-03	19:15	60	65.5	66.5	66	65.5	65
59	13-Oct-03	21:15	60	65.5	66.5	66	65.5	65
60	13-Oct-03	23:15	60	65	66	65	64.5	64
61	14-Oct-03	1:15	60	63	64	63	63	62.5
62	14-Oct-03	2:15	60	62.5	63	62	62	62
63	14-Oct-03	3:15	60	62	62	61.5	61.5	61.5
64	14-Oct-03	4:15	60	61.5	62	61	61	61
65	14-Oct-03	5:15	60	62	64	62	61.5	61
66	14-Oct-03	6:15	60	63.5	66	63.5	62.5	61
67	14-Oct-03	8:15	60	64.5	67	65	63.5	60.5
68	14-Oct-03	10:15	60	63.5	65	63.5	62.5	61.5
69	14-Oct-03	12:15	60	63.5	65	64	63.5	62.5
70	14-Oct-03	13:15	60	64.5	65.5	64.5	64	63
71	14-Oct-03	14:15	60	65.5	66.5	65.5	64.5	63.5

72	14-Oct-03	15:15	60	64.5	66.5	65	64	62
73	14-Oct-03	16:15	60	64.5	67	65.5	63.5	60.5

TABLE C-12
LOCATION 12 – FUTURE MARKHAM CENTRE
(TOWN CENTRE BLVD. SOUTH)

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	05-Dec	18:00:01	60	50	51.5	49	48.5	46.5
2	05-Dec	19:00:01	60	49	49	47	46.5	45
3	05-Dec	20:00:01	60	45.5	46.5	45.5	45	43.5
4	05-Dec	21:00:01	60	52	49	46	45	43
5	05-Dec	22:00:01	60	46.5	48	45.5	44.5	43
6	05-Dec	23:00:01	60	43.5	44.5	43.5	43	41
7	06-Dec	0:00:01	60	44	46.5	43.5	42.5	40
8	06-Dec	1:00:01	60	41	43	41	40.5	38.5
9	06-Dec	2:00:01	60	41	43.5	40	39	36.5
10	06-Dec	3:00:01	60	38	40	38	37.5	35.5
11	06-Dec	4:00:01	60	37	39	37.5	37	35.5
12	06-Dec	5:00:01	60	49.5	45.5	39.5	38	36
13	06-Dec	6:00:01	60	44	46	42	40.5	38
14	06-Dec	7:00:01	60	45	44.5	42.5	42	40
15	06-Dec	8:00:01	60	45	45.5	43.5	43	41
16	06-Dec	9:00:01	60	44.5	47	44.5	43	40.5
17	06-Dec	10:00:01	60	51	51	46.5	45.5	43
18	06-Dec	11:00:01	60	47.5	48.5	43.5	42.5	41
19	06-Dec	12:00:01	60	57	53	43.5	42	40
20	06-Dec	13:00:01	60	52	51.5	43.5	42	39.5
21	06-Dec	14:00:01	60	48	47.5	43	42.5	40.5
22	06-Dec	15:00:01	60	46	47	45	44	41.5
23	06-Dec	16:00:01	60	46	47	45.5	44.5	42.5
24	06-Dec	17:00:02	60	50	48	45.5	45	43
25	06-Dec	18:00:02	60	50	47.5	45.5	45	43.5
26	06-Dec	19:00:02	60	49	49.5	46.5	46	44
27	06-Dec	20:00:02	60	45.5	47.5	45	44	42
28	06-Dec	21:00:02	60	45	46.5	44.5	44	42
29	06-Dec	22:00:02	60	44.5	46.5	45	44	42
30	06-Dec	23:00:02	60	45.5	45.5	44	43	41
31	07-Dec	0:00:02	60	42.5	44	42.5	42	40
32	07-Dec	1:00:02	60	42	43.5	42	41.5	39.5
33	07-Dec	2:00:02	60	40	41.5	40	39.5	37.5
34	07-Dec	3:00:02	60	40	41.5	39.5	38.5	37

TABLE C-12 (Cont'd)
LOCATION 12 – FUTURE MARKHAM CENTRE
(TOWN CENTRE BLVD. SOUTH)

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
35	07-Dec	4:00:02	60	37	40.5	37.5	36.5	35
36	07-Dec	5:00:02	60	51	47	39	37.5	34.5
37	07-Dec	6:00:02	60	39	41	39	38	36
38	07-Dec	7:00:02	60	40.5	43	40.5	39.5	38
39	07-Dec	8:00:02	60	46.5	45	43	42	40
40	07-Dec	9:00:02	60	43.5	45	43	42.5	40.5
41	07-Dec	10:00:02	60	46.5	46	43.5	42.5	40
42	07-Dec	11:00:02	60	53	44.5	43	42	40
43	07-Dec	12:00:02	60	49	46.5	44	43	41
44	07-Dec	13:00:02	60	45	45.5	44	43.5	41.5
45	07-Dec	14:00:02	60	47	46.5	45	44	42
46	07-Dec	15:00:02	60	48.5	47	45.5	44.5	42.5
47	07-Dec	16:00:02	60	50	48.5	46.5	46	44
48	07-Dec	17:00:03	60	52	49	47	46	44
49	07-Dec	18:00:03	60	48	48	46.5	46	44
50	07-Dec	19:00:03	60	50	48	45.5	45	42.5
51	07-Dec	20:00:03	60	46.5	47.5	46	45	43
52	07-Dec	21:00:03	60	44.5	46.5	44.5	43.5	41
53	07-Dec	22:00:03	60	45.5	47	45	44.5	41.5
54	07-Dec	23:00:03	60	44.5	46.5	44.5	43.5	41
55	08-Dec	0:00:03	60	43.5	47	42.5	41	38.5
56	08-Dec	1:00:03	60	39.5	42	39	38	35.5
57	08-Dec	2:00:03	60	38	40	38	37	35.5
58	08-Dec	3:00:03	60	40	42.5	39.5	38	35.5
59	08-Dec	4:00:03	60	39.5	42	39.5	39	37.5
60	08-Dec	5:00:03	60	50	48	46	45	41
61	08-Dec	6:00:03	60	53	55.5	54	52	48
62	08-Dec	7:00:03	60	56.5	57.5	55.5	55	53
63	08-Dec	8:00:03	60	53	54.5	53	52.5	48
64	08-Dec	9:00:03	60	51	49.5	47	46	45
65	08-Dec	10:00:03	60	52.5	55.5	49.5	47.5	45
66	08-Dec	11:00:03	60	53	54	49.5	48.5	44.5
67	08-Dec	12:00:03	60	48	49	45.5	45	43
68	08-Dec	13:00:03	60	49.5	49	45.5	45	43.5
69	08-Dec	14:00:03	60	53	57	51	48	44
70	08-Dec	15:00:03	60	53.5	53	51.5	50.5	48
71	08-Dec	16:00:03	60	59.5	57	54.5	53.5	52

TABLE C-13
LOCATION 13 – 231 VALENTINA DR.

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
1	05-Nov-03	18:00	60	62	65	61	59	54.5
2	05-Nov-03	19:00	60	61	65	60.5	59	54.5
3	05-Nov-03	20:00	60	57.5	59	56.5	55	51.5
4	05-Nov-03	21:00	60	53	55.5	53	51.5	48
5	05-Nov-03	22:00	60	52	55	52	50.5	47
6	05-Nov-03	23:00	60	50.5	53.5	50.5	49	45.5
7	06-Nov-03	0:00	60	47.5	50.5	47	45	42.5
8	06-Nov-03	1:00	60	47	50.5	46	44	42
9	06-Nov-03	2:00	60	45.5	48.5	45	43.5	41.5
10	06-Nov-03	3:00	60	44.5	47.5	43	42	40
11	06-Nov-03	4:00	60	48	51.5	47	45	40.5
12	06-Nov-03	5:00	60	53	56.5	52.5	50.5	46
13	06-Nov-03	6:00	60	56	58.5	56.5	55	51
14	06-Nov-03	7:00	60	55	58	55	53	49.5
15	06-Nov-03	8:00	60	54.5	57	54.5	53	48.5
16	06-Nov-03	9:00	60	56.5	59	56.5	55.5	52
17	06-Nov-03	10:00	60	57	59	56.5	55.5	53
18	06-Nov-03	11:00	60	57.5	59.5	57.5	56.5	53.5
19	06-Nov-03	12:00	60	57	60	57	55.5	51.5
20	06-Nov-03	13:00	60	56	59	56.5	55.5	52
21	06-Nov-03	14:00	60	56.5	59	56	54.5	50.5
22	06-Nov-03	15:00	60	55.5	58.5	56.5	55	50
23	06-Nov-03	16:00	60	56	58.5	56	55	49
24	06-Nov-03	17:00	60	55.5	58	55.5	54.5	49.5
25	06-Nov-03	18:00	60	55.5	57	55	53.5	49.5
26	06-Nov-03	19:00	60	53.5	56	53.5	52	48.5
27	06-Nov-03	20:00	60	53.5	56	53.5	52	49
28	06-Nov-03	21:00	60	55.5	56	53.5	51.5	48.5
29	06-Nov-03	22:00	60	53	56	53	51.5	48
30	06-Nov-03	23:00	60	50.5	53.5	50.5	49	45.5
31	07-Nov-03	0:00	60	49.5	52.5	49	47	43.5
32	07-Nov-03	1:00	60	47.5	50.5	47	45.5	42.5
33	07-Nov-03	2:00	60	47.5	50	47.5	45.5	43
34	07-Nov-03	3:00	60	47	50	46	44.5	42
35	07-Nov-03	4:00	60	48.5	51	47.5	46	43
36	07-Nov-03	5:00	60	53.5	57	53	50.5	47
37	07-Nov-03	6:00	60	57	59	57.5	56	52.5
38	07-Nov-03	7:00	60	57.5	60	57.5	56.5	53.5
39	07-Nov-03	8:00	60	60	62.5	59	57.5	53.5
40	07-Nov-03	9:00	60	64.5	67.5	61	58.5	53.5

TABLE C-13 (Cont'd)
LOCATION 13 – 231 VALENTINA DR.

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
41	07-Nov-03	10:00	60	66.5	70	63.5	61	55
42	07-Nov-03	11:00	60	71	75	69	65.5	57.5
43	07-Nov-03	12:00	60	70.5	74.5	69	66.5	59.5
44	07-Nov-03	13:00	60	71	75	69.5	66.5	59.5
45	07-Nov-03	14:00	60	69.5	73	68.5	66	60
46	07-Nov-03	15:00	60	70	74	69	66	60
47	07-Nov-03	16:00	60	64.5	68	64	62	57
48	07-Nov-03	17:00	60	64	67.5	63.5	61	56
49	07-Nov-03	18:00	60	66.5	66.5	62	60	55
50	07-Nov-03	19:00	60	61.5	65	61	58.5	53.5
51	07-Nov-03	20:00	60	62	65.5	60.5	58.5	53
52	07-Nov-03	21:00	60	63	66.5	62.5	60	55.5
53	07-Nov-03	22:00	60	62.5	66.5	61	58.5	52.5
54	07-Nov-03	23:00	60	57.5	61	56.5	54.5	50
55	08-Nov-03	0:00	60	58	59	53.5	51	46.5
56	08-Nov-03	1:00	60	49	51.5	48.5	47	43.5
57	08-Nov-03	2:00	60	48.5	51.5	48	46	42.5
58	08-Nov-03	3:00	60	47	50	45.5	43.5	41
59	08-Nov-03	4:00	60	46.5	49.5	45	43	41
60	08-Nov-03	5:00	60	47.5	50.5	46.5	45	41
61	08-Nov-03	6:00	60	51.5	54.5	50.5	48.5	44.5
62	08-Nov-03	7:00	60	52.5	55.5	52.5	50.5	46
63	08-Nov-03	8:00	60	54	57	54.5	52.5	48.5
64	08-Nov-03	9:00	60	57	59.5	56.5	55	49.5
65	08-Nov-03	10:00	60	58	60.5	57.5	56.5	51.5
66	08-Nov-03	11:00	60	57.5	60.5	57.5	56	51.5
67	08-Nov-03	12:00	60	58.5	61.5	58.5	57	52.5
68	08-Nov-03	13:00	60	57.5	60.5	57.5	56.5	52
69	08-Nov-03	14:00	60	57	59.5	57	55.5	50.5
70	08-Nov-03	15:00	60	56	58.5	56	54.5	50.5
71	08-Nov-03	16:00	60	54.5	57	55	53.5	49.5
72	08-Nov-03	17:00	60	55	57.5	55	53.5	49.5
73	08-Nov-03	18:00	60	54	57	54.5	52.5	49
74	08-Nov-03	19:00	60	54	56.5	53.5	52	49
75	08-Nov-03	20:00	60	53.5	56	53	51.5	48.5
76	08-Nov-03	21:00	60	53	55.5	53	51.5	48
77	08-Nov-03	22:00	60	52.5	55.5	52	50.5	47
78	08-Nov-03	23:00	60	51	54	51	49.5	46.5
79	09-Nov-03	0:00	60	50	53	50	48.5	45.5
80	09-Nov-03	1:00	60	49.5	52.5	49.5	47.5	44.5

81	09-Nov-03	2:00	60	49.5	52.5	49	47.5	44

TABLE C-13 (Cont'd)
LOCATION 13 – 231 VALENTINA DR.

Interval	Date	Start Time	Duration (min)	Leq (dBA)	L10 (dBA)	L33 (dBA)	L50 (dBA)	L90 (dBA)
82	09-Nov-03	3:00	60	46	49.5	45.5	44.5	41.5
83	09-Nov-03	4:00	60	45.5	49	43.5	42	40
84	09-Nov-03	5:00	60	46.5	50	46	43.5	40.5
85	09-Nov-03	6:00	60	48	51.5	47.5	45.5	42.5
86	09-Nov-03	7:00	60	50.5	53.5	49.5	48	44
87	09-Nov-03	8:00	60	55	58	54	52	47
88	09-Nov-03	9:00	60	56.5	60	56	54	49.5
89	09-Nov-03	10:00	60	58.5	61.5	57	55	50
90	09-Nov-03	11:00	60	57.5	60.5	56.5	55	50.5
91	09-Nov-03	12:00	60	58.5	61.5	57	55.5	50.5
92	09-Nov-03	13:00	60	56	58.5	55.5	54	49.5
93	09-Nov-03	14:00	60	56.5	58.5	55.5	54	49.5
94	09-Nov-03	15:00	60	56	58	55.5	54	50
95	09-Nov-03	16:00	60	58	57	54.5	53	50
96	09-Nov-03	17:00	60	53.5	56	54	52.5	49
97	09-Nov-03	18:00	60	53.5	56	53.5	52	49
98	09-Nov-03	19:00	60	53.5	55.5	53	51.5	48.5
99	09-Nov-03	20:00	60	52.5	55	52.5	50.5	48
100	09-Nov-03	21:00	60	52	55	52.5	50.5	47.5
101	09-Nov-03	22:00	60	51.5	53.5	50.5	49	46
102	09-Nov-03	23:00	60	49	51.5	49	47.5	45
103	10-Nov-03	0:00	60	49	51.5	48	46.5	44
104	10-Nov-03	1:00	60	46.5	49.5	46	45	42
105	10-Nov-03	2:00	60	46.5	49	45.5	44.5	42.5
106	10-Nov-03	3:00	60	46	48	45.5	44.5	42.5
107	10-Nov-03	4:00	60	47.5	50.5	47	45.5	42.5
108	10-Nov-03	5:00	60	55	58	54.5	52.5	48
109	10-Nov-03	6:00	60	57.5	59.5	57	56	52.5
110	10-Nov-03	7:00	60	57	58.5	56	55	52
111	10-Nov-03	8:00	60	56	58.5	56	54.5	51
112	10-Nov-03	9:00	60	57.5	60	57	55.5	52
113	10-Nov-03	10:00	60	56.5	59	56.5	55	51.5
114	10-Nov-03	11:00	60	56	59	56	55	51.5
115	10-Nov-03	12:00	60	56.5	59	56.5	55.5	52.5
116	10-Nov-03	13:00	60	56.5	59	56	55	51.5
117	10-Nov-03	14:00	60	57	59.5	57	56	53
118	10-Nov-03	15:00	60	58	61	57.5	56.5	52.5
119	10-Nov-03	16:00	60	72.5	79	62.5	56.5	46.5
120	10-Nov-03	17:00	60	50.5	49	48	48	48
121	10-Nov-03	18:00	60	48	48	48	48	47.5
122	10-Nov-03	19:00	60	48.5	48	48	47.5	47.5

APPENDIX D

STAMSON DATA SHEETS
PREDICTED 2021
BASELINE TRAFFIC NOISE LEVELS

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:36:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 83butt21.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 83 Button Rd (day/night)
-----------------------------------------------
Car traffic volume  : 42205/4689  veh/TimePeriod  *
Medium truck volume :  2454/273   veh/TimePeriod  *
Heavy truck volume  :  4417/491   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):  54528
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 83 Button Rd (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  :  18.50 / 18.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 83 Button Rd (day)
---------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.50 !        1.53 !         1.53

ROAD (0.00 + 66.41 + 0.00) = 66.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  78.13   0.00  -1.37  -1.19   0.00   0.00  -9.16  66.41
-------------------------------------------------------------------------------

Segment Leq : 66.41 dBA

Total Leq All Segments: 66.41 dBA

Results segment # 1: 83 Button Rd (night)
-----------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        4.50 !        4.20 !         4.20

ROAD (0.00 + 68.88 + 0.00) = 68.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  71.60   0.00  -1.29  -1.01   0.00   0.00  -0.12  69.17*
   -90     90   0.56  71.60   0.00  -1.42  -1.29   0.00   0.00   0.00  68.88
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 68.88 dBA

Total Leq All Segments: 68.88 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.41
                           (NIGHT): 68.88
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-11-2003 18:42:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 59emba21.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 59 Embassdor Court (day/night)
-------------------------------------------------
Car traffic volume  : 37754/4195  veh/TimePeriod  *
Medium truck volume :  2195/244   veh/TimePeriod  *
Heavy truck volume  :  3951/439   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):  48778
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 59 Embassdor Court (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  :  19.00 / 19.00  m
Receiver height           :   1.80 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 59 Embassdor Court (day)
---------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.80 !        1.80 !         1.80

ROAD (0.00 + 74.53 + 0.00) = 74.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.55  77.64   0.00  -1.60  -1.27   0.00   0.00  -1.19  73.58*
   -90     90   0.64  77.64   0.00  -1.69  -1.43   0.00   0.00   0.00  74.53
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 74.53 dBA

Total Leq All Segments: 74.53 dBA

Results segment # 1: 59 Embassdor Court (night)
-----------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        4.50 !        4.43 !         4.43

ROAD (0.00 + 68.22 + 0.00) = 68.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.47  71.11   0.00  -1.51  -1.12   0.00   0.00  -0.03  68.44*
   -90     90   0.56  71.11   0.00  -1.60  -1.29   0.00   0.00   0.00  68.22
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 68.22 dBA

Total Leq All Segments: 68.22 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 74.53
```

```
                        (NIGHT): 68.22

STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:46:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 7651ke21.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions – with baseline conditions (Reg. Traffic only)
```

Keele Street Alignment

```
Road data, segment # 1: 7651 Keele Street (day/night)
-----------------------------------------------
Car traffic volume  : 28416/3157  veh/TimePeriod  *
Medium truck volume :  1615/179   veh/TimePeriod  *
Heavy truck volume  :  2260/251   veh/TimePeriod  *
Posted speed limit  :    60 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):  35879
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 7651 Keele Street (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  :  28.50 / 28.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 7651 Keele Street (day)
---------------------------------------

Source height = 1.63 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   0.66  74.35   0.00  -4.62  -1.45   0.00   0.00   0.00  68.29
-------------------------------------------------------------------------------

Segment Leq : 68.29 dBA

Total Leq All Segments: 68.29 dBA
```

```
Results segment # 1: 7651 Keele Street (night)
----------------------------------------

Source height = 1.63 m

ROAD (0.00 + 62.16 + 0.00) = 62.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  67.82   0.00  -4.37  -1.30   0.00   0.00   0.00  62.16
-------------------------------------------------------------------------------

Segment Leq : 62.16 dBA

Total Leq All Segments: 62.16 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 68.29
                           (NIGHT): 62.16
```

```
TAMSON 5.0        NORMAL REPORT        Date: 10-12-2003 17:44:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 104sug21.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 104 Suger Crescent(day/night)
-------------------------------------------------
Car traffic volume  : 39909/4434  veh/TimePeriod  *
Medium truck volume :  2268/252   veh/TimePeriod  *
Heavy truck volume  :  3175/353   veh/TimePeriod  *
Posted speed limit  :    80 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):  50390
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 104 Suger Crescent (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  :  46.50 / 46.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 104 Suger Crescent (day)
---------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.50 !        1.54 !         1.54

ROAD (0.00 + 63.40 + 0.00) = 63.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  78.17   0.00  -7.42  -1.19   0.00   0.00  -6.15  63.40
-------------------------------------------------------------------------------

Segment Leq : 63.40 dBA

Total Leq All Segments: 63.40 dBA

Results segment # 1: 104 Suger Crescent (night)
-----------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        4.50 !        3.57 !         3.57

ROAD (0.00 + 62.64 + 0.00) = 62.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  71.64   0.00  -6.98  -1.02   0.00   0.00  -2.02  61.62*
   -90     90   0.57  71.64   0.00  -7.70  -1.30   0.00   0.00   0.00  62.64
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.64 dBA

Total Leq All Segments: 62.64 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.40
                           (NIGHT): 62.64
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-11-2003 11:06:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 364hw721.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 364 Hwy 7 (day/night)
----------------------------------------------
Car traffic volume  : 47140/5238  veh/TimePeriod  *
Medium truck volume :  2095/233   veh/TimePeriod  *
Heavy truck volume  :  3143/349   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):  58197
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   4.00
    Heavy Truck  % of Total Volume     :   6.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 364 Hwy 7 (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  :  30.50 / 30.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 364 Hwy 7 (day)
-----------------------------------

Source height = 1.57 m

ROAD (0.00 + 70.59 + 0.00) = 70.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  77.15   0.00  -5.11  -1.45   0.00   0.00   0.00  70.59
-------------------------------------------------------------------------------

Segment Leq : 70.59 dBA

Total Leq All Segments: 70.59 dBA
```

```
Results segment # 1: 364 Hwy 7 (night)
---------------------------------------

Source height = 1.56 m

ROAD (0.00 + 64.48 + 0.00) = 64.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  70.62   0.00  -4.83  -1.30   0.00   0.00   0.00  64.48
-------------------------------------------------------------------------------

Segment Leq : 64.48 dBA

Total Leq All Segments: 64.48 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 70.59
                           (NIGHT): 64.48
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:40:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2mngmr21.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 2 Montgomery Court (day/night)
-------------------------------------------------
Car traffic volume  : 48313/5368  veh/TimePeriod  *
Medium truck volume :  1818/202   veh/TimePeriod  *
Heavy truck volume  :  1818/202   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):  57722
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 2 Montgomery (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  :  50.00 / 50.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 2 Montgomery (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 65.61 + 0.00) = 65.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  75.74   0.00  -8.68  -1.46   0.00   0.00   0.00  65.61
-------------------------------------------------------------------------------

Segment Leq : 65.61 dBA

Total Leq All Segments: 65.61 dBA
```

```
Results segment # 1: 2 Montgomery (night)
-----------------------------------------

Source height = 1.37 m

ROAD (0.00 + 59.67 + 0.00) = 59.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  69.21   0.00  -8.23  -1.31   0.00   0.00   0.00  59.67
-------------------------------------------------------------------------------

Segment Leq : 59.67 dBA

Total Leq All Segments: 59.67 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 65.61
                           (NIGHT): 59.67
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:41:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: lichfe21.te          Time Period: Day/Night 16/8 hours
Description:   2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 73 Lichfield Rd (day/night)
-------------------------------------------------
Car traffic volume  : 41141/4571  veh/TimePeriod  *
Medium truck volume :  1548/172   veh/TimePeriod  *
Heavy truck volume  :  1548/172   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):  49153
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Lichfield Rd (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Lichfield Rd (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 73.59 + 0.00) = 73.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  75.04   0.00   0.00  -1.46   0.00   0.00   0.00  73.59
-------------------------------------------------------------------------------

Segment Leq : 73.59 dBA

Total Leq All Segments: 73.59 dBA
```

```
Results segment # 1: Lichfield Rd (night)
------------------------------------------

Source height = 1.37 m

ROAD (0.00 + 67.20 + 0.00) = 67.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  68.51   0.00   0.00  -1.31   0.00   0.00   0.00  67.20
-------------------------------------------------------------------------------

Segment Leq : 67.20 dBA

Total Leq All Segments: 67.20 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 73.59
                           (NIGHT): 67.20
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:43:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: gldiat21.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 10 Gladiator Road (day/night)
-------------------------------------------------
Car traffic volume  : 35110/3901  veh/TimePeriod  *
Medium truck volume :  1321/147   veh/TimePeriod  *
Heavy truck volume  :  1321/147   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):  41948
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 10 Gladiator Road (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 10 Gladiator Road (day)
-----------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 62.33 + 0.00) = 62.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  74.35   0.00   0.00  -1.21   0.00   0.00 -10.82  62.33
-------------------------------------------------------------------------------

Segment Leq : 62.33 dBA

Total Leq All Segments: 62.33 dBA

Results segment # 1: 10 Gladiator Road (night)
-------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        4.29 !         4.29

ROAD (0.00 + 66.52 + 0.00) = 66.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  67.83   0.00   0.00  -1.04   0.00   0.00  -0.08  66.71*
   -90     90   0.57  67.83   0.00   0.00  -1.31   0.00   0.00   0.00  66.52
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 66.52 dBA

Total Leq All Segments: 66.52



TOTAL Leq FROM ALL SOURCES (DAY): 62.33
                           (NIGHT): 66.52
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:44:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 6921hy21.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions – with baseline conditions (Reg. Traffic only)


Road data, segment # 1: 6921 Hwy 7 (day/night)
----------------------------------------------
Car traffic volume  : 11661/1296  veh/TimePeriod  *
Medium truck volume :   439/49    veh/TimePeriod  *
Heavy truck volume  :   439/49    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):  13932
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 6921 Hwy 7 (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  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 6921 Hwy 7 (day)
-------------------------------------

Source height = 1.37 m

ROAD (0.00 + 61.04 + 0.00) = 61.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  69.57   0.00  -7.07  -1.46   0.00   0.00   0.00  61.04
-------------------------------------------------------------------------------

Segment Leq : 61.04 dBA

Total Leq All Segments: 61.04 dBA
```

```
Results segment # 1: 6921 Hwy 7 (night)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 55.04 + 0.00) = 55.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  63.05   0.00  -6.70  -1.31   0.00   0.00   0.00  55.04
-------------------------------------------------------------------------------

Segment Leq : 55.04 dBA

Total Leq All Segments: 55.04 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.04
                           (NIGHT): 55.04
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:45:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 154tho21.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions – with baseline conditions (Reg. Traffic only)
```

Centre Street Alignment

```
Road data, segment # 1: 154 Thornway Avenue (day/night)
-------------------------------------------------
Car traffic volume  : 29508/3279  veh/TimePeriod  *
Medium truck volume :   301/33    veh/TimePeriod  *
Heavy truck volume  :   301/33    veh/TimePeriod  *
Posted speed limit  :    60 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):  33456
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 154 Thornway Avenue (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  :  18.00 / 18.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: 154 Thornway Avenue (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 66.36 + 0.00) = 66.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  69.13   0.00  -1.31  -1.46   0.00   0.00   0.00  66.36
-------------------------------------------------------------------------------

Segment Leq : 66.36 dBA

Total Leq All Segments: 66.36 dBA
```

```
Results segment # 1: 154 Thornway Avenue (night)
----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 59.99 + 0.00) = 59.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  62.57   0.00  -1.26  -1.33   0.00   0.00   0.00  59.99
-------------------------------------------------------------------------------

Segment Leq : 59.99 dBA

Total Leq All Segments: 59.99 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.36
                           (NIGHT): 59.99
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:47:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 79chil21.te          Time Period: Day/Night 16/8 hours
Description:   2021 Predictions – with baseline conditions (Reg. Traffic only)
```

Bathurst Street Alignment

```
Road data, segment # 1: 79 Chilmar Crescent (day/night)
-----------------------------------------------
Car traffic volume  : 37466/4163  veh/TimePeriod  *
Medium truck volume :  1196/133   veh/TimePeriod  *
Heavy truck volume  :  1196/133   veh/TimePeriod  *
Posted speed limit  :    60 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):  44286
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 79 Chilmar Crescent (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  :  22.50 / 22.50  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 79 Chilmar Crescent (day)
-----------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 60.83 + 0.00) = 60.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  72.79   0.00  -2.68  -1.21   0.00   0.00  -8.07  60.83
-------------------------------------------------------------------------------


Segment Leq : 60.83 dBA

Total Leq All Segments: 60.83 dBA

Results segment # 1: 79 Chilmar Crescent (night)
-------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        4.50 !        3.93 !         3.93

ROAD (0.00 + 62.17 + 0.00) = 62.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  66.26   0.00  -2.52  -1.04   0.00   0.00  -0.27  62.43*
   -90     90   0.58  66.26   0.00  -2.77  -1.31   0.00   0.00   0.00  62.17
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.17 dBA

Total Leq All Segments: 62.17 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 60.83
                           (NIGHT): 62.17
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-12-2003 15:57:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 21Warden.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions – with baseline conditions (Reg. Traffic only)
```

Town Centre Blvd. South Alignment

```
Road data, segment # 1: Future Markham Centre (on Warden Avenue between Town
centre Blvd. S. to Main Street Unionville)  (day/night)
-----------------------------------------------
Car traffic volume  : 40059/4451  veh/TimePeriod  *
Medium truck volume :   409/45    veh/TimePeriod  *
Heavy truck volume  :   409/45    veh/TimePeriod  *
Posted speed limit  :    60 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):  45418
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: TownCetrBlvd (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  : 144.00 / 144.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: TownCetrBlvd (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  70.46   0.00 -16.31  -1.46   0.00   0.00   0.00  52.69
-------------------------------------------------------------------------------

Segment Leq : 52.69 dBA

Total Leq All Segments: 52.69 dBA
```

```
Results segment # 1: TownCetrBlvd (night)
------------------------------------------

Source height = 1.00 m

ROAD (0.00 + 47.01 + 0.00) = 47.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  63.91   0.00 -15.57  -1.33   0.00   0.00   0.00  47.01
-------------------------------------------------------------------------------

Segment Leq : 47.01 dBA

Total Leq All Segments: 47.01 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 52.69
                           (NIGHT): 47.01
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 16:49:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 231val21.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions – with baseline conditions (Reg. Traffic only)
```

Kennedy Road Alignment

```
Road data, segment # 1: 231 Valentina Drive (day/night)
-----------------------------------------------
Car traffic volume  : 46417/5157  veh/TimePeriod  *
Medium truck volume :  1747/194   veh/TimePeriod  *
Heavy truck volume  :  1747/194   veh/TimePeriod  *
Posted speed limit  :    60 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):  55456
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: 231 Valentina Drive (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  :  21.00 / 21.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: 231 Valentina Drive (day)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 61.55 + 0.00) = 61.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  74.21   0.00  -2.17  -1.14   0.00   0.00  -9.35  61.55
-------------------------------------------------------------------------------

Segment Leq : 61.55 dBA

Total Leq All Segments: 61.55 dBA

Results segment # 1: 231 Valentina Drive (night)
-----------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        3.31 !         3.31

ROAD (0.00 + 64.06 + 0.00) = 64.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.39  67.67   0.00  -2.04  -0.97   0.00   0.00  -4.68  59.99*
   -90     90   0.57  67.67   0.00  -2.30  -1.31   0.00   0.00   0.00  64.06
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 64.06 dBA

Total Leq All Segments: 64.06 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.55
                           (NIGHT): 64.06
```

APPENDIX E

STAMSON DATA SHEETS
PREDICTED SOUND LEVELS
DUE TO ADDED BUS TRANSIT TRAFFIC

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 12:05:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b83butto.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus Buses)


Road data, segment # 1: Martin Grove Rd. to Kipling Ave. - reg. traffic
Eastbound (day/night)
-----------------------------------------------
Car traffic volume  : 20954/2328  veh/TimePeriod  *
Medium truck volume :  1218/135   veh/TimePeriod  *
Heavy truck volume  :  2193/244   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):  27072
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Martin Grove Rd. to Kipling Ave. - reg. traffic
Eastbound (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  :  28.60 / 28.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Martin Grove Rd. to Kipling Ave. - reg. traffic
Westbound (day/night)
------------------------------------------------
Car traffic volume  : 20954/2328  veh/TimePeriod  *
Medium truck volume :  1218/135   veh/TimePeriod  *
Heavy truck volume  :  2193/244   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):  27072
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Martin Grove Rd. to Kipling Ave. - reg. traffic
Westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Martin Grove Rd. to Kipling Ave. - reg. traffic Eastbound
(day)
--------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.50 !        1.52 !         1.52

ROAD (0.00 + 60.58 + 0.00) = 60.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.09   0.00  -4.22  -1.19   0.00   0.00  -9.10  60.58
```

```
-------------------------------------------------------------------------
Segment Leq : 60.58 dBA

Results segment # 2: Martin Grove Rd. to Kipling Ave. - reg. traffic Westbound
(day)
--------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.50 !        1.53 !         1.53

ROAD (0.00 + 64.70 + 0.00) = 64.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.09   0.00   0.00  -1.19   0.00   0.00  -9.20  64.70
-------------------------------------------------------------------------------

Segment Leq : 64.70 dBA

Total Leq All Segments (day): 66.12 dBA



Results segment # 1: Martin Grove Rd. to Kipling Ave. - reg. traffic Eastbound
(night)
----------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        4.50 !        4.31 !         4.31

ROAD (0.00 + 62.89 + 0.00) = 62.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  68.56   0.00  -3.97  -1.01   0.00   0.00  -0.11  63.46*
   -90     90   0.56  68.56   0.00  -4.38  -1.29   0.00   0.00   0.00  62.89
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.89 dBA
```

Results segment # 2: Martin Grove Rd. to Kipling Ave. – reg. traffic Westbound (night)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	4.50	4.13	4.13

ROAD (0.00 + 67.27 + 0.00) = 67.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	68.56	0.00	0.00	-1.01	0.00	0.00	-0.13	67.41*
-90	90	0.56	68.56	0.00	0.00	-1.29	0.00	0.00	0.00	67.27

* Bright Zone !

Segment Leq : 67.27 dBA

Total Leq All Segments (night): **68.62** dBA

```
RT/Custom data, segment # 1: Martin Grove Rd. to Kipling Ave. - BRT Eastbound
(day/night)
-------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Martin Grove Rd. to Kipling Ave. - BRT Eastbound
(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  :  28.60 / 28.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Martin Grove Rd. to Kipling Ave. - BRT Westbound
(day/night)
-------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Martin Grove Rd. to Kipling Ave. - BRT Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Martin Grove Rd. to Kipling Ave. - BRT Eastbound (day)
----------------------------------

Source height = 2.00 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.53 !         1.53

RT/Custom (0.00 + 43.72 + 0.00) = 43.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  58.08  -4.20  -1.17   0.00   0.00  -8.99  43.72
-------------------------------------------------------------------------

Segment Leq : 43.72 dBA

Results segment # 2: Martin Grove Rd. to Kipling Ave. – BRT Westbound (day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.57 !         1.57

RT/Custom (0.00 + 47.92 + 0.00) = 47.92 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  58.08   0.00  -1.17   0.00   0.00  -8.99  47.92
-------------------------------------------------------------------------

Segment Leq : 47.92 dBA

Total Leq All Segments (day): 49.32 dBA

Results segment # 1: Martin Grove Rd. to Kipling Ave. – BRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.33 !         4.33

RT/Custom (0.00 + 43.70 + 0.00) = 43.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  49.33  -3.95  -1.00   0.00   0.00  -0.11  44.28*
   -90     90   0.56  49.33  -4.36  -1.28   0.00   0.00   0.00  43.70
-------------------------------------------------------------------------
```

```
 * Bright Zone !
Segment Leq : 43.70 dBA


Results segment # 2: Martin Grove Rd. to Kipling Ave. - BRT Westbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.17 !         4.17

RT/Custom (0.00 + 48.05 + 0.00) = 48.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  49.33   0.00  -1.00   0.00   0.00  -0.12  48.21*
   -90     90   0.56  49.33   0.00  -1.28   0.00   0.00   0.00  48.05
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.05 dBA

Total Leq All Segments (night): 49.41 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.21
                           (NIGHT): 68.67
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-11-2003 19:10:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: B59Embas.te          Time Period: Day/Night 16/8 hours
Description:    2021 Predictions (plus Buses)


Road data, segment # 1: Pine Valley Drive to Whitmore Road – reg. traffic
                      Eastbound (day/night)
-----------------------------------------------
Car traffic volume  : 18877/2097  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1976/220   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):  24389
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Pine Valley Drive to Whitmore Road – reg. traffic
                     Eastbound (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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Pine Valley Drive to Whitmore Road - reg. traffic
                       westbound (day/night)
-------------------------------------------------
Car traffic volume  : 18877/2097  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1976/220   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):  24389
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   5.00
    Heavy Truck  % of Total Volume      :   9.00
    Day (16 hrs) % of Total Volume      :  90.00

Data for Segment # 2: Pine Valley Drive to Whitmore Road - reg. traffic
                     westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

Results segment # 1: Pine Valley Drive to Whitmore Road – reg. traffic Eastbound (day)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	1.50	1.50	1.50

ROAD (0.00 + 68.46 + 0.00) = 68.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	74.63	0.00	-4.48	-1.29	0.00	0.00	-5.00	63.87*
-90	90	0.65	74.63	0.00	-4.73	-1.44	0.00	0.00	0.00	68.46

* Bright Zone !

Segment Leq : 68.46 dBA

Results segment # 2: Pine Valley Drive to Whitmore Road – reg. traffic westbound (day)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	1.50	1.51	1.51

ROAD (0.00 + 73.19 + 0.00) = 73.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	74.63	0.00	0.00	-1.29	0.00	0.00	-5.00	68.35*
-90	90	0.65	74.63	0.00	0.00	-1.44	0.00	0.00	0.00	73.19

* Bright Zone !

Segment Leq : 73.19 dBA

Total Leq All Segments (day): **74.45** dBA

```
Results segment # 1: Pine Valley Drive to Whitmore Road - reg. traffic
Eastbound (night)
---------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        4.50 !        4.45 !         4.45

ROAD (0.00 + 62.34 + 0.00) = 62.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.47  68.11   0.00  -4.22  -1.12   0.00   0.00  -0.03  62.73*
   -90     90   0.56  68.11   0.00  -4.48  -1.29   0.00   0.00   0.00  62.34
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.34 dBA

Results segment # 2: Pine Valley Drive to Whitmore Road - reg. traffic
westbound (night)
---------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        4.50 !        4.41 !         4.41

ROAD (0.00 + 66.82 + 0.00) = 66.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.47  68.11   0.00   0.00  -1.12   0.00   0.00  -0.04  66.95*
   -90     90   0.56  68.11   0.00   0.00  -1.29   0.00   0.00   0.00  66.82
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 66.82 dBA

Total Leq All Segments (night): 68.14 dBA
```

```
RT/Custom data, segment # 1: Pine Valley Drive to Whitmore Road - BRT
Eastbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Pine Valley Drive to Whitmore Road - BRT Eastbound
(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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Pine Valley Drive to Whitmore Road - BRT
Westbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Pine Valley Drive to Whitmore Road - BRT Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

Results segment # 1: Pine Valley Drive to Whitmore Road – BRT Eastbound (day)

Source height = 2.00 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
2.00	1.50	1.51	1.51

RT/Custom (0.00 + 51.94 + 0.00) = 51.94 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	58.08	-4.45	-1.28	0.00	0.00	-5.00	47.36*
-90	90	0.64	58.08	-4.71	-1.43	0.00	0.00	0.00	51.94

* Bright Zone !

Segment Leq : 51.94 dBA

Results segment # 2: Pine Valley Drive to Whitmore Road – BRT Westbound (day)

Source height = 2.00 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
2.00	1.50	1.52	1.52

RT/Custom (0.00 + 56.65 + 0.00) = 56.65 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	58.08	0.00	-1.28	0.00	0.00	-4.99	51.82*
-90	90	0.64	58.08	0.00	-1.43	0.00	0.00	0.00	56.65

* Bright Zone !

Segment Leq : 56.65 dBA

Total Leq All Segments (day): **57.91** dBA

```
Results segment # 1: Pine Valley Drive to Whitmore Road - BRT Eastbound
(night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.46 !         4.46

RT/Custom (0.00 + 43.60 + 0.00) = 43.60 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.47  49.33  -4.19  -1.11   0.00   0.00  -0.03  43.99*
   -90     90   0.56  49.33  -4.45  -1.28   0.00   0.00   0.00  43.60
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.60 dBA

Results segment # 2: Pine Valley Drive to Whitmore Road - BRT Westbound
(night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.42 !         4.42

RT/Custom (0.00 + 48.05 + 0.00) = 48.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.47  49.33   0.00  -1.11   0.00   0.00  -0.03  48.19*
   -90     90   0.56  49.33   0.00  -1.28   0.00   0.00   0.00  48.05
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.05 dBA

Total Leq All Segments (night): 49.38 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 74.55
```

(NIGHT): **68.20**

STAMSON 5.0 NORMAL REPORT Date: 24-11-2003 12:55:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b7651kee.te Time Period: Day/Night 16/8 hours
Description: **2021 Predictions (plus Buses)**

Keele Street Alignment

Road data, segment # 1: Hwy 7 to Hwy 407 – reg. traffic Northbound (day/night)

Car traffic volume : 14024/1558 veh/TimePeriod *
Medium truck volume : 797/89 veh/TimePeriod *
Heavy truck volume : 1116/124 veh/TimePeriod *
Posted speed limit : 60 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): 17707
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 5.00
Heavy Truck % of Total Volume : 7.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Hwy 7 to Hwy 407 – reg. traffic Northbound (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 : 23.00 / 23.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```
Road data, segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (day/night)
-----------------------------------------------
Car traffic volume  : 14024/1558  veh/TimePeriod  *
Medium truck volume :   797/89    veh/TimePeriod  *
Heavy truck volume  :  1116/124   veh/TimePeriod  *
Posted speed limit  :    60 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):  17707
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hwy 7 to Hwy 407 - reg. traffic Northbound (day)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 66.76 + 0.00) = 66.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.29   0.00  -3.07  -1.45   0.00   0.00   0.00  66.76
-------------------------------------------------------------------------------

Segment Leq : 66.76 dBA
```

```
Results segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (day)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 63.95 + 0.00) = 63.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.29   0.00  -5.89  -1.45   0.00   0.00   0.00  63.95
-------------------------------------------------------------------------------

Segment Leq : 63.95 dBA

Total Leq All Segments (day): 68.59 dBA

Results segment # 1: Hwy 7 to Hwy 407 - reg. traffic Northbound (night)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 60.55 + 0.00) = 60.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  64.76   0.00  -2.91  -1.30   0.00   0.00   0.00  60.55
-------------------------------------------------------------------------------

Segment Leq : 60.55 dBA

Results segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (night)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 57.90 + 0.00) = 57.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  64.76   0.00  -5.57  -1.30   0.00   0.00   0.00  57.90
-------------------------------------------------------------------------------

Segment Leq : 57.90 dBA

Total Leq All Segments (night): 62.43 dBA
```

```
RT/Custom data, segment # 1: Hwy 7 to Hwy 407 - BRT Northbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Hwy 7 to Hwy 407 - BRT Northbound (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  :  23.00 / 23.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Hwy 7 to Hwy 407 - BRT Southbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Hwy 7 to Hwy 407 - BRT Southbound (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hwy 7 to Hwy 407 - BRT Northbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 54.27 + 0.00) = 54.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.75  -3.05  -1.43   0.00   0.00   0.00  54.27
-------------------------------------------------------------------------

Segment Leq : 54.27 dBA
```

```
Results segment # 2: Hwy 7 to Hwy 407 - BRT Southbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 51.47 + 0.00) = 51.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.75  -5.85  -1.43   0.00   0.00   0.00  51.47
-------------------------------------------------------------------------

Segment Leq : 51.47 dBA

Total Leq All Segments (day): 56.10 dBA



Results segment # 1: Hwy 7 to Hwy 407 - BRT Northbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 45.84 + 0.00) = 45.84 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.00  -2.89  -1.28   0.00   0.00   0.00  45.84
-------------------------------------------------------------------------

Segment Leq : 45.84 dBA

Results segment # 2: Hwy 7 to Hwy 407 - BRT Southbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 43.20 + 0.00) = 43.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.00  -5.53  -1.28   0.00   0.00   0.00  43.20
-------------------------------------------------------------------------

Segment Leq : 43.20 dBA

Total Leq All Segments (night): 47.73 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 68.83
                           (NIGHT): 62.58
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-12-2003 17:42:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b104suge.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus Buses)


Road data, segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 19329/2148  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1538/171   veh/TimePeriod  *
Posted speed limit  :    80 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):  24405
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
(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  :  56.60 / 56.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 19329/2148  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1538/171   veh/TimePeriod  *
Posted speed limit  :    80 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):  24405
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
(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  :  36.40 / 36.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
 (day)
--------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.50 !        1.53 !         1.53

ROAD (0.00 + 59.03 + 0.00) = 59.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.02   0.00  -8.71  -1.19   0.00   0.00  -6.09  59.03
```

```
-------------------------------------------------------------------------------

Segment Leq : 59.03 dBA
Results segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
 (day)
------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.50 !        1.55 !         1.55

ROAD (0.00 + 61.74 + 0.00) = 61.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.02   0.00  -5.81  -1.19   0.00   0.00  -6.27  61.74
-------------------------------------------------------------------------------

Segment Leq : 61.74 dBA

Total Leq All Segments: 63.60 dBA



Results segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
 (night)
--------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        4.50 !        3.74 !         3.74

ROAD (0.00 + 58.16 + 0.00) = 58.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  68.49   0.00  -8.19  -1.02   0.00   0.00  -1.39  57.89*
   -90     90   0.57  68.49   0.00  -9.03  -1.30   0.00   0.00   0.00  58.16
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.16 dBA
```

```
Results segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
 (night)
---------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        4.50 !        3.32 !         3.32

ROAD (0.00 + 61.16 + 0.00) = 61.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  68.49   0.00  -5.47  -1.02   0.00   0.00  -3.20  58.80*
   -90     90   0.57  68.49   0.00  -6.03  -1.30   0.00   0.00   0.00  61.16
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 61.16 dBA

Total Leq All Segments: 62.92 dBA
```

```
RT/Custom data, segment # 1: Centre St. to Langstaff Rd. - BRT Eastbound
(day/night)
-----------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: BRT-EB (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  :  56.60 / 56.60  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: Centre St. to Langstaff Rd. - BRT Westbound
(day/night)
-----------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: Centre St. to Langstaff Rd. - BRT Westbound (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  :  36.40 / 36.40  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Centre St. to Langstaff Rd. - BRT Eastbound (day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.63 !         1.63

RT/Custom (0.00 + 41.80 + 0.00) = 41.80 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  57.50  -8.64  -1.17   0.00   0.00  -5.89  41.80
-------------------------------------------------------------------------

Segment Leq : 41.80 dBA


Results segment # 2: Centre St. to Langstaff Rd. - BRT Westbound(day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.71 !         1.71

RT/Custom (0.00 + 44.64 + 0.00) = 44.64 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  57.50  -5.77  -1.17   0.00   0.00  -5.91  44.64
-------------------------------------------------------------------------

Segment Leq : 44.64 dBA

Total Leq All Segments: 46.46 dBA


Results segment # 1: Centre St. to Langstaff Rd. - BRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
```

```
       2.00 !        4.50 !        3.84 !         3.84

RT/Custom (0.00 + 38.51 + 0.00) = 38.51 dBA

Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  48.75  -8.12  -1.00   0.00   0.00  -1.13  38.50*
   -90     90   0.56  48.75  -8.97  -1.28   0.00   0.00   0.00  38.51
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.51 dBA


Results segment # 2: Centre St. to Langstaff Rd. – BRT Westbound (night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.47 !         3.47

RT/Custom (0.00 + 41.49 + 0.00) = 41.49 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  48.75  -5.42  -1.00   0.00   0.00  -2.23  40.10*
   -90     90   0.56  48.75  -5.99  -1.28   0.00   0.00   0.00  41.49
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.49 dBA

Total Leq All Segments: 43.26 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.69
                           (NIGHT): 62.97
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-11-2003 10:56:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b364Hwy7.te          Time Period: Day/Night 16/8 hours
Description:   2021 Predictions (plus Buses)


Road data, segment # 1: Bayview Ave. to Leslie St. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24190/2688  veh/TimePeriod  *
Medium truck volume :  1075/119   veh/TimePeriod  *
Heavy truck volume  :  1613/179   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):  29864
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   4.00
    Heavy Truck  % of Total Volume     :   6.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Bayview Ave. to Leslie St. - reg. traffic Eastbound
(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  :  41.00 / 41.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Bayview Ave. to Leslie St. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24190/2688  veh/TimePeriod  *
Medium truck volume :  1075/119   veh/TimePeriod  *
Heavy truck volume  :  1613/179   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):  29864
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   4.00
    Heavy Truck  % of Total Volume     :   6.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Bayview Ave. to Leslie St. - reg. traffic Westbound
(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  :  20.00 / 20.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Bayview Ave. to Leslie St. - reg. traffic Eastbound (day)
--------------------------------------

Source height = 1.57 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   0.66  74.25   0.00  -7.24  -1.45   0.00   0.00   0.00  65.56
-------------------------------------------------------------------------------

Segment Leq : 65.56 dBA
```

Results segment # 2: Bayview Ave. to Leslie St. – reg. traffic Westbound (day)

Source height = 1.57 m

ROAD (0.00 + 70.73 + 0.00) = 70.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	74.25	0.00	-2.07	-1.45	0.00	0.00	0.00	70.73

Segment Leq : 70.73 dBA

Total Leq All Segments (day): **71.88** dBA

Results segment # 1: Bayview Ave. to Leslie St. – reg. traffic Eastbound (night)

Source height = 1.56 m

ROAD (0.00 + 59.57 + 0.00) = 59.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	67.71	0.00	-6.85	-1.30	0.00	0.00	0.00	59.57

Segment Leq : 59.57 dBA

Results segment # 2: Bayview Ave. to Leslie St. – reg. traffic Westbound (night)

Source height = 1.56 m

ROAD (0.00 + 64.46 + 0.00) = 64.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	67.71	0.00	-1.96	-1.30	0.00	0.00	0.00	64.46

Segment Leq : 64.46 dBA

Total Leq All Segments (night): **65.68** dBA

```
RT/Custom data, segment # 1: Bayview Ave. to Leslie St. - BRT Eastbound
(day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Bayview Ave. to Leslie St. - BRT Eastbound (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  :  41.00 / 41.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Bayview Ave. to Leslie St. - BRT Westbound
(day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Bayview Ave. to Leslie St. - BRT Westbound (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  :  20.00 / 20.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Bayview Ave. to Leslie St. - BRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 49.47 + 0.00) = 49.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08  -7.18  -1.43   0.00   0.00   0.00  49.47
-------------------------------------------------------------------------

Segment Leq : 49.47 dBA
```

```
Results segment # 2: Bayview Ave. to Leslie St. - BRT Westbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 54.59 + 0.00) = 54.59 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08  -2.06  -1.43   0.00   0.00   0.00  54.59
-------------------------------------------------------------------------

Segment Leq : 54.59 dBA

Total Leq All Segments (day): 55.75 dBA



Results segment # 1: Bayview Ave. to Leslie St. - BRT Eastbound (night)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 41.26 + 0.00) = 41.26 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  49.33  -6.79  -1.28   0.00   0.00   0.00  41.26
-------------------------------------------------------------------------

Segment Leq : 41.26 dBA

Results segment # 2: Bayview Ave. to Leslie St. - BRT Westbound (night)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 46.11 + 0.00) = 46.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  49.33  -1.94  -1.28   0.00   0.00   0.00  46.11
-------------------------------------------------------------------------

Segment Leq : 46.11 dBA

Total Leq All Segments (night): 47.34 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 71.99
                           (NIGHT): 65.74
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 12:43:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b2mngmry.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus Buses)


Road data, segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24395/2711  veh/TimePeriod  *
Medium truck volume :   918/102   veh/TimePeriod  *
Heavy truck volume  :   918/102   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):  29146
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(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  :  60.10 / 60.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24395/2711  veh/TimePeriod  *
Medium truck volume :   918/102   veh/TimePeriod  *
Heavy truck volume  :   918/102   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):  29146
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
```

```
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00
Data for Segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound
(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  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 61.31 + 0.00) = 61.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.77   0.00 -10.01  -1.46   0.00   0.00   0.00  61.31
-------------------------------------------------------------------------------

Segment Leq : 61.31 dBA


Results segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound
(day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 64.25 + 0.00) = 64.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.77   0.00  -7.07  -1.46   0.00   0.00   0.00  64.25
-------------------------------------------------------------------------------

Segment Leq : 64.25 dBA

Total Leq All Segments (day): 66.03 dBA


Results segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(night)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 55.45 + 0.00) = 55.45 dBA
```

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.24	0.00	-9.49	-1.31	0.00	0.00	0.00	55.45

Segment Leq : 55.45 dBA

Results segment # 2: Woodbine Ave. to Rodick Rd. – reg. traffic Westbound (night)

Source height = 1.37 m

ROAD (0.00 + 58.23 + 0.00) = 58.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.24	0.00	-6.70	-1.31	0.00	0.00	0.00	58.23

Segment Leq : 58.23 dBA

Total Leq All Segments (night): **60.07** dBA

```
RT/Custom data, segment # 1: Woodbine Ave. to Rodick Rd. - BRT Eastbound
(day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Woodbine Ave. to Rodick Rd. - BRT Eastbound (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  :  60.10 / 60.10  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Woodbine Ave. to Rodick Rd. - BRT Westbound
(day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Woodbine Ave. to Rodick Rd. - BRT Westbound (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  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Woodbine Ave. to Rodick Rd. - BRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 46.73 + 0.00) = 46.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08  -9.92  -1.43   0.00   0.00   0.00  46.73
-------------------------------------------------------------------------

Segment Leq : 46.73 dBA
```

Results segment # 2: Woodbine Ave. to Rodick Rd. – BRT Westbound (day)

Source height = 2.00 m

RT/Custom (0.00 + 49.64 + 0.00) = 49.64 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.64	58.08	-7.01	-1.43	0.00	0.00	0.00	49.64

Segment Leq : 49.64 dBA

Total Leq All Segments (day): **51.43** dBA

Results segment # 1: Woodbine Ave. to Rodick Rd. – BRT Eastbound (night)

Source height = 2.00 m

RT/Custom (0.00 + 38.68 + 0.00) = 38.68 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	49.33	-9.37	-1.28	0.00	0.00	0.00	38.68

Segment Leq : 38.68 dBA

Results segment # 2: Woodbine Ave. to Rodick Rd. – BRT Westbound (night)

Source height = 2.00 m

RT/Custom (0.00 + 41.43 + 0.00) = 41.43 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	49.33	-6.62	-1.28	0.00	0.00	0.00	41.43

Segment Leq : 41.43 dBA

Total Leq All Segments (night): **43.28** dBA

TOTAL Leq FROM ALL SOURCES (DAY): **66.18**
(NIGHT): **60.16**

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 12:46:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b73lichf.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus Buses)


Road data, segment # 1: Warden Ave. to Kennedy Rd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 21060/2340  veh/TimePeriod  *
Medium truck volume :   793/88    veh/TimePeriod  *
Heavy truck volume  :   793/88    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):  25161
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Warden Ave. to Kennedy Rd. - reg. traffic Eastbound
(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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Warden Ave. to Kennedy Rd. - reg. traffic Westbound
(day/night)
------------------------------------------------
Car traffic volume  : 21060/2340  veh/TimePeriod  *
Medium truck volume :   793/88    veh/TimePeriod  *
Heavy truck volume  :   793/88    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):  25161
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   3.50
    Heavy Truck  % of Total Volume      :   3.50
    Day (16 hrs) % of Total Volume      :  90.00

Data for Segment # 2: Warden Ave. to Kennedy Rd. - reg. traffic Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Warden Ave. to Kennedy Rd. - reg. traffic Eastbound (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 66.18 + 0.00) = 66.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.14   0.00  -4.50  -1.46   0.00   0.00   0.00  66.18
-------------------------------------------------------------------------------

Segment Leq : 66.18 dBA
```

Results segment # 2: Warden Ave. to Kennedy Rd. – reg. traffic Westbound (day)

Source height = 1.37 m

ROAD (0.00 + 70.68 + 0.00) = 70.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.14	0.00	0.00	-1.46	0.00	0.00	0.00	70.68

Segment Leq : 70.68 dBA

Total Leq All Segments (day): **72.00** dBA

Results segment # 1: Warden Ave. to Kennedy Rd. – reg. traffic Eastbound (night)

Source height = 1.37 m

ROAD (0.00 + 60.03 + 0.00) = 60.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.60	0.00	-4.27	-1.31	0.00	0.00	0.00	60.03

Segment Leq : 60.03 dBA

Results segment # 2: Warden Ave. to Kennedy Rd. – reg. traffic Westbound (night)

Source height = 1.37 m

ROAD (0.00 + 64.29 + 0.00) = 64.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.60	0.00	0.00	-1.31	0.00	0.00	0.00	64.29

Segment Leq : 64.29 dBA

Total Leq All Segments (night): **65.67** dBA

```
RT/Custom data, segment # 1: Warden Ave. to Kennedy Rd. - BRT Eastbound
(day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Warden Ave. to Kennedy Rd. - BRT Eastbound (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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Warden Ave. to Kennedy Rd. - BRT Westbound
(day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Warden Ave. to Kennedy Rd. - BRT Westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Warden Ave. to Kennedy Rd. - BRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 52.19 + 0.00) = 52.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08  -4.46  -1.43   0.00   0.00   0.00  52.19
-------------------------------------------------------------------------

Segment Leq : 52.19 dBA
```

```
Results segment # 2: WB Warden Ave. to Kennedy Rd. - BRT Westbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 56.65 + 0.00) = 56.65 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08   0.00  -1.43   0.00   0.00   0.00  56.65
-------------------------------------------------------------------------

Segment Leq : 56.65 dBA

Total Leq All Segments (day): 57.98 dBA

Results segment # 1: Warden Ave. to Kennedy Rd. - BRT Eastbound (night)
------------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 43.84 + 0.00) = 43.84 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  49.33  -4.22  -1.28   0.00   0.00   0.00  43.84
-------------------------------------------------------------------------

Segment Leq : 43.84 dBA

Results segment # 2: Warden Ave. to Kennedy Rd. - BRT Westbound (night)
------------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 48.05 + 0.00) = 48.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  49.33   0.00  -1.28   0.00   0.00   0.00  48.05
-------------------------------------------------------------------------

Segment Leq : 48.05 dBA

Total Leq All Segments (night): 49.45 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 72.17
                           (NIGHT): 65.78
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 17:36:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: B10Gladi.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus Buses)


Road data, segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 16276/1808  veh/TimePeriod  *
Medium truck volume :   613/68    veh/TimePeriod  *
Heavy truck volume  :   613/68    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):  19446
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic Eastbound
(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  :  21.00 / 21.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Road data, segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 16276/1808  veh/TimePeriod  *
Medium truck volume :   613/68    veh/TimePeriod  *
Heavy truck volume  :   613/68    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):  19446
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic eastbound
(day)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 56.86 + 0.00) = 56.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  71.02   0.00  -2.22  -1.21   0.00   0.00 -10.73  56.86
-------------------------------------------------------------------------------

Segment Leq : 56.86 dBA

Results segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic westbound
(day)
---------------------------------------
```

```
Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 58.99 + 0.00) = 58.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.52  71.02   0.00   0.00  -1.21   0.00   0.00 -10.82  58.99
-------------------------------------------------------------------------

Segment Leq : 58.99 dBA

Total Leq All Segments (day): 61.06 dBA

Results segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic eastbound
(night)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        4.35 !         4.35

ROAD (0.00 + 60.87 + 0.00) = 60.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.43  64.48   0.00  -2.09  -1.04   0.00   0.00  -0.08  61.28*
   -90     90   0.57  64.48   0.00  -2.30  -1.31   0.00   0.00   0.00  60.87
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.87 dBA

Results segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic westbound
(night)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        2.41 !         2.41
```

```
ROAD (0.00 + 58.44 + 0.00) = 58.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  64.48   0.00   0.00  -1.04   0.00   0.00  -5.00  58.44
-------------------------------------------------------------------------------
Segment Leq : 58.44 dBA

Total Leq All Segments (night): 62.83 dBA
RT/Custom data, segment # 1: McCowan Rd. to Laidlaw Blvd. - BRT eastbound
(day/night)
-----------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: EB - BRT (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  :  21.00 / 21.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: McCowan Rd. to Laidlaw Blvd. - BRT westbound
(day/night)
-----------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: McCowan Rd. to Laidlaw Blvd. - BRT westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
```

```
Barrier elevation          :    0.00 m
Reference angle            :    0.00
```

```
Results segment # 1: McCowan Rd. to Laidlaw Blvd. - BRT eastbound (day)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.52 !         1.52

RT/Custom (0.00 + 44.20 + 0.00) = 44.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  58.08  -2.19  -1.17   0.00   0.00 -10.51  44.20
-------------------------------------------------------------------------

Segment Leq : 44.20 dBA


Results segment # 2: McCowan Rd. to Laidlaw Blvd. - BRT westbound (day)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.53 !         1.53

RT/Custom (0.00 + 46.40 + 0.00) = 46.40 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  58.08   0.00  -1.17   0.00   0.00 -10.51  46.40
-------------------------------------------------------------------------

Segment Leq : 46.40 dBA

Total Leq All Segments (day): 48.45 dBA

Results segment # 1: McCowan Rd. to Laidlaw Blvd. - BRT westbound (night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.38 !         4.38
```

```
RT/Custom (0.00 + 45.78 + 0.00) = 45.78 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  49.33  -2.06  -1.00   0.00   0.00  -0.07  46.20*
   -90     90   0.56  49.33  -2.27  -1.28   0.00   0.00   0.00  45.78
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.78 dBA


Results segment # 2: McCowan Rd. to Laidlaw Blvd. – BRT westbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.33 !         4.33

RT/Custom (0.00 + 48.05 + 0.00) = 48.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  49.33   0.00  -1.00   0.00   0.00  -0.08  48.26*
   -90     90   0.56  49.33   0.00  -1.28   0.00   0.00   0.00  48.05
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.05 dBA

Total Leq All Segments (night): 50.07 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.30
                           (NIGHT): 63.06
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 17:41:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: B6921hy7.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus Buses)


Road data, segment # 1: Ninth Line to Markham Bypass - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  :  5183/576   veh/TimePeriod  *
Medium truck volume :   195/22    veh/TimePeriod  *
Heavy truck volume  :   195/22    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):   6192
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Ninth Line to Markham Bypass - reg. traffic Eastbound
(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  :  30.00 / 30.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Ninth Line to Markham Bypass - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  :  5183/576   veh/TimePeriod  *
Medium truck volume :   195/22    veh/TimePeriod  *
Heavy truck volume  :   195/22    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):   6192
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Ninth Line to Markham Bypass - reg. traffic Westbound
(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  :  48.20 / 48.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Ninth Line to Markham Bypass - reg. traffic Eastbound
(day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 59.59 + 0.00) = 59.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  66.05   0.00  -5.00  -1.46   0.00   0.00   0.00  59.59
-------------------------------------------------------------------------------

Segment Leq : 59.59 dBA
```

Results segment # 2: Ninth Line to Markham Bypass – reg. traffic Westbound (day)

Source height = 1.37 m

ROAD (0.00 + 56.17 + 0.00) = 56.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	66.05	0.00	-8.42	-1.46	0.00	0.00	0.00	56.17

Segment Leq : 56.17 dBA

Total Leq All Segments: **61.22** dBA

Results segment # 1: Ninth Line to Markham Bypass – reg. traffic Eastbound (night)

Source height = 1.37 m

ROAD (0.00 + 53.51 + 0.00) = 53.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.56	0.00	-4.74	-1.31	0.00	0.00	0.00	53.51

Segment Leq : 53.51 dBA

Results segment # 2: Ninth Line to Markham Bypass – reg. traffic Westbound (night)

Source height = 1.37 m

ROAD (0.00 + 50.27 + 0.00) = 50.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.56	0.00	-7.98	-1.31	0.00	0.00	0.00	50.27

Segment Leq : 50.27 dBA

Total Leq All Segments (night): **55.20** dBA

```
RT/Custom data, segment # 1: Ninth Line to Markham Bypass - BRT Eastbound
(day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Ninth Line to Markham Bypass - BRT Eastbound (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  :  30.00 / 30.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Ninth Line to Markham Bypass - BRT Westbound
(day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Ninth Line to Markham Bypass - BRT Westbound (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  :  48.20 / 48.20  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Ninth Line to Markham Bypass - BRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 51.70 + 0.00) = 51.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08  -4.95  -1.43   0.00   0.00   0.00  51.70
-------------------------------------------------------------------------

Segment Leq : 51.70 dBA
```

```
Results segment # 2: Ninth Line to Markham Bypass - BRT Westbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 48.31 + 0.00) = 48.31 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.08  -8.34  -1.43   0.00   0.00   0.00  48.31
-------------------------------------------------------------------------

Segment Leq : 48.31 dBA

Total Leq All Segments (day): 53.34 dBA


Results segment # 1: Ninth Line to Markham Bypass - BRT Eastbound (night)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 43.37 + 0.00) = 43.37 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  49.33  -4.68  -1.28   0.00   0.00   0.00  43.37
-------------------------------------------------------------------------

Segment Leq : 43.37 dBA

Results segment # 2: Ninth Line to Markham Bypass - BRT Westbound (night)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 40.17 + 0.00) = 40.17 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  49.33  -7.88  -1.28   0.00   0.00   0.00  40.17
-------------------------------------------------------------------------

Segment Leq : 40.17 dBA

Total Leq All Segments (night): 45.07 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.87
                           (NIGHT): 55.60
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 12:51:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b154thor.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus Buses)
```

Centre Street Alignment

```
Road data, segment # 1: Dufferin to Bathurst - Reg. traffic
Eastbound(day/night)
-----------------------------------------------
Car traffic volume  : 14362/1596  veh/TimePeriod  *
Medium truck volume :   147/16    veh/TimePeriod  *
Heavy truck volume  :   147/16    veh/TimePeriod  *
Posted speed limit  :    60 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):  16283
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Dufferin to Bathurst - Reg. traffic Eastbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Dufferin to Bathurst - Reg. traffic Westbound
(day/night)
-------------------------------------------------
Car traffic volume  : 14362/1596  veh/TimePeriod  *
Medium truck volume :   147/16    veh/TimePeriod  *
Heavy truck volume  :   147/16    veh/TimePeriod  *
Posted speed limit  :    60 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):  16283
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dufferin to Bathurst - Reg. traffic westbound
(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  :  19.00 / 19.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dufferin to Bathurst - Reg. traffic Eastbound (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 64.55 + 0.00) = 64.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  66.01   0.00   0.00  -1.46   0.00   0.00   0.00  64.55
-------------------------------------------------------------------------------

Segment Leq : 64.55 dBA
```

```
Results segment # 2: Dufferin to Bathurst - Reg. traffic Westbound (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 62.85 + 0.00) = 62.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  66.01   0.00  -1.70  -1.46   0.00   0.00   0.00  62.85
-------------------------------------------------------------------------------

Segment Leq : 62.85 dBA

Total Leq All Segments (day): 66.79 dBA

Results segment # 1: Dufferin to Bathurst - Reg. traffic Eastbound (night)
----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 58.11 + 0.00) = 58.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  59.44   0.00   0.00  -1.33   0.00   0.00   0.00  58.11
-------------------------------------------------------------------------------

Segment Leq : 58.11 dBA

Results segment # 2: Dufferin to Bathurst - Reg. traffic Westbound (night)
----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 56.48 + 0.00) = 56.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  59.44   0.00  -1.63  -1.33   0.00   0.00   0.00  56.48
-------------------------------------------------------------------------------

Segment Leq : 56.48 dBA

Total Leq All Segments (night): 60.38 dBA
```

```
RT/Custom data, segment # 1: Dufferin to Bathurst - BRT Eastbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Dufferin to Bathurst - BRT Eastbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Dufferin to Bathurst - BRT Westbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Dufferin to Bathurst - BRT Westbound (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  :  19.00 / 19.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dufferin to Bathurst - BRT Eastbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 57.32 + 0.00) = 57.32 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.64  58.75   0.00  -1.43   0.00   0.00   0.00  57.32
-------------------------------------------------------------------

Segment Leq : 57.32 dBA
```

```
Results segment # 2: Dufferin to Bathurst - BRT Westbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 55.63 + 0.00) = 55.63 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.75  -1.69  -1.43   0.00   0.00   0.00  55.63
-------------------------------------------------------------------------

Segment Leq : 55.63 dBA

Total Leq All Segments (day): 59.57 dBA

Results segment # 1: Dufferin to Bathurst - BRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 48.72 + 0.00) = 48.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.00   0.00  -1.28   0.00   0.00   0.00  48.72
-------------------------------------------------------------------------

Segment Leq : 48.72 dBA

Results segment # 2: Dufferin to Bathurst - BRT Westbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 47.13 + 0.00) = 47.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.00  -1.60  -1.28   0.00   0.00   0.00  47.13
-------------------------------------------------------------------------

Segment Leq : 47.13 dBA

Total Leq All Segments (night): 51.01 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 67.55
                           (NIGHT): 60.86
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 18:04:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: B79chilm.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus Buses)
```

Bathurst Street Alignment

```
Road data, segment # 1: Cetre St. to Hwy 7 - reg. traffic Northbound
(day/night)
-----------------------------------------------
Car traffic volume  : 17788/1976  veh/TimePeriod  *
Medium truck volume :   568/63    veh/TimePeriod  *
Heavy truck volume  :   568/63    veh/TimePeriod  *
Posted speed limit  :    60 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):  21026
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Cetre St. to Hwy 7 - reg. traffic Northbound (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  :  17.25 / 17.25  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Cetre St. to Hwy 7 - reg. traffic Southbound
(day/night)
------------------------------------------------
Car traffic volume  : 17788/1976  veh/TimePeriod  *
Medium truck volume :   568/63    veh/TimePeriod  *
Heavy truck volume  :   568/63    veh/TimePeriod  *
Posted speed limit  :    60 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):  21026
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Cetre St. to Hwy 7 - reg. traffic Southbound (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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 23.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Cetre St. to Hwy 7 - reg. traffic Northbound (day)
--------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 59.16 + 0.00) = 59.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  69.55   0.00  -0.92  -1.21   0.00   0.00  -8.26  59.16
-------------------------------------------------------------------------------
```

```
Segment Leq : 59.16 dBA


Results segment # 2: Cetre St. to Hwy 7 - reg. traffic Southbound (day)
----------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 56.26 + 0.00) = 56.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  69.55   0.00  -4.12  -1.21   0.00   0.00  -7.96  56.26
-------------------------------------------------------------------------------

Segment Leq : 56.26 dBA

Total Leq All Segments: 60.96 dBA

Results segment # 1: Cetre St. to Hwy 7 - reg. traffic Northbound (night)
----------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        4.50 !        3.76 !         3.76

ROAD (0.00 + 60.75 + 0.00) = 60.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  63.01   0.00  -0.87  -1.04   0.00   0.00  -0.33  60.78*
   -90     90   0.58  63.01   0.00  -0.96  -1.31   0.00   0.00   0.00  60.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.75 dBA
```

```
Results segment # 2: Cetre St. to Hwy 7 - reg. traffic Southbound (night)
----------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        4.50 !        1.88 !         1.88

ROAD (0.00 + 52.06 + 0.00) = 52.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  63.01   0.00  -3.88  -1.04   0.00   0.00  -6.04  52.06
-------------------------------------------------------------------------------

Segment Leq : 52.06 dBA

Total Leq All Segments (night): 61.30 dBA
```

```
RT/Custom data, segment # 1: Cetre St. to Hwy 7 - BRT Northbound (day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Cetre St. to Hwy 7 - BRT Northbound (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  :  17.25 / 17.25  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: Cetre St. to Hwy 7 - BRT Southbound (day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Cetre St. to Hwy 7 - BRT Southbound (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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Cetre St. to Hwy 7 - BRT Northbound (day)
----------------------------------

Source height = 2.00 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.62 !         1.62

RT/Custom (0.00 + 49.13 + 0.00) = 49.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  58.75  -0.91  -1.17   0.00   0.00  -7.54  49.13
-------------------------------------------------------------------------

Segment Leq : 49.13 dBA

Results segment # 2: Cetre St. to Hwy 7 – BRT Southbound (day)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.57 !         1.57

RT/Custom (0.00 + 45.98 + 0.00) = 45.98 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  58.75  -4.06  -1.17   0.00   0.00  -7.53  45.98
-------------------------------------------------------------------------

Segment Leq : 45.98 dBA

Total Leq All Segments (day): 50.84 dBA

Results segment # 1: NB - BRT Cetre St. to Hwy 7 – BRT Northbound

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.92 !         3.92

RT/Custom (0.00 + 47.78 + 0.00) = 47.78 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.00  -0.86  -1.00   0.00   0.00  -0.25  47.89*
   -90     90   0.56  50.00  -0.94  -1.28   0.00   0.00   0.00  47.78
-------------------------------------------------------------------------
```

```
 * Bright Zone !
Segment Leq : 47.78 dBA
Results segment # 2: Cetre St. to Hwy 7 - BRT Southbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.14 !         4.14

RT/Custom (0.00 + 44.51 + 0.00) = 44.51 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.00  -3.82  -1.00   0.00   0.00  -0.21  44.97*
   -90     90   0.56  50.00  -4.22  -1.28   0.00   0.00   0.00  44.51
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.51 dBA

Total Leq All Segments (night): 49.46 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.36
                           (NIGHT): 61.58
```

```
STAMSON 5.0        NORMAL REPORT        Date: 12-12-2003 10:31:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: bwarden.te           Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus Buses)
```

Town Centre Blvd. South Alignment

```
Road data, segment # 1: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Northbound (day/night)
-----------------------------------------------
Car traffic volume  : 18824/2092  veh/TimePeriod  *
Medium truck volume :   192/21    veh/TimePeriod  *
Heavy truck volume  :   192/21    veh/TimePeriod  *
Posted speed limit  :    60 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):  21342
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Northbound (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  : 144.00 / 144.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Southbound (day/night)
-----------------------------------------------
Car traffic volume  : 18824/2092  veh/TimePeriod  *
Medium truck volume :   192/21    veh/TimePeriod  *
Heavy truck volume  :   192/21    veh/TimePeriod  *
Posted speed limit  :    60 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):  21342
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Southbound (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  : 151.00 / 151.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Northbound (day)
-------------------------------------

Source height = 1.00 m

ROAD (0.00 + 49.41 + 0.00) = 49.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  67.17   0.00 -16.31  -1.46   0.00   0.00   0.00  49.41
-------------------------------------------------------------------------------

Segment Leq : 49.41 dBA
```

Results segment # 2: Town Centre Blvd S. to Main St. Unionville - reg. traffic Southbound (day)

Source height = 1.00 m

ROAD (0.00 + 49.07 + 0.00) = 49.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.17	0.00	-16.65	-1.46	0.00	0.00	0.00	49.07

Segment Leq : 49.07 dBA

Total Leq All Segments: **52.25** dBA

Results segment # 1: Town Centre Blvd S. to Main St. Unionville - reg. traffic Northbound (night)

Source height = 1.00 m

ROAD (0.00 + 43.72 + 0.00) = 43.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.59	60.62	0.00	-15.57	-1.33	0.00	0.00	0.00	43.72

Segment Leq : 43.72 dBA

Results segment # 2: Town Centre Blvd S. to Main St. Unionville - reg. traffic Southbound (night)

Source height = 1.00 m

ROAD (0.00 + 43.39 + 0.00) = 43.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.59	60.62	0.00	-15.90	-1.33	0.00	0.00	0.00	43.39

Segment Leq : 43.39 dBA

Total Leq All Segments: **46.57** dBA

```
RT/Custom data, segment # 1: Town Centre Blvd. S. to Main St. Unionville -
BRT Northbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Town Centre Blvd. S. to Main St. Unionville - BRT
Eastbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Town Centre Blvd. S. to Main St. Unionville -
BRT Westbound (day/night)
------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Town Centre Blvd. S. to Main St. Unionville - BRT
Westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Town Centre Blvd. S. to Main St. Unionville - BRT
Eastbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 57.32 + 0.00) = 57.32 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  58.75   0.00  -1.43   0.00   0.00   0.00  57.32
-------------------------------------------------------------------------

Segment Leq : 57.32 dBA
```

Results segment # 2: Town Centre Blvd. S. to Main St. Unionville - BRT Westbound (day)

Source height = 2.00 m

RT/Custom (0.00 + 57.32 + 0.00) = 57.32 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.64	58.75	0.00	-1.43	0.00	0.00	0.00	57.32

Segment Leq : 57.32 dBA

Total Leq All Segments: **60.33** dBA

Results segment # 1: Town Centre Blvd. S. to Main St. Unionville - BRT Eastbound (night)

Source height = 2.00 m

RT/Custom (0.00 + 48.72 + 0.00) = 48.72 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	50.00	0.00	-1.28	0.00	0.00	0.00	48.72

Segment Leq : 48.72 dBA

Results segment # 2: Town Centre Blvd. S. to Main St. Unionville - BRT Westbound (night)

Source height = 2.00 m

RT/Custom (0.00 + 48.72 + 0.00) = 48.72 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	50.00	0.00	-1.28	0.00	0.00	0.00	48.72

Segment Leq : 48.72 dBA

Total Leq All Segments: **51.73** dBA

TOTAL Leq FROM ALL SOURCES (DAY): **60.96**
(NIGHT): **52.89**

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 12:58:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b231vale.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus Buses)
```

Kennedy Road Alignment

```
Road data, segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(day/night)
-----------------------------------------------
Car traffic volume  : 22266/2474  veh/TimePeriod  *
Medium truck volume :   838/93    veh/TimePeriod  *
Heavy truck volume  :   838/93    veh/TimePeriod  *
Posted speed limit  :    60 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):  26602
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound
(day/night)
-----------------------------------------------
Car traffic volume  : 22266/2474  veh/TimePeriod  *
Medium truck volume :   838/93    veh/TimePeriod  *
Heavy truck volume  :   838/93    veh/TimePeriod  *
Posted speed limit  :    60 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):  26602
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Sorthbound
(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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(day)
--------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 59.72 + 0.00) = 59.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  71.02   0.00   0.00  -1.14   0.00   0.00 -10.16  59.72
```

```
-------------------------------------------------------------------------------

Segment Leq : 59.72 dBA
Results segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound
(day)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 56.71 + 0.00) = 56.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  71.02   0.00  -4.25  -1.14   0.00   0.00  -8.91  56.71
-------------------------------------------------------------------------------

Segment Leq : 56.71 dBA

Total Leq All Segments (day): 61.48 dBA



Results segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(night)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        2.83 !         2.83

ROAD (0.00 + 58.39 + 0.00) = 58.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.39  64.48   0.00   0.00  -0.97   0.00   0.00  -5.12  58.39
-------------------------------------------------------------------------------

Segment Leq : 58.39 dBA
```

Results segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound (night)

Source height = 1.37 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.37	4.50	3.64	3.64

ROAD (0.00 + 58.66 + 0.00) = 58.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	64.48	0.00	-3.99	-0.97	0.00	0.00	-3.64	55.88*
-90	90	0.57	64.48	0.00	-4.51	-1.31	0.00	0.00	0.00	58.66

* Bright Zone !

Segment Leq : 58.66 dBA

Total Leq All Segments (night): **61.54** dBA

```
RT/Custom data, segment # 1: Main St. Unionville to Hwy 7 - BRT Northbound
(day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Main St. Unionville to Hwy 7 - BRT Northbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Main St. Unionville to Hwy 7 - BRT Southbound
(day/night)
-------------------------------------------------
1 - Custom (75.0 dBA):
Traffic volume    :   480/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: SB - BRT (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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Main St. Unionville to Hwy 7 - BRT Northbound (day)
-----------------------------------

Source height = 2.00 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.77 !         1.77

RT/Custom (0.00 + 48.73 + 0.00) = 48.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.47  58.75   0.00  -1.11   0.00   0.00  -8.91  48.73
-------------------------------------------------------------------------

Segment Leq : 48.73 dBA


Results segment # 2: Main St. Unionville to Hwy 7 - BRT Southbound (day)
------------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.64 !         1.64

RT/Custom (0.00 + 45.09 + 0.00) = 45.09 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.47  58.75  -4.19  -1.11   0.00   0.00  -8.35  45.09
-------------------------------------------------------------------------

Segment Leq : 45.09 dBA

Total Leq All Segments (day): 50.29 dBA



Results segment # 1: Main St. Unionville to Hwy 7 - BRT Northbound (night)
------------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.17 !         3.17

RT/Custom (0.00 + 48.72 + 0.00) = 48.72 dBA
```

```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.38  50.00   0.00  -0.93   0.00   0.00  -4.88  44.19*
   -90     90   0.56  50.00   0.00  -1.28   0.00   0.00   0.00  48.72
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.72 dBA


Results segment # 2: Main St. Unionville to Hwy 7 - BRT Southbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.81 !         3.81

RT/Custom (0.00 + 44.27 + 0.00) = 44.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.38  50.00  -3.94  -0.93   0.00   0.00  -2.48  42.66*
   -90     90   0.56  50.00  -4.45  -1.28   0.00   0.00   0.00  44.27
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.27 dBA

Total Leq All Segments (night): 50.05 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.80
                           (NIGHT): 61.84
```

APPENDIX F

STAMSON DATA SHEETS
PREDICTED 2021 SOUND LEVELS
DUE TO ADDED LRT

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 16:20:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: L83butt.te           Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus LRT)


Road data, segment # 1: Martin Grove Rd. to Kipling Ave - reg. traffic
Eastbound (day/night)
-----------------------------------------------
Car traffic volume  : 20954/2328  veh/TimePeriod  *
Medium truck volume :  1218/135   veh/TimePeriod  *
Heavy truck volume  :  2193/244   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):  27072
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Martin Grove Rd. to Kipling Ave - reg. traffic Eastbound
(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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Martin Grove Rd. to Kipling Ave - reg. traffic
Westbound (day/night)
-------------------------------------------------
Car traffic volume  : 20954/2328  veh/TimePeriod  *
Medium truck volume :  1218/135   veh/TimePeriod  *
Heavy truck volume  :  2193/244   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):  27072
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Martin Grove Rd. to Kipling Ave - reg. traffic Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Martin Grove Rd. to Kipling Ave - reg. traffic Eastbound
(day)
--------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.50 !        1.52 !         1.52

ROAD (0.00 + 60.71 + 0.00) = 60.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.09   0.00  -4.08  -1.19   0.00   0.00  -9.10  60.71
```

```
--------------------------------------------------------------------------------
Segment Leq : 60.71 dBA
```

Results segment # 2: Martin Grove Rd. to Kipling Ave – reg. traffic Westbound (day)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	1.50	1.53	1.53

ROAD (0.00 + 64.70 + 0.00) = 64.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	75.09	0.00	0.00	-1.19	0.00	0.00	-9.20	64.70

Segment Leq : 64.70 dBA

Total Leq All Segments (day): **66.16** dBA

Results segment # 1: Martin Grove Rd. to Kipling Ave – reg. traffic Eastbound (night)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	4.50	4.30	4.30

ROAD (0.00 + 63.03 + 0.00) = 63.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	68.56	0.00	-3.84	-1.01	0.00	0.00	-0.11	63.59*
-90	90	0.56	68.56	0.00	-4.24	-1.29	0.00	0.00	0.00	63.03

* Bright Zone !

Segment Leq : 63.03 dBA

Results segment # 2: Martin Grove Rd. to Kipling Ave – reg. traffic Westbound (night)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	4.50	4.13	4.13

ROAD (0.00 + 67.27 + 0.00) = 67.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	68.56	0.00	0.00	-1.01	0.00	0.00	-0.13	67.41*
-90	90	0.56	68.56	0.00	0.00	-1.29	0.00	0.00	0.00	67.27

* Bright Zone !

Segment Leq : 67.27 dBA

Total Leq All Segments (night): **68.66** dBA

```
RT/Custom data, segment # 1: Martin Grove Rd. to Kipling Ave. - LRT Eastbound
(day/night)
-------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Martin Grove Rd. to Kipling Ave. - LRT Eastbound
(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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Martin Grove Rd. to Kipling Ave. - LRT Westbound
(day/night)
-------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Martin Grove Rd. to Kipling Ave. - LRT Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Bus-EB (day)
---------------------------------

Source height = 2.00 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.54 !         1.54

RT/Custom (0.00 + 40.48 + 0.00) = 40.48 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  54.71  -4.06  -1.17   0.00   0.00  -8.99  40.48
-------------------------------------------------------------------------

Segment Leq : 40.48 dBA


Results segment # 2: Martin Grove Rd. to Kipling Ave. - LRT Westbound (day)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.57 !         1.57

RT/Custom (0.00 + 44.55 + 0.00) = 44.55 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  54.71   0.00  -1.17   0.00   0.00  -8.99  44.55
-------------------------------------------------------------------------

Segment Leq : 44.55 dBA

Total Leq All Segments (day): 45.99 dBA



Results segment # 1: Martin Grove Rd. to Kipling Ave. - LRT Eastbound (night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.32 !         4.32

RT/Custom (0.00 + 45.24 + 0.00) = 45.24 dBA
```

```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.73  -3.82  -1.00   0.00   0.00  -0.11  45.81*
   -90     90   0.56  50.73  -4.22  -1.28   0.00   0.00   0.00  45.24
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.24 dBA


Results segment # 2: Martin Grove Rd. to Kipling Ave. - LRT Westbound (night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.17 !         4.17

RT/Custom (0.00 + 49.45 + 0.00) = 49.45 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.73   0.00  -1.00   0.00   0.00  -0.12  49.61*
   -90     90   0.56  50.73   0.00  -1.28   0.00   0.00   0.00  49.45
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.45 dBA

Total Leq All Segments (night): 50.85 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.20
                           (NIGHT): 68.73
```

```
STAMSON 5.0        NORMAL REPORT        Date: 25-11-2003 19:08:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: l59EmbaN.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)


Road data, segment # 1: Pine Valley Dr. to Whitmore Rd. - reg. traffic
Eastbound (day/night)
-----------------------------------------------
Car traffic volume  : 18877/2097  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1976/220   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):  24389
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Pine Valley Dr. to Whitmore Rd. - reg. traffic Eastbound
(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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Pine Valley Dr. to Whitmore Rd. - reg. traffic
Westbound (day/night)
------------------------------------------------
Car traffic volume  : 18877/2097  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1976/220   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):  24389
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   9.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Pine Valley Dr. to Whitmore Rd. - reg. traffic Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Pine Valley Dr. to Whitmore Rd. - reg. traffic Eastbound
(day)
-------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 68.46 + 0.00) = 68.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.56  74.63   0.00  -4.48  -1.29   0.00   0.00  -5.00  63.87*
   -90     90   0.65  74.63   0.00  -4.73  -1.44   0.00   0.00   0.00  68.46
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 68.46 dBA

Results segment # 2: Pine Valley Dr. to Whitmore Rd. - reg. traffic Westbound
(day)
-------------------------------------

Source height = 1.73 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.73 !        1.50 !        1.51 !         1.51

ROAD (0.00 + 73.19 + 0.00) = 73.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.56  74.63   0.00   0.00  -1.29   0.00   0.00  -5.00  68.35*
   -90     90   0.65  74.63   0.00   0.00  -1.44   0.00   0.00   0.00  73.19
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 73.19 dBA

Total Leq All Segments (day): 74.45 dBA
```

Results segment # 1: Pine Valley Dr. to Whitmore Rd. – reg. traffic Eastbound (night)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	4.50	4.45	4.45

ROAD (0.00 + 62.34 + 0.00) = 62.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.47	68.11	0.00	-4.22	-1.12	0.00	0.00	-0.03	62.73*
-90	90	0.56	68.11	0.00	-4.48	-1.29	0.00	0.00	0.00	62.34

* Bright Zone !

Segment Leq : 62.34 dBA

Results segment # 2: Pine Valley Dr. to Whitmore Rd. – reg. traffic Westbound (night)

Source height = 1.73 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.73	4.50	4.41	4.41

ROAD (0.00 + 66.82 + 0.00) = 66.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.47	68.11	0.00	0.00	-1.12	0.00	0.00	-0.04	66.95*
-90	90	0.56	68.11	0.00	0.00	-1.29	0.00	0.00	0.00	66.82

* Bright Zone !

Segment Leq : 66.82 dBA

Total Leq All Segments (night): **68.14** dBA

```
RT/Custom data, segment # 1: Pine Valley Dr. to Whitmore Rd. – LRT Eastbound
(day/night)
-----------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Pine Valley Dr. to Whitmore Rd. – LRT Eastbound
(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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / -12.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Pine Valley Dr. to Whitmore Rd. – LRT Westbound
(day/night)
-----------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Pine Valley Dr. to Whitmore Rd. – LRT Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.50 m
Barrier receiver distance :   0.50 / 0.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Pine Valley Dr. to Whitmore Rd. - LRT Eastbound (day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.51 !         1.51

RT/Custom (0.00 + 48.57 + 0.00) = 48.57 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  54.71  -4.45  -1.28   0.00   0.00  -5.00  43.98*
   -90     90   0.64  54.71  -4.71  -1.43   0.00   0.00   0.00  48.57
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.57 dBA

Results segment # 2: Pine Valley Dr. to Whitmore Rd. - LRT Westbound (day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.52 !         1.52

RT/Custom (0.00 + 53.28 + 0.00) = 53.28 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  54.71   0.00  -1.28   0.00   0.00  -4.99  48.44*
   -90     90   0.64  54.71   0.00  -1.43   0.00   0.00   0.00  53.28
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.28 dBA

Total Leq All Segments (day): 54.54 dBA
```

```
Results segment # 1: Pine Valley Dr. to Whitmore Rd. - LRT Eastbound (night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        5.53 !         5.53

RT/Custom (0.00 + 45.00 + 0.00) = 45.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.47  50.73  -4.19  -1.11   0.00   0.00  99.00 144.43
   -90     90   0.56  50.73  -4.45  -1.28   0.00   0.00   0.00  45.00
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.00 dBA

Results segment # 2: Pine Valley Dr. to Whitmore Rd. - LRT Westbound (night)
----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.42 !         4.42

RT/Custom (0.00 + 49.45 + 0.00) = 49.45 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.47  50.73   0.00  -1.11   0.00   0.00  -0.03  49.59*
   -90     90   0.56  50.73   0.00  -1.28   0.00   0.00   0.00  49.45
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.45 dBA

Total Leq All Segments (night): 50.78 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 74.49
                           (NIGHT): 68.22
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 13:18:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: l7651kee.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)
```

Keele Street Alignment

```
Road data, segment # 1: Hwy 7 to Hwy 407 - reg. traffic Northbound (day/night)
-----------------------------------------------
Car traffic volume  : 14024/1558  veh/TimePeriod  *
Medium truck volume :   797/89    veh/TimePeriod  *
Heavy truck volume  :  1116/124   veh/TimePeriod  *
Posted speed limit  :    60 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):  17707
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Hwy 7 to Hwy 407 - reg. traffic Northbound (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  :  23.00 / 23.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (day/night)
-----------------------------------------------
Car traffic volume  : 14024/1558  veh/TimePeriod  *
Medium truck volume :   797/89    veh/TimePeriod  *
Heavy truck volume  :  1116/124   veh/TimePeriod  *
Posted speed limit  :    60 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):  17707
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hwy 7 to Hwy 407 - reg. traffic Northbound (day)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 66.76 + 0.00) = 66.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.29   0.00  -3.07  -1.45   0.00   0.00   0.00  66.76
-------------------------------------------------------------------------------

Segment Leq : 66.76 dBA
```

```
Results segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (day)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 63.95 + 0.00) = 63.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  71.29   0.00  -5.89  -1.45   0.00   0.00   0.00  63.95
-------------------------------------------------------------------------------

Segment Leq : 63.95 dBA

Total Leq All Segments (day): 68.59 dBA


Results segment # 1: Hwy 7 to Hwy 407 - reg. traffic Northbound (night)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 60.55 + 0.00) = 60.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  64.76   0.00  -2.91  -1.30   0.00   0.00   0.00  60.55
-------------------------------------------------------------------------------

Segment Leq : 60.55 dBA

Results segment # 2: Hwy 7 to Hwy 407 - reg. traffic Southbound (night)
---------------------------------------

Source height = 1.63 m

ROAD (0.00 + 57.90 + 0.00) = 57.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  64.76   0.00  -5.57  -1.30   0.00   0.00   0.00  57.90
-------------------------------------------------------------------------------

Segment Leq : 57.90 dBA

Total Leq All Segments (night): 62.43 dBA
```

```
RT/Custom data, segment # 1: Hwy 7 to Hwy 407 - LRT Northbound (day/night)
-----------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Hwy 7 to Hwy 407 - LRT Northbound (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  :  23.00 / 23.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Hwy 7 to Hwy 407 - LRT Southbound (day/night)
-----------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Hwy 7 to Hwy 407 - LRT Southbound (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hwy 7 to Hwy 407 - LRT Northbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 50.89 + 0.00) = 50.89 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  55.38  -3.05  -1.43   0.00   0.00   0.00  50.89
-------------------------------------------------------------------------

Segment Leq : 50.89 dBA
```

```
Results segment # 2: Hwy 7 to Hwy 407 - LRT Southbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 48.10 + 0.00) = 48.10 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  55.38  -5.85  -1.43   0.00   0.00   0.00  48.10
-------------------------------------------------------------------------

Segment Leq : 48.10 dBA

Total Leq All Segments (day): 52.73 dBA



Results segment # 1: Hwy 7 to Hwy 407 - LRT Northbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 47.24 + 0.00) = 47.24 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  51.40  -2.89  -1.28   0.00   0.00   0.00  47.24
-------------------------------------------------------------------------

Segment Leq : 47.24 dBA

Results segment # 2: Hwy 7 to Hwy 407 - LRT Southbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 44.60 + 0.00) = 44.60 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  51.40  -5.53  -1.28   0.00   0.00   0.00  44.60
-------------------------------------------------------------------------

Segment Leq : 44.60 dBA

Total Leq All Segments (night): 49.13 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 68.70
                           (NIGHT): 62.63
```

```
STAMSON 5.0        NORMAL REPORT        Date: 10-12-2003 17:39:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: l104suge.te          Time Period: Day/Night 16/8 hours
Description:   2021 Predictions (plus LRT)


Road data, segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 19329/2148  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1538/171   veh/TimePeriod  *
Posted speed limit  :    80 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):  24405
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
(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  :  56.00 / 56.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 19329/2148  veh/TimePeriod  *
Medium truck volume :  1098/122   veh/TimePeriod  *
Heavy truck volume  :  1538/171   veh/TimePeriod  *
Posted speed limit  :    80 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):  24405
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   5.00
    Heavy Truck  % of Total Volume     :   7.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
(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  :  38.00 / 38.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
(day)
--------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.50 !        1.53 !         1.53

ROAD (0.00 + 59.09 + 0.00) = 59.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.02   0.00  -8.64  -1.19   0.00   0.00  -6.09  59.09
-------------------------------------------------------------------------------
```

```
Segment Leq : 59.09 dBA
Results segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
(day)
-----------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        1.50 !        1.55 !         1.55

ROAD (0.00 + 61.48 + 0.00) = 61.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.51  75.02   0.00  -6.09  -1.19   0.00   0.00  -6.25  61.48
-------------------------------------------------------------------------------

Segment Leq : 61.48 dBA

Total Leq All Segments: 63.46 dBA

Results segment # 1: Centre St. to Langstaff Rd. - reg. traffic Eastbound
(night)
---------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        4.50 !        3.73 !         3.73

ROAD (0.00 + 58.23 + 0.00) = 58.23 dBA

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  68.49   0.00  -8.12  -1.02   0.00   0.00  -1.41  57.94*
   -90     90   0.57  68.49   0.00  -8.96  -1.30   0.00   0.00   0.00  58.23
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.23 dBA
```

```
Results segment # 2: Centre St. to Langstaff Rd. - reg. traffic Westbound
(night)
---------------------------------------

Source height = 1.63 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.63 !        4.50 !        3.37 !         3.37

ROAD (0.00 + 60.87 + 0.00) = 60.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.42  68.49   0.00  -5.73  -1.02   0.00   0.00  -3.00  58.73*
   -90     90   0.57  68.49   0.00  -6.32  -1.30   0.00   0.00   0.00  60.87
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.87 dBA

Total Leq All Segments: 62.76 dBA
```

```
RT/Custom data, segment # 1: Centre St. to Langstaff Rd. - LRT Eastbound
(day/night)
-----------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 1: LRT-EB (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  :  56.00 / 56.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Centre St. to Langstaff Rd. - LRT Westbound
(day/night)
-----------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    80 km/h

Data for Segment # 2: Centre St. to Langstaff Rd. - LRT Westbound (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  :  38.00 / 38.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Centre St. to Langstaff Rd. - LRT Eastbound (day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.63 !         1.63

RT/Custom (0.00 + 38.50 + 0.00) = 38.50 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  54.13  -8.57  -1.17   0.00   0.00  -5.89  38.50
-------------------------------------------------------------------------

Segment Leq : 38.50 dBA


Results segment # 2: Centre St. to Langstaff Rd. - LRT Westbound (day)
---------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.70 !         1.70

RT/Custom (0.00 + 41.00 + 0.00) = 41.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  54.13  -6.05  -1.17   0.00   0.00  -5.91  41.00
-------------------------------------------------------------------------

Segment Leq : 41.00 dBA

Total Leq All Segments: 42.94 dBA

Results segment # 1: Centre St. to Langstaff Rd. - LRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.83 !         3.83
```

```
RT/Custom (0.00 + 39.98 + 0.00) = 39.98 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.15  -8.06  -1.00   0.00   0.00  -1.14  39.96*
   -90     90   0.56  50.15  -8.90  -1.28   0.00   0.00   0.00  39.98
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.98 dBA


Results segment # 2: Centre St. to Langstaff Rd. – LRT Westbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.51 !         3.51

RT/Custom (0.00 + 42.60 + 0.00) = 42.60 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.15  -5.69  -1.00   0.00   0.00  -2.00  41.46*
   -90     90   0.56  50.15  -6.28  -1.28   0.00   0.00   0.00  42.60
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.60 dBA

Total Leq All Segments: 44.49 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.50
                           (NIGHT): 62.82
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-11-2003 10:59:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: L364Hwy7.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)


Road data, segment # 1: Bayview Ave. to Leslie St. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24190/2688  veh/TimePeriod  *
Medium truck volume :  1075/119   veh/TimePeriod  *
Heavy truck volume  :  1613/179   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):  29864
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   4.00
    Heavy Truck  % of Total Volume     :   6.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Bayview Ave. to Leslie St. - reg. traffic Eastbound
(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  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Bayview Ave. to Leslie St. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24190/2688  veh/TimePeriod  *
Medium truck volume :  1075/119   veh/TimePeriod  *
Heavy truck volume  :  1613/179   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):  29864
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   4.00
    Heavy Truck  % of Total Volume     :   6.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Bayview Ave. to Leslie St. - reg. traffic Westbound
(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  :  22.00 / 22.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Bayview Ave. to Leslie St. - reg. traffic Eastbound (day)
--------------------------------------

Source height = 1.57 m

ROAD (0.00 + 65.74 + 0.00) = 65.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  74.25   0.00  -7.06  -1.45   0.00   0.00   0.00  65.74
-------------------------------------------------------------------------------

Segment Leq : 65.74 dBA
```

Results segment # 2: Bayview Ave. to Leslie St. – reg. traffic Westbound (day)

Source height = 1.57 m

ROAD (0.00 + 70.04 + 0.00) = 70.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	74.25	0.00	-2.76	-1.45	0.00	0.00	0.00	70.04

Segment Leq : 70.04 dBA

Total Leq All Segments (day): **71.41** dBA

Results segment # 1: Bayview Ave. to Leslie St. – reg. traffic Eastbound (night)

Source height = 1.56 m

ROAD (0.00 + 59.74 + 0.00) = 59.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	67.71	0.00	-6.68	-1.30	0.00	0.00	0.00	59.74

Segment Leq : 59.74 dBA

Results segment # 2: Bayview Ave. to Leslie St. – reg. traffic Westbound (night)

Source height = 1.56 m

ROAD (0.00 + 63.81 + 0.00) = 63.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	67.71	0.00	-2.61	-1.30	0.00	0.00	0.00	63.81

Segment Leq : 63.81 dBA

Total Leq All Segments (night): **65.25** dBA

```
RT/Custom data, segment # 1: Bayview Ave. to Leslie St. - LRT Eastbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Bayview Ave. to Leslie St. - LRT Eastbound (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  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Bayview Ave. to Leslie St. - LRT Westbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Bayview Ave. to Leslie St. - LRT Westbound (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  :  22.00 / 22.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Bayview Ave. to Leslie St. - LRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 46.27 + 0.00) = 46.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -7.01  -1.43   0.00   0.00   0.00  46.27
-------------------------------------------------------------------------

Segment Leq : 46.27 dBA
```

```
Results segment # 2: Bayview Ave. to Leslie St. - LRT Westbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 50.54 + 0.00) = 50.54 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -2.74  -1.43   0.00   0.00   0.00  50.54
-------------------------------------------------------------------------

Segment Leq : 50.54 dBA

Total Leq All Segments (day): 51.92 dBA



Results segment # 1: Bayview Ave. to Leslie St. - LRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 42.83 + 0.00) = 42.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -6.62  -1.28   0.00   0.00   0.00  42.83
-------------------------------------------------------------------------

Segment Leq : 42.83 dBA

Results segment # 2: Bayview Ave. to Leslie St. - LRT Westbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 46.87 + 0.00) = 46.87 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -2.59  -1.28   0.00   0.00   0.00  46.87
-------------------------------------------------------------------------

Segment Leq : 46.87 dBA

Total Leq All Segments (night): 48.31 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 71.46
                           (NIGHT): 65.33
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 13:08:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: l2mngmry.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)


Road data, segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(day/night)
-------------------------------------------------
Car traffic volume  : 24395/2711  veh/TimePeriod  *
Medium truck volume :   918/102   veh/TimePeriod  *
Heavy truck volume  :   918/102   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):  29146
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(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  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 24395/2711  veh/TimePeriod  *
Medium truck volume :   918/102   veh/TimePeriod  *
Heavy truck volume  :   918/102   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):  29146
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound
(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  :  42.00 / 42.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound
(day)
--------------------------------------

Source height = 1.37 m

ROAD (0.00 + 61.32 + 0.00) = 61.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.77   0.00  -9.99  -1.46   0.00   0.00   0.00  61.32
-------------------------------------------------------------------------------

Segment Leq : 61.32 dBA
```

Results segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound (day)

Source height = 1.37 m

ROAD (0.00 + 63.89 + 0.00) = 63.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.77	0.00	-7.42	-1.46	0.00	0.00	0.00	63.89

Segment Leq : 63.89 dBA

Total Leq All Segments (day): **65.80** dBA

Results segment # 1: Woodbine Ave. to Rodick Rd. - reg. traffic Eastbound (night)

Source height = 1.37 m

ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.24	0.00	-9.48	-1.31	0.00	0.00	0.00	55.46

Segment Leq : 55.46 dBA

Results segment # 2: Woodbine Ave. to Rodick Rd. - reg. traffic Westbound (night)

Source height = 1.37 m

ROAD (0.00 + 57.89 + 0.00) = 57.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.24	0.00	-7.04	-1.31	0.00	0.00	0.00	57.89

Segment Leq : 57.89 dBA

Total Leq All Segments (night): **59.85** dBA

```
RT/Custom data, segment # 1: Woodbine Ave. to Rodick Rd. - LRT Eastbound
(day/night)
------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Woodbine Ave. to Rodick Rd. - LRT Eastbound (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  :  60.00 / 60.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Woodbine Ave. to Rodick Rd. - LRT Westbound
(day/night)
------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Woodbine Ave. to Rodick Rd. - LRT Westbound (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  :  42.00 / 42.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Woodbine Ave. to Rodick Rd. - LRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 43.37 + 0.00) = 43.37 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -9.90  -1.43   0.00   0.00   0.00  43.37
-------------------------------------------------------------------------

Segment Leq : 43.37 dBA
```

```
Results segment # 2: Woodbine Ave. to Rodick Rd. - LRT Westbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 45.92 + 0.00) = 45.92 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -7.36  -1.43   0.00   0.00   0.00  45.92
-------------------------------------------------------------------------

Segment Leq : 45.92 dBA

Total Leq All Segments (day): 47.84 dBA

Results segment # 1: Woodbine Ave. to Rodick Rd. - LRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 40.09 + 0.00) = 40.09 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -9.36  -1.28   0.00   0.00   0.00  40.09
-------------------------------------------------------------------------

Segment Leq : 40.09 dBA

Results segment # 2: Woodbine Ave. to Rodick Rd. - LRT Westbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 42.50 + 0.00) = 42.50 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -6.95  -1.28   0.00   0.00   0.00  42.50
-------------------------------------------------------------------------

Segment Leq : 42.50 dBA

Total Leq All Segments (night): 44.47 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 65.87
                           (NIGHT): 59.98
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 17:21:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: L73lichf.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)


Road data, segment # 1: Warden Ave. to Kennedy Rd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 21060/2340  veh/TimePeriod  *
Medium truck volume :   793/88    veh/TimePeriod  *
Heavy truck volume  :   793/88    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):  25161
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Warden Ave. to Kennedy Rd. - reg. traffic Eastbound
(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  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Warden Ave. to Kennedy Rd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 21060/2340  veh/TimePeriod  *
Medium truck volume :   793/88    veh/TimePeriod  *
Heavy truck volume  :   793/88    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):  25161
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
```

```
Heavy Truck  % of Total Volume     :   3.50
Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Warden Ave. to Kennedy Rd. - reg. traffic Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Warden Ave. to Kennedy Rd. - reg. traffic Eastbound (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 66.44 + 0.00) = 66.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.14   0.00  -4.24  -1.46   0.00   0.00   0.00  66.44
-------------------------------------------------------------------------------

Segment Leq : 66.44 dBA

Results segment # 2: Warden Ave. to Kennedy Rd. - reg. traffic Westbound (day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 70.68 + 0.00) = 70.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  72.14   0.00   0.00  -1.46   0.00   0.00   0.00  70.68
-------------------------------------------------------------------------------

Segment Leq : 70.68 dBA
Total Leq All Segments (day): 72.07 dBA
```

Results segment # 1: Warden Ave. to Kennedy Rd. – reg. traffic Eastbound (night)

Source height = 1.37 m

ROAD (0.00 + 60.27 + 0.00) = 60.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.60	0.00	-4.02	-1.31	0.00	0.00	0.00	60.27

Segment Leq : 60.27 dBA

Results segment # 2: Warden Ave. to Kennedy Rd. – reg. traffic Westbound (night)

Source height = 1.37 m

ROAD (0.00 + 64.29 + 0.00) = 64.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.60	0.00	0.00	-1.31	0.00	0.00	0.00	64.29

Segment Leq : 64.29 dBA

Total Leq All Segments (night): **65.74** dBA

```
RT/Custom data, segment # 1: Warden Ave. to Kennedy Rd. - LRT Eastbound
(day/night)
------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Warden Ave. to Kennedy Rd. - LRT Eastbound (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  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Warden Ave. to Kennedy Rd. - LRT Westbound
(day/night)
------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Warden Ave. to Kennedy Rd. - LRT Westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Warden Ave. to Kennedy Rd. - LRT Eastbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 49.08 + 0.00) = 49.08 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -4.20  -1.43   0.00   0.00   0.00  49.08
-------------------------------------------------------------------------

Segment Leq : 49.08 dBA
```

```
Results segment # 2: Warden Ave. to Kennedy Rd. - LRT Westbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 53.28 + 0.00) = 53.28 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71   0.00  -1.43   0.00   0.00   0.00  53.28
-------------------------------------------------------------------------

Segment Leq : 53.28 dBA

Total Leq All Segments (day): 54.68 dBA



Results segment # 1: Warden Ave. to Kennedy Rd. - LRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 45.49 + 0.00) = 45.49 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -3.97  -1.28   0.00   0.00   0.00  45.49
-------------------------------------------------------------------------

Segment Leq : 45.49 dBA

Results segment # 2: Warden Ave. to Kennedy Rd. - LRT Westbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 49.45 + 0.00) = 49.45 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73   0.00  -1.28   0.00   0.00   0.00  49.45

-------------------------------------------------------------------------

Segment Leq : 49.45 dBA

Total Leq All Segments (night): 50.92 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 72.15
                           (NIGHT): 65.88
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 17:33:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: L10Gladi.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)


Road data, segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 16276/1808  veh/TimePeriod  *
Medium truck volume :   613/68    veh/TimePeriod  *
Heavy truck volume  :   613/68    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):  19446
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic Eastbound
(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  :  21.00 / 21.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 16276/1808  veh/TimePeriod  *
Medium truck volume :   613/68    veh/TimePeriod  *
Heavy truck volume  :   613/68    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):  19446
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic Westbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic Eastbound
(day)
--------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 56.86 + 0.00) = 56.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  71.02   0.00  -2.22  -1.21   0.00   0.00 -10.73  56.86
-------------------------------------------------------------------------------
```

```
Segment Leq : 56.86 dBA
Results segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic Westbound
(day)
---------------------------------------

Source height = 1.37 m
Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 58.99 + 0.00) = 58.99 dBA

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  71.02   0.00   0.00  -1.21   0.00   0.00 -10.82  58.99
-------------------------------------------------------------------------------

Segment Leq : 58.99 dBA

Total Leq All Segments (day): 61.06 dBA


Results segment # 1: McCowan Rd. to Laidlaw Blvd. - reg. traffic Eastbound
(night)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        4.35 !         4.35

ROAD (0.00 + 60.87 + 0.00) = 60.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  64.48   0.00  -2.09  -1.04   0.00   0.00  -0.08  61.28*
   -90     90   0.57  64.48   0.00  -2.30  -1.31   0.00   0.00   0.00  60.87
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.87 dBA

Results segment # 2: McCowan Rd. to Laidlaw Blvd. - reg. traffic Westbound
(night)
---------------------------------------
```

```
Source height = 1.37 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        2.41 !         2.41

ROAD (0.00 + 58.44 + 0.00) = 58.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  64.48   0.00   0.00  -1.04   0.00   0.00  -5.00  58.44
-------------------------------------------------------------------------------

Segment Leq : 58.44 dBA
Total Leq All Segments (night): 62.83 dBA
```

```
RT/Custom data, segment # 1: McCowan Rd. to Laidlaw Blvd. - LRT Eastbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: McCowan Rd. to Laidlaw Blvd. - LRT Eastbound (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  :  21.00 / 21.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: McCowan Rd. to Laidlaw Blvd. - LRT Westbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: McCowan Rd. to Laidlaw Blvd. - LRT Westbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.44 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: McCowan Rd. to Laidlaw Blvd. - LRT Eastbound (day)
-----------------------------------

Source height = 2.00 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.52 !         1.52

RT/Custom (0.00 + 40.83 + 0.00) = 40.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  54.71  -2.19  -1.17   0.00   0.00 -10.51  40.83
-------------------------------------------------------------------------

Segment Leq : 40.83 dBA

Results segment # 2: McCowan Rd. to Laidlaw Blvd. – LRT Westbound (day)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.53 !         1.53

RT/Custom (0.00 + 43.03 + 0.00) = 43.03 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.50  54.71   0.00  -1.17   0.00   0.00 -10.51  43.03
-------------------------------------------------------------------------

Segment Leq : 43.03 dBA

Total Leq All Segments (day): 45.08 dBA

Results segment # 1: McCowan Rd. to Laidlaw Blvd. – LRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.38 !         4.38

RT/Custom (0.00 + 47.18 + 0.00) = 47.18 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.73  -2.06  -1.00   0.00   0.00  -0.07  47.60*
   -90     90   0.56  50.73  -2.27  -1.28   0.00   0.00   0.00  47.18
```

```
-----------------------------------------------------------------------
 * Bright Zone !
Segment Leq : 47.18 dBA

Results segment # 2: McCowan Rd. to Laidlaw Blvd. - LRT Westbound (night)
-------------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.33 !         4.33

RT/Custom (0.00 + 49.45 + 0.00) = 49.45 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  50.73   0.00  -1.00   0.00   0.00  -0.08  49.66*
   -90     90   0.56  50.73   0.00  -1.28   0.00   0.00   0.00  49.45
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.45 dBA

Total Leq All Segments (night): 51.47 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.17
                           (NIGHT): 63.14
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 17:45:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: L6921hy7.te          Time Period: Day/Night 16/8 hours
Description: 2021 Predictions (plus LRT)


Road data, segment # 1: Ninth Line to Markham Bypass - reg. traffic Eastbound
(day/night)
-------------------------------------------------
Car traffic volume  :  5183/576   veh/TimePeriod  *
Medium truck volume :   195/22    veh/TimePeriod  *
Heavy truck volume  :   195/22    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):   6192
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Ninth Line to Markham Bypass - reg. traffic Eastbound
(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  :  33.30 / 33.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Ninth Line to Markham Bypass - reg. traffic Westbound
(day/night)
------------------------------------------------
Car traffic volume  :  5183/576   veh/TimePeriod  *
Medium truck volume :   195/22    veh/TimePeriod  *
Heavy truck volume  :   195/22    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):   6192
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Ninth Line to Markham Bypass - reg. traffic Westbound
(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  :  48.00 / 48.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Ninth Line to Markham Bypass - reg. traffic Eastbound
(day)
---------------------------------------

Source height = 1.37 m

ROAD (0.00 + 58.84 + 0.00) = 58.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  66.05   0.00  -5.75  -1.46   0.00   0.00   0.00  58.84
-------------------------------------------------------------------------------

Segment Leq : 58.84 dBA
```

Results segment # 2: Ninth Line to Markham Bypass – reg. traffic Westbound (day)

Source height = 1.37 m

ROAD (0.00 + 56.20 + 0.00) = 56.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	66.05	0.00	-8.39	-1.46	0.00	0.00	0.00	56.20

Segment Leq : 56.20 dBA

Total Leq All Segments (day): **60.73** dBA

Results segment # 1: Ninth Line to Markham Bypass – reg. traffic Eastbound (night)

Source height = 1.37 m

ROAD (0.00 + 52.80 + 0.00) = 52.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.56	0.00	-5.45	-1.31	0.00	0.00	0.00	52.80

Segment Leq : 52.80 dBA

Results segment # 2: Ninth Line to Markham Bypass – reg. traffic Westbound (night)

Source height = 1.37 m

ROAD (0.00 + 50.30 + 0.00) = 50.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.56	0.00	-7.95	-1.31	0.00	0.00	0.00	50.30

Segment Leq : 50.30 dBA

Total Leq All Segments (night): **54.74** dBA

```
RT/Custom data, segment # 1: Ninth Line to Markham Bypass - LRT Eastbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: Ninth Line to Markham Bypass - LRT Eastbound (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  :  33.30 / 33.30  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Ninth Line to Markham Bypass - LRT Westbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: Ninth Line to Markham Bypass - LRT Westbound (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  :  48.00 / 48.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Ninth Line to Markham Bypass - LRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 47.58 + 0.00) = 47.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -5.70  -1.43   0.00   0.00   0.00  47.58
-------------------------------------------------------------------------

Segment Leq : 47.58 dBA
```

```
Results segment # 2: Ninth Line to Markham Bypass – LRT Westbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 44.97 + 0.00) = 44.97 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  54.71  -8.31  -1.43   0.00   0.00   0.00  44.97
-------------------------------------------------------------------------

Segment Leq : 44.97 dBA

Total Leq All Segments (day): 49.48 dBA


Results segment # 1: Ninth Line to Markham Bypass – LRT Eastbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 44.07 + 0.00) = 44.07 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -5.39  -1.28   0.00   0.00   0.00  44.07
-------------------------------------------------------------------------

Segment Leq : 44.07 dBA

Results segment # 2: Ninth Line to Markham Bypass – LRT Wesstbound (night)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 41.60 + 0.00) = 41.60 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  50.73  -7.86  -1.28   0.00   0.00   0.00  41.60

-------------------------------------------------------------------------

Segment Leq : 41.60 dBA

Total Leq All Segments (night): 46.02 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.04
                           (NIGHT): 55.29
```

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 13:16:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: l154thor.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)
```

Centre Street Alignment

```
Road data, segment # 1: Dufferin St. to Bathurst Rd. - reg. traffic Eastbound
(day/night)
-----------------------------------------------
Car traffic volume  : 14362/1596  veh/TimePeriod  *
Medium truck volume :   147/16    veh/TimePeriod  *
Heavy truck volume  :   147/16    veh/TimePeriod  *
Posted speed limit  :    60 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):  16283
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Dufferin St. to Bathurst Rd. - reg. traffic Eastbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Dufferin St. to Bathurst Rd. - reg. traffic Westbound
(day/night)
-----------------------------------------------
Car traffic volume  : 14362/1596  veh/TimePeriod  *
Medium truck volume :   147/16    veh/TimePeriod  *
Heavy truck volume  :   147/16    veh/TimePeriod  *
Posted speed limit  :    60 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):  16283
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dufferin St. to Bathurst Rd. - reg. traffic Westbound
(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  :  19.00 / 19.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dufferin St. to Bathurst Rd. - reg. traffic Eastbound
(day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 64.55 + 0.00) = 64.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  66.01   0.00   0.00  -1.46   0.00   0.00   0.00  64.55
-------------------------------------------------------------------------------

Segment Leq : 64.55 dBA
```

Results segment # 2: Dufferin St. to Bathurst Rd. – reg. traffic Eastbound (day)

Source height = 1.00 m

ROAD (0.00 + 62.85 + 0.00) = 62.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	66.01	0.00	-1.70	-1.46	0.00	0.00	0.00	62.85

Segment Leq : 62.85 dBA

Total Leq All Segments (day): **66.79** dBA

Results segment # 1: Dufferin St. to Bathurst Rd. – reg. traffic Eastbound (night)

Source height = 1.00 m

ROAD (0.00 + 58.11 + 0.00) = 58.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.59	59.44	0.00	0.00	-1.33	0.00	0.00	0.00	58.11

Segment Leq : 58.11 dBA

Results segment # 2: Dufferin St. to Bathurst Rd. – reg. traffic Westbound (night)

Source height = 1.00 m

ROAD (0.00 + 56.48 + 0.00) = 56.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.59	59.44	0.00	-1.63	-1.33	0.00	0.00	0.00	56.48

Segment Leq : 56.48 dBA

Total Leq All Segments (night): **60.38** dBA

```
RT/Custom data, segment # 1: Dufferin St. to Bathurst Rd. - LRT Eastbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Dufferin St. to Bathurst Rd. - LRT Eastbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

RT/Custom data, segment # 2: Dufferin St. to Bathurst Rd. - LRT Westbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Dufferin St. to Bathurst Rd. - LRT Westbound (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  :  19.00 / 19.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Dufferin St. to Bathurst Rd. - LRT Eastbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 53.95 + 0.00) = 53.95 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  55.38   0.00  -1.43   0.00   0.00   0.00  53.95
-------------------------------------------------------------------------

Segment Leq : 53.95 dBA
```

```
Results segment # 2: Dufferin St. to Bathurst Rd. - LRT Westbound (day)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 52.26 + 0.00) = 52.26 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  55.38  -1.69  -1.43   0.00   0.00   0.00  52.26
-------------------------------------------------------------------------

Segment Leq : 52.26 dBA

Total Leq All Segments (day): 56.20 dBA


Results segment # 1: Dufferin St. to Bathurst Rd. - LRT Eastbound (night)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 50.12 + 0.00) = 50.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  51.40   0.00  -1.28   0.00   0.00   0.00  50.12
-------------------------------------------------------------------------

Segment Leq : 50.12 dBA

Results segment # 2: Dufferin St. to Bathurst Rd. - LRT Westbound (night)
----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 48.53 + 0.00) = 48.53 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.56  51.40  -1.60  -1.28   0.00   0.00   0.00  48.53
-------------------------------------------------------------------------

Segment Leq : 48.53 dBA

Total Leq All Segments (night): 52.41 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 67.16
                           (NIGHT): 61.02
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2003 18:02:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: L79chilm.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)
```

Bathurst Street Alignment

```
Road data, segment # 1: Centre St. to Hwy 7 - reg. traffic Northbound
(day/night)
-----------------------------------------------
Car traffic volume  : 17788/1976  veh/TimePeriod  *
Medium truck volume :   568/63    veh/TimePeriod  *
Heavy truck volume  :   568/63    veh/TimePeriod  *
Posted speed limit  :    60 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):  21026
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Centre St. to Hwy 7 - reg. traffic Northbound
(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  :  17.25 / 17.25  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Centre St. to Hwy 7 - reg. traffic Southbound
(day/night)
------------------------------------------------
Car traffic volume  : 17788/1976  veh/TimePeriod  *
Medium truck volume :   568/63    veh/TimePeriod  *
Heavy truck volume  :   568/63    veh/TimePeriod  *
Posted speed limit  :    60 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):  21026
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   3.00
    Heavy Truck  % of Total Volume      :   3.00
    Day (16 hrs) % of Total Volume      :  90.00

Data for Segment # 2: Centre St. to Hwy 7 - reg. traffic Southbound
(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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 23.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Centre St. to Hwy 7 - reg. traffic Northbound (day)
---------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 59.16 + 0.00) = 59.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  69.55   0.00  -0.92  -1.21   0.00   0.00  -8.26  59.16
-------------------------------------------------------------------------------
```

```
Segment Leq : 59.16 dBA
Results segment # 2: Centre St. to Hwy 7 - reg. traffic Southbound (day)
-------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 56.26 + 0.00) = 56.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.52  69.55   0.00  -4.12  -1.21   0.00   0.00  -7.96  56.26
-------------------------------------------------------------------------------

Segment Leq : 56.26 dBA

Total Leq All Segments (day): 60.96 dBA



Results segment # 1: Centre St. to Hwy 7 - reg. traffic Northbound (night)
---------------------------------------

Source height = 1.32 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.32 !        4.50 !        3.76 !         3.76

ROAD (0.00 + 60.75 + 0.00) = 60.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.43  63.01   0.00  -0.87  -1.04   0.00   0.00  -0.33  60.78*
   -90     90   0.58  63.01   0.00  -0.96  -1.31   0.00   0.00   0.00  60.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.75 dBA
```

Results segment # 2: Centre St. to Hwy 7 – reg. traffic Southbound (night)

Source height = 1.32 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.32	4.50	1.88	1.88

ROAD (0.00 + 52.06 + 0.00) = 52.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.43	63.01	0.00	-3.88	-1.04	0.00	0.00	-6.04	52.06

Segment Leq : 52.06 dBA

Total Leq All Segments (night): **61.30** dBA

```
RT/Custom data, segment # 1: Centre St. to Hwy 7 - LRT Northbound (day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Centre St. to Hwy 7 - LRT Northbound (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  :  17.25 / 17.25  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

RT/Custom data, segment # 2: Centre St. to Hwy 7 - LRT Southbound (day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: SB - LRT (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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Centre St. to Hwy 7 - LRT Northbound (day)
----------------------------------

Source height = 2.00 m
```

```
Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.62 !         1.62

RT/Custom (0.00 + 45.76 + 0.00) = 45.76 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.50  55.38  -0.91  -1.17   0.00   0.00  -7.54  45.76
-------------------------------------------------------------------

Segment Leq : 45.76 dBA


Results segment # 2: Centre St. to Hwy 7 - LRT Southbound (day)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.57 !         1.57

RT/Custom (0.00 + 42.61 + 0.00) = 42.61 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.50  55.38  -4.06  -1.17   0.00   0.00  -7.53  42.61
-------------------------------------------------------------------

Segment Leq : 42.61 dBA

Total Leq All Segments (day): 47.47 dBA

Results segment # 1: Centre St. to Hwy 7 - LRT Northbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.92 !         3.92

RT/Custom (0.00 + 49.18 + 0.00) = 49.18 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.41  51.40  -0.86  -1.00   0.00   0.00  -0.25  49.29*
```

```
   -90     90   0.56  51.40  -0.94  -1.28   0.00   0.00   0.00  49.18
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.18 dBA

Results segment # 2: Centre St. to Hwy 7 – LRT Southbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        4.14 !         4.14

RT/Custom (0.00 + 45.91 + 0.00) = 45.91 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.41  51.40  -3.82  -1.00   0.00   0.00  -0.21  46.37*
   -90     90   0.56  51.40  -4.22  -1.28   0.00   0.00   0.00  45.91
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.91 dBA

Total Leq All Segments (night): 50.86 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.15
                           (NIGHT): 61.68
```

```
STAMSON 5.0        NORMAL REPORT        Date: 12-12-2003 10:30:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: lwarden.te           Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)
```

Town Centre Blvd. South Alignment

```
Road data, segment # 1: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Northbound (day/night)
-----------------------------------------------
Car traffic volume  : 18824/2092  veh/TimePeriod  *
Medium truck volume :   192/21    veh/TimePeriod  *
Heavy truck volume  :   192/21    veh/TimePeriod  *
Posted speed limit  :    60 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):  21342
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Northbound (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  : 144.00 / 144.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Southbound (day/night)
-----------------------------------------------
Car traffic volume  : 18824/2092  veh/TimePeriod  *
Medium truck volume :   192/21    veh/TimePeriod  *
Heavy truck volume  :   192/21    veh/TimePeriod  *
Posted speed limit  :    60 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):  21342
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   1.00
    Heavy Truck  % of Total Volume      :   1.00
    Day (16 hrs) % of Total Volume      :  90.00
Data for Segment # 2: Town Centre Blvd S. to Main St. Unionville - reg.
traffic Southbound (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  : 151.00 / 151.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Town Centre Blvd S. to Main St. Unionville - reg. traffic
Northbound (day)
---------------------------------------

Source height = 1.00 m

ROAD (0.00 + 49.41 + 0.00) = 49.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  67.17   0.00 -16.31  -1.46   0.00   0.00   0.00  49.41
-------------------------------------------------------------------------------

Segment Leq : 49.41 dBA

Results segment # 2: Town Centre Blvd S. to Main St. Unionville - reg. traffic
Southbound (day)
---------------------------------------

Source height = 1.00 m
```

```
ROAD (0.00 + 49.07 + 0.00) = 49.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  67.17   0.00 -16.65  -1.46   0.00   0.00   0.00  49.07
-------------------------------------------------------------------------------
Segment Leq : 49.07 dBA

Total Leq All Segments: 52.25 dBA


Results segment # 1: Town Centre Blvd S. to Main St. Unionville - reg. traffic
Northbound (night)
----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 43.72 + 0.00) = 43.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  60.62   0.00 -15.57  -1.33   0.00   0.00   0.00  43.72
-------------------------------------------------------------------------------

Segment Leq : 43.72 dBA

Results segment # 2: Town Centre Blvd S. to Main St. Unionville - reg. traffic
Southbound (night)
----------------------------------------

Source height = 1.00 m

ROAD (0.00 + 43.39 + 0.00) = 43.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  60.62   0.00 -15.90  -1.33   0.00   0.00   0.00  43.39
-------------------------------------------------------------------------------

Segment Leq : 43.39 dBA

Total Leq All Segments: 46.57 dBA
```

```
RT/Custom data, segment # 1: Town Centre Blvd. S. to Main St. Unionville - LRT
Eastbound (day/night)
------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Town Centre Blvd. S. to Main St. Unionville - LRT
Northbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


RT/Custom data, segment # 2: Town Centre Blvd. S. to Main St. Unionville - LRT
Southbound (day/night)
------------------------------------------------------------------------------
-------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Town Centre Blvd. S. to Main St. Unionville - LRT
Southbound (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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Town Centre Blvd. S. to Main St. Unionville - LRT
Northbound (day)
-----------------------------------

Source height = 2.00 m

RT/Custom (0.00 + 53.95 + 0.00) = 53.95 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.64  55.38   0.00  -1.43   0.00   0.00   0.00  53.95
-------------------------------------------------------------------------

Segment Leq : 53.95 dBA
```

Results segment # 2: Town Centre Blvd. S. to Main St. Unionville - LRT Southbound (day)

Source height = 2.00 m

RT/Custom (0.00 + 53.95 + 0.00) = 53.95 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.64	55.38	0.00	-1.43	0.00	0.00	0.00	53.95

Segment Leq : 53.95 dBA

Total Leq All Segments: **56.96** dBA

Results segment # 1: Town Centre Blvd. S. to Main St. Unionville - LRT Northbound (night)

Source height = 2.00 m

RT/Custom (0.00 + 50.12 + 0.00) = 50.12 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	51.40	0.00	-1.28	0.00	0.00	0.00	50.12

Segment Leq : 50.12 dBA

Results segment # 2: Town Centre Blvd. S. to Main St. Unionville - LRT Southbound (night)

Source height = 2.00 m

RT/Custom (0.00 + 50.12 + 0.00) = 50.12 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.56	51.40	0.00	-1.28	0.00	0.00	0.00	50.12

Segment Leq : 50.12 dBA

Total Leq All Segments: **53.13** dBA

TOTAL Leq FROM ALL SOURCES (DAY): **58.23**
(NIGHT): **54.00**

```
STAMSON 5.0        NORMAL REPORT        Date: 24-11-2003 15:23:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: l231vale.te          Time Period: Day/Night 16/8 hours
Description:  2021 Predictions (plus LRT)
```

Kennedy Road Alignment

```
Road data, segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(day/night)
-----------------------------------------------
Car traffic volume  : 22266/2474  veh/TimePeriod  *
Medium truck volume :   838/93    veh/TimePeriod  *
Heavy truck volume  :   838/93    veh/TimePeriod  *
Posted speed limit  :    60 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):  26602
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound
(day/night)
-----------------------------------------------
Car traffic volume  : 22266/2474  veh/TimePeriod  *
Medium truck volume :   838/93    veh/TimePeriod  *
Heavy truck volume  :   838/93    veh/TimePeriod  *
Posted speed limit  :    60 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):  26602
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.50
    Heavy Truck  % of Total Volume     :   3.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound
(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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(day)
---------------------------------------
Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 59.72 + 0.00) = 59.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  71.02   0.00   0.00  -1.14   0.00   0.00 -10.16  59.72
-------------------------------------------------------------------------------
```

```
Segment Leq : 59.72 dBA
```

```
Results segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound
(day)
-------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 56.71 + 0.00) = 56.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  71.02   0.00  -4.25  -1.14   0.00   0.00  -8.91  56.71
-------------------------------------------------------------------------------

Segment Leq : 56.71 dBA

Total Leq All Segments (day): 61.48 dBA


Results segment # 1: Main St. Unionville to Hwy 7 - reg. traffic Northbound
(night)
---------------------------------------

Source height = 1.37 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.37 !        4.50 !        2.83 !         2.83

ROAD (0.00 + 58.39 + 0.00) = 58.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.39  64.48   0.00   0.00  -0.97   0.00   0.00  -5.12  58.39
-------------------------------------------------------------------------------

Segment Leq : 58.39 dBA
```

Results segment # 2: Main St. Unionville to Hwy 7 - reg. traffic Southbound (night)

Source height = 1.37 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.37	4.50	3.64	3.64

ROAD (0.00 + 58.66 + 0.00) = 58.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.39	64.48	0.00	-3.99	-0.97	0.00	0.00	-3.64	55.88*
-90	90	0.57	64.48	0.00	-4.51	-1.31	0.00	0.00	0.00	58.66

* Bright Zone !

Segment Leq : 58.66 dBA

Total Leq All Segments (night): **61.54** dBA

```
RT/Custom data, segment # 1: Main St. Unionville to Hwy 7 - LRT Northbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 1: Main St. Unionville to Hwy 7 - LRT Northbound
(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  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: Main St. Unionville to Hwy 7 - LRT Southbound
(day/night)
-------------------------------------------------
1 - Custom (76.4 dBA):
Traffic volume    :   160/32    veh/TimePeriod
Speed             :    60 km/h

Data for Segment # 2: Main St. Unionville to Hwy 7 - LRT Southbound
(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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Main St. Unionville to Hwy 7 - LRT Northbound (day)
-----------------------------------
```

```
Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.77 !         1.77

RT/Custom (0.00 + 45.36 + 0.00) = 45.36 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.47  55.38   0.00  -1.11   0.00   0.00  -8.91  45.36
-------------------------------------------------------------------

Segment Leq : 45.36 dBA

Results segment # 2: Main St. Unionville to Hwy 7 - LRT Southbound (day)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        1.50 !        1.64 !         1.64

RT/Custom (0.00 + 41.72 + 0.00) = 41.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.47  55.38  -4.19  -1.11   0.00   0.00  -8.35  41.72
-------------------------------------------------------------------

Segment Leq : 41.72 dBA

Total Leq All Segments (day): 46.92 dBA

Results segment # 1: Main St. Unionville to Hwy 7 - LRT Northbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.17 !         3.17

RT/Custom (0.00 + 50.12 + 0.00) = 50.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
```

```
   -90     90   0.38  51.40   0.00  -0.93   0.00   0.00  -4.88  45.59*
   -90     90   0.56  51.40   0.00  -1.28   0.00   0.00   0.00  50.12
-------------------------------------------------------------------------
 * Bright Zone !
Segment Leq : 50.12 dBA


Results segment # 2: Main St. Unionville to Hwy 7 - LRT Southbound (night)
-----------------------------------

Source height = 2.00 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       2.00 !        4.50 !        3.81 !         3.81

RT/Custom (0.00 + 45.67 + 0.00) = 45.67 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.38  51.40  -3.94  -0.93   0.00   0.00  -2.48  44.06*
   -90     90   0.56  51.40  -4.45  -1.28   0.00   0.00   0.00  45.67
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.67 dBA

Total Leq All Segments (night): 51.45 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 61.63
                           (NIGHT): 61.94
```