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TRANSPORTATION TRAFFIC NOISE ASSESSMENT

805 Dundas Street East
Mississauga, Ontario

REPORT: GW22-164- Transportation Noise

September 22, 2022

PREPARED FOR

KJC Properties Inc.
1940 Ellesmere Road
Scarborough, ON M1H 2V7

PREPARED BY

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EXECUTIVE SUMMARY

This report describes a transportation noise assessment to satisfy the requirements of the City of Mississauga's site development submission requirements for the proposed multi-building development located at the 805 Dundas Street East in Mississauga, Ontario. The major sources of transportation noise are Dundas Street East, Haines Road, and the CP Freight railway. Figure 1 illustrates a complete site plan with surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) requirements; (ii) future vehicular traffic volumes based on projected roadway traffic counts; (iii) train information assumed from Gradient Wind's previous experience; and (iv) architectural drawings received from Kirkor Architects and Planners, dated September 15th, 2022.

The results of the current analysis indicate that POW noise levels will range between 51 and 71 dBA during the daytime period (07:00-23:00) and between 48 and 68 dBA during the nighttime period (23:00-07:00). The highest noise levels (i.e. 71 dBA) occur along the southeast façade of Building A, which is nearest and most exposed to Dundas Street and the CP rail line.

The noise levels predicted due to roadway and railway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required as described in Section 5.2 and indicated in Figure 3. Results of the calculations also indicate that Buildings A and D in the development will require central air conditioning, whereas Building B will require forced air heating with provisions for central air conditioning. This will allow occupants to keep windows closed and maintain a comfortable living/working environment. As noise levels remain below 55dBA for Building C, no ventilation requirements or Warning Clauses are recommended for noise mitigation purposes. Warning clauses are also required as per CP requirements, due to proximity of the proposed development to these railways, as summarized in Section 6.

Noise levels predicted due to roadway and railway traffic exceed the criteria listed in the NPC-300 at the Outdoor Living Areas (OLA) in the development. Therefore, noise control measures will be required to reduce the Leq to under 55 dBA. Results indicate that the noise level at the Building A Level 8 and Level

10 west terraces can be reduced to below 55 dBA if a 1.1m tall noise barrier is used. Results also indicate that the noise levels at the Building B and D rear yards can be reduced to below 55 dBA if a 2.2m tall noise barrier is utilized.

With regards to off-site stationary noise impacts, a stationary noise study will be performed once mechanical plans for the proposed building become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas, and on the proposed buildings themselves. Typically, off-site stationary noise levels can be controlled by judicious selection and placement of the equipment and the introduction of silencers or noise screens where needed. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits.

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1.   INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by KJC Properties Inc. to undertake a transportation noise assessment to satisfy the City of Mississauga's site development submission requirements for the proposed multi-building development located at 805 Dundas Street East in Mississauga, Ontario. This report summarizes the methodology, results, and recommendations related to a transportation noise assessment investigating exterior noise levels generated by local roadway and railway traffic.

The assessment was performed based on theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP) NPC-300 guidelines. Noise calculations were based on architectural drawings received from Kirkor Architects and Planners, dated September 15th, 2022.

2.   TERMS OF REFERENCE

The focus of this transportation noise study is the proposed mixed-use development located at 805 Dundas Street East in Mississauga, Ontario. The study site is situated on a plot of land bounded by Dundas Street East to the southeast, Cedar Creek Lane to the southwest, Haines Road to the northeast, and existing three-storey townhouses to the northwest.

The proposed development comprises a 12-storey mixed-use residential building (Building 'A') and three 3-storey townhouse buildings (Buildings 'B', 'C', and 'D' which comprise of 6, 8, and 6 townhouse units respectively) located to the north of Building A (relative to project north). All developments are accessible via a driveway connecting to Haines Road. Surface parking, two levels of below-grade parking, and a loading zone are also accessible via the noted driveway. Building A comprises two residential lobbies: one located near the southeast corner, and the second is located near the southwest corner. Retail entrances are present along the inner north façade and the south façade. Buildings B, C, and D are all accessed through private residential entrances along the south elevation. At Level 2 the building steps back from the inner north façade to provide an outdoor amenity terrace. The outdoor amenity terrace is accompanied by an attached indoor amenity space, while the rest of the floor, and the remainder of the building above, comprises residential occupancy. Above Level 2 the building rises with a uniform floor

plate to Level 12 with additional step backs from the northeast and northwest segments at Levels 8 and 10. Above Level 12, the building is topped with two mechanical penthouses on the southwest and southeast corners of the building.

3. OBJECTIVES

The main goals of this work are to (i) calculate the future noise levels on the study building produced by local transportation sources, (ii) determine whether exterior noise levels exceed the allowable limits specified by the MECP Noise Control Guidelines – NPC-300, and (iii) explore mitigation as required.

4. METHODOLOGY

4.1 Background

Noise can be defined as any obtrusive sound. It is created at a source, transmitted through a medium, such as air, and intercepted by a receiver. Noise may be characterized in terms of the power of the source or the sound pressure at a specific distance. While the power of a source is characteristic of that particular source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Measurement of noise is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard noise level (2×10^{-5} Pascals). The 'A' suffix refers to a weighting scale, which better represents how the noise is perceived by the human ear. With this scale, a doubling of power results in a 3 dBA increase in measured noise levels and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

4.2 Transportation Noise

4.2.1 Criteria for Transportation Noise

For vehicle traffic, the equivalent sound energy level, L_{eq}, provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00)/8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The NPC-300 guidelines specify that the recommended indoor noise limit range (that is relevant to this study) is 50, 45 and 40 dBA for office space,

residence living rooms and sleeping quarters respectively, as listed in Table 1. However, to account for deficiencies in building construction and to control peak noise, these levels should be targeted toward 47, 42 and 37 dBA. Indoor noise levels due to railway traffic are 5 dBA lower and should be targeted toward 42, 37, and 32 dBA.

TABLE 1: INDOOR SOUND LEVEL CRITERIA (ROAD)[1]

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

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise while a standard closed window is capable of providing a minimum 20 dBA noise reduction[2]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which normally triggers the need for central air conditioning (or similar systems). Where noise levels exceed 65 dBA daytime and 60 dBA nighttime building components will require higher levels of sound attenuation[3].

Due to the characteristics of rail noise which occur over short periods (i.e. whistles, brake squealing), and a significant low frequency component produced by the movement of the locomotive along the track, road and rail traffic noise require separate analyses, particularly when assessing indoor sound levels. In

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[1] Adapted from Table C-2, Part C, Section 3.2.3 of NPC-300
[2] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[3] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

order to account for the special characteristics of railway sound, the indoor sound level criteria is more stringent by 5 dBA as compared to the roadway traffic criteria. This difference typically results in requirements for upgraded glazing elements to provide better noise attenuation from the building envelope. Interior noise level criteria include the influence from rail crossings and warning whistle bursts. As there are no level crossings in the vicinity of the study building, whistle noise was excluded from analysis.

For designated Outdoor Living Areas (OLAs), the sound level limit is 55 dBA during the daytime period. An excess of up to 5 dBA above the limit is acceptable only in cases where the required noise control measures are not feasible for technical, economic, or administrative reasons. In cases where noise levels at an OLA exceed 60 dBA, mitigation must be provided, were technically and administratively feasible. This development proposes multiple outdoor amenities that were identified in this study as OLAs: the Level 8 and 10 West and east terraces, the Level 2 outdoor amenity area and the rear yards for Buildings B-D .

4.2.2 Roadway and Railway Traffic Volumes

NPC-300 dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes have been considered for the mature state of development based on theoretical capacity and train information based on Gradient Wind's previous experience. Table 2 (below) summarizes the AADT values used for each roadway and railway line included in this assessment.

TABLE 2: ROADWAY AND RAILWAY TRAFFIC DATA

Segment	Roadway/Transit Type	Speed Limit (km/h)	Projected 2031 AADT Count
Dundas Street East	4 Lane Arterial	50	**30,000****
Haines	2-Lane Collector	50	**8,000****
Canadian Pacific Railway	Railway	80	**11/8***
Go Rail Line	Railway	113	**23/0***

* - Daytime/nighttime volumes
** - Theoretical Capacity

4.2.3 Theoretical Transportation Noise Predictions

When an area is influenced by road and rail traffic, the criteria requires the outdoor noise impact from each source to be examined for comparison to respective criterion. Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data. Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise. The impact from railway noise is then combined with roadway predictions using a logarithmic addition at each point of reception and compared to the relevant criteria.

In addition to the roadway and railway volumes summarized in Table 2, theoretical noise predictions were also based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks.

- The day/night split for all streets was taken to be 90%/10%, respectively.

- Reflective intermediate ground surfaces were assumed.

- Receptor heights are noted in Table 3.

- The study site was treated as having gently sloping topography.

- Noise receptors were strategically placed at 15 locations around the study area, as illustrated in Figure 2.

- CP rails were modeled with an average of 164 cars and 4 locomotives per train (80 km/h)

- For GO Transit, one locomotive was modelled per train, with an average of 13 cars and 1 locomotive per train (113 km/h).

- Rail lines are assumed to not be welded along the corridor next to the study site.

- Whistle events were not considered as there are no level crossings.

The noise generated from both on-road and railway traffic were combined for the 16 receptor locations identified in Figure 2. The combined outdoor noise levels from both road and rail were compared to the appropriate NPC-300 criteria stipulated in Table C-2 of the guideline.

5. RESULTS AND DISCUSSION

5.1 Transportation Noise Levels

The results of the roadway noise calculations are summarized in Table 3 below.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO TRANSPORTATION SOURCES

Receptor Number	Receptor Height (m)	Receptor Location / Type	Roadway Noise Level (dBA)		Railway Noise Level (dBA)		Total Noise Level (dBA)	
			Day	Night	Day	Night	Day	Night
1	42	POW – Building A – East	67	60	61	52	**68**	**61**
2	42	POW – Building A – Northeast	68	62	63	64	**69**	**66**
3	42	POW – Building A – Southeast	69	63	66	66	**71**	**68**
4	42	POW – Building A – Southwest	66	60	64	64	**68**	**66**
5	7.7	POW – Building D – Northeast	66	59	53	54	**66**	**61**
6	7.7	POW – Building D – Southeast	64	58	54	54	**64**	**59**
7	7.7	POW – Building C – Southeast	50	44	45	46	**52**	**48**
8	7.7	POW – Building B – Southwest	60	54	54	54	**61**	**57**
9	32	OLA – Terrace at Level 10 - West	46	N/A*	59	N/A*	**59**	**N/A***
10	25.7	OLA – Terrace at Level 8 - West	43	N/A*	59	N/A*	**59**	**N/A***
11	6.5	OLA – Outdoor Amenity at Level 2	46	N/A*	49	N/A*	**51**	**N/A***
12	32	OLA – Terrace at Level 10 - East	46	N/A*	47	N/A*	**50**	**N/A***
13	25.7	OLA – Terrace at Level 10 - East	46	N/A*	46	N/A*	**49**	**N/A***
14	1.5	OLA – Building D Rear Yard	56	N/A*	-	N/A*	**56**	**N/A***
15	1.5	OLA – Building B Rear Yard	54	N/A*	56	N/A*	**58**	**N/A***

* Nighttime noise levels are not considered at OLA receptors, per NPC-300 guidelines

The results of the current analysis indicate that POW noise levels will range between 51 and 71 dBA during the daytime period (07:00-23:00) and between 48 and 68 dBA during the nighttime period (23:00-07:00). The highest noise levels (i.e. 71 dBA) occur along the southeast façade of Building A, which is nearest and most exposed to Dundas Street and the CP rail line.

The noise levels predicted due to roadway and railway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required where noise levels exceed 60 dBA (rail) and 65 dBA (road), as discussed in Section 4. Results of the calculations also indicate that Buildings A and D in the development will require central air conditioning, whereas Building B will require forced air heating with provisions for central air conditioning. This will allow occupants to keep windows closed and maintain a comfortable living/working environment. In addition to ventilation requirements, Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements for Buildings A, B, and D, as summarized in Section 6. As noise levels remain below 55dBA for Building C, no ventilation requirements or Warning Clauses are proposed for noise mitigation purposes.

Noise levels predicted due to roadway and railway traffic exceed the criteria listed in the NPC-300 at the Outdoor Living Areas (OLA) on the Building A Level 8 and 10 western terraces and Buildings B and D rear yards. Therefore, noise control measures will be required to reduce the L to under 60 dBA, as close to 55 dBA as technically and administratively feasible. Investigation into the mitigating effect of a noise barrier along the south edge of the OLA is summarized in Section 5.2.2.

5.2   Noise Control Measures

5.2.1   Upgraded Building Components

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4 for building components. At the time of this study which was prepared for a ZBA application, window schedules, wall assemblies, and room layouts have not been finalized. Therefore, detailed STC calculations could not be performed at this time. The anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). The estimated STC requirements for the windows are summarized below for various units within the development (see Figure 3):

TABLE 4: STC RECOMMENDATIONS

Building	Façade	Window STC (Bedroom/Living Room/Retail)	Exterior Wall STC
Building A	East	30/25/25	45
Building A	Northeast	32/27/25	45
Building A	Southeast	34/29/25	45
Building A	Southwest	32/27/25	45
Building D	Northeast	29/25/25	45

The STC requirements apply to windows, doors, spandrel panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 45, where a stud wall system is used. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems having a combination of glass thickness and inter-pane spacing. It is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

5.2.2   Noise Barrier Investigation

Various barrier heights were tested, with the barrier located along the perimeters of the amenity areas, as indicated in Figure 4. Results indicate that the noise level at the Level 8 and Level 10 West Terraces can be reduced to below 55 dBA if a 1.1m noise barrier is used. Results also indicate that the noise levels at the Building B and D rear yards can be reduced to below 55 dBA if a 2.2m noise barrier is utilized. The results can be seen in Table 5 (below):

TABLE 5: RESULTS OF NOISE BARRIER INVESTIGATION

Receptor ID	Location	Receptor Height Above Grade (m)	Daytime L_{eq} Noise Levels (dBA)	
			No Barrier	With 2.2m Barrier
R14	Building D Rear Yard	1.5	56	**50**
R15	Building B Rear Yard	1.5	57	**51**

6.   CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that POW noise levels will range between 51 and 71 dBA during the daytime period (07:00-23:00) and between 48 and 68 dBA during the nighttime period (23:00-07:00). The highest noise levels (i.e. 71 dBA) occur along the southeast façade of Building A, which is nearest and most exposed to Dundas Street and the CP rail line. The noise levels predicted due to roadway and railway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required as described in Section 5.2 and indicated in Figure 3.

Results of the calculations also indicate that Buildings A and D in the development will require central air conditioning, whereas Building B will require forced air heating with provisions for central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. As noise levels remain below 55dBA for Building C, no ventilation requirements or Warning Clauses are proposed for noise mitigation purposes. The following Type D Warning Clause[4] will also be required to be placed on all Lease, Purchase and Sale Agreements for Buildings A and D, as summarized below:

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[4] Ministry of the Environment, Conservation and Parks - Publication NPC-300

Type D:

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

The following Type C Warning Clause[5] will also be required to be placed on all Lease, Purchase and Sale Agreements for Building B, as summarized below:

Type C:

"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

Noise levels predicted due to roadway and railway traffic exceed the criteria listed in the NPC-300 at the Outdoor Living Areas (OLA) in the development. Therefore, noise control measures will be required to reduce the Leq to under 60 dBA. Results indicate that the noise level at the Building A Level 8 and Level 10 west terraces can be reduced to below 55 dBA if a 1.1m noise barrier is used. Results also indicate that the noise levels at the Building B and D rear yards can be reduced to below 55 dBA if a 2.2m noise barrier is utilized.

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[5] Ministry of the Environment, Conservation and Parks - Publication NPC-300

The following warning clauses are required as per CP requirements, due to proximity of the proposed development to these railways:

CP:

 "All persons intending to acquire an interest in the real property by purchase or lease are advised of the existence of the right-of-way of the Canadian Pacific Railway. In future, it is possible that such rail facilities and operations may be altered or expanded, which expansion or alteration may affect the living environment of residents despite the inclusion of noise and vibration attenuating measures in the design of the property and that the Canadian Pacific Railway will not be responsible for complaints or claims arising from its use of its facilities and/or arising from its operations."

With regards to off-site stationary noise impacts, a stationary noise study will be performed once mechanical plans for the proposed building become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas, and on the proposed buildings themselves. Typically, off-site stationary noise levels can be controlled by judicious selection and placement of the equipment and the introduction of silencers or noise screens where needed. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits.

This concludes our assessment and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

Sincerely,

Gradient Wind Engineering Inc.

Essraa Alqassab, BASc
Junior Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File No. 22-164 – Transportation Noise

BUILDING D

STUDY SITE

BUILDING C

BUILDING B

BUILDING A

PROPERTY LINE

HAINES ROAD

DUNDAS STREET EAST

CP RAIL LINE

PROJECT	805 DUNDAS STREET EAST ROADWAY TRAFFIC ASSESSMENT		DESCRIPTION	
SCALE	1:3000 (APPROX.)	DRAWING NO. GW22-164-1	FIGURE 1: SITE PLAN AND SURROUNDING CONTEXT	
DATE	SEPTEMBER 1, 2022	DRAWN BY E.A.		

FIGURE 2:
RECEPTOR LOCATIONS
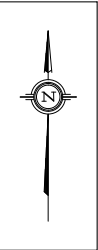
1 OLA RECEPTOR

1 POW RECEPTOR

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PROJECT
805 DUNDAS STREET EAST
ROADWAY TRAFFIC ASSESSMENT

SCALE
1:1000 (APPROX.)

DRAWING NO.
GW22-164-2

DATE
SEPTEMBER 1, 2022

DRAWN BY
E.A.

DESCRIPTION
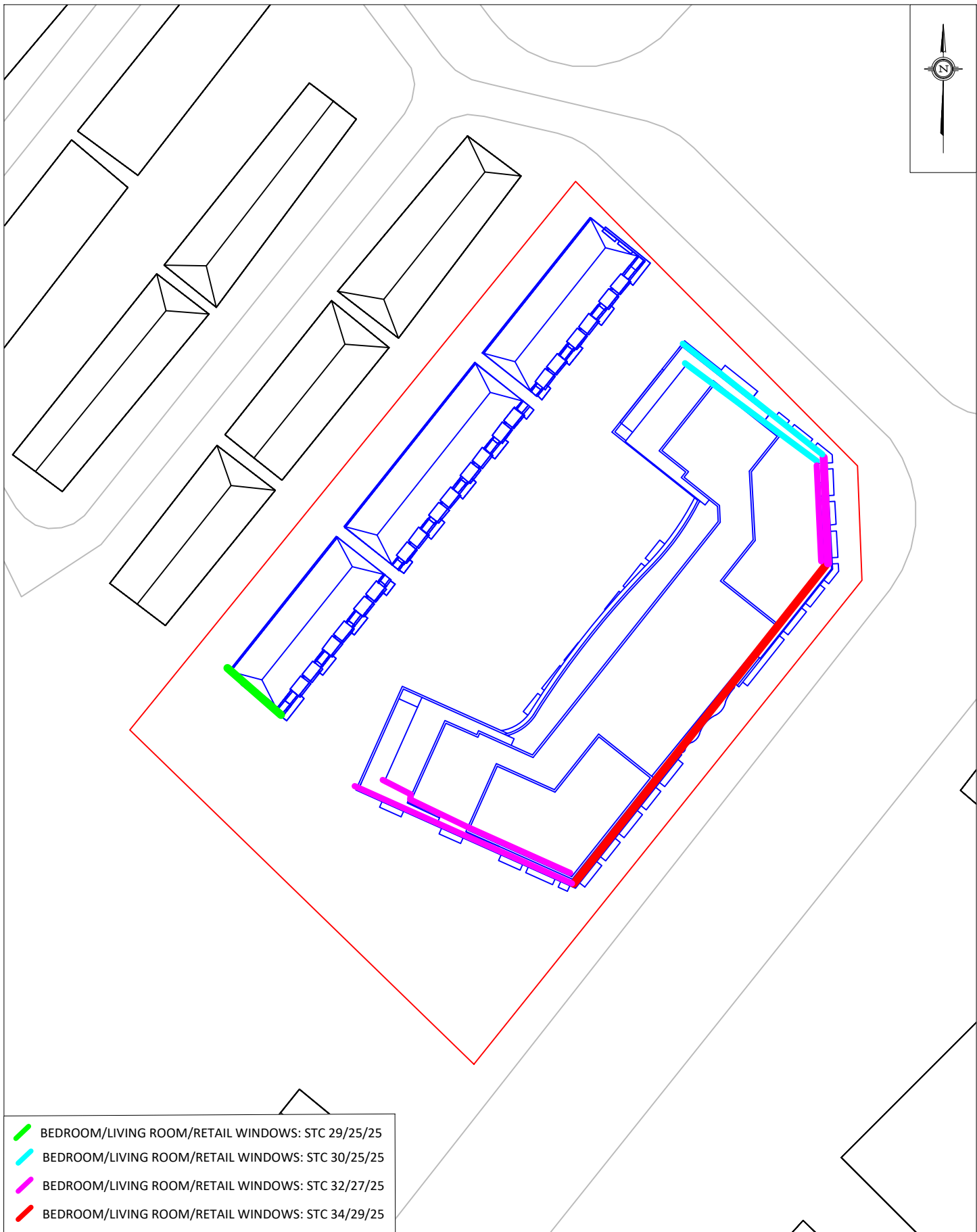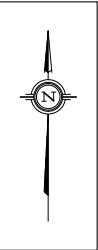
BEDROOM/LIVING ROOM/RETAIL WINDOWS: STC 29/25/25

BEDROOM/LIVING ROOM/RETAIL WINDOWS: STC 30/25/25

BEDROOM/LIVING ROOM/RETAIL WINDOWS: STC 32/27/25

BEDROOM/LIVING ROOM/RETAIL WINDOWS: STC 34/29/25

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PROJECT	805 DUNDAS STREET EAST ROADWAY TRAFFIC ASSESSMENT		DESCRIPTION
SCALE 1:1000 (APPROX.)	DRAWING NO. GW22-164-3		FIGURE 3: STC RECOMMENDATIONS
DATE SEPTEMBER 1, 2022	DRAWN BY E.A.		

PROPOSED 2.2M NOISE BARRIER

PROPOSED 2.2M NOISE BARRIER

PROPOSED 1.1M NOISE BARRIER

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PROJECT	805 DUNDAS STREET EAST ROADWAY TRAFFIC ASSESSMENT		DESCRIPTION
SCALE 1:1000 (APPROX.)	DRAWING NO. GW22-164-4		FIGURE 4: NOISE BARRIER RECOMMENDATION
DATE SEPTEMBER 1, 2022	DRAWN BY E.A.		

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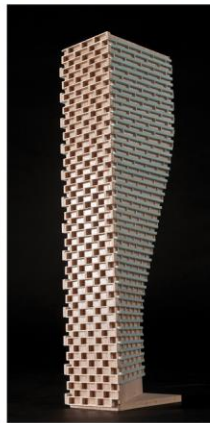
APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

```
STAMSON 5.0          NORMAL REPORT        Date: 02-09-2022 10:32:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te                  Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train             ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type              !             !(km/h) !/Train!/Train! type !weld
----------------+------------+------+------+------+------+----
  1. CP          ! 11.0/1.0    ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. Go          ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2            : -90.00 deg   0.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 230.00 / 230.00 m
Receiver height            :  42.00 / 42.00  m
Topography                 :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1             : -90.00 deg   Angle2 : 0.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  : 207.00 / 207.00 m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00


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

Barrier height for grazing incidence
------------------------------------
Source       ! Receiver     ! Barrier      ! Elevation of
Height  (m)  ! Height  (m)  ! Height  (m)  ! Barrier Top  (m)
------------+------------+------------+-------------
     4.00 !        42.00 !        7.80 !         7.80
     0.50 !        42.00 !        4.65 !         4.65

LOCOMOTIVE (0.00 + 60.57 + 0.00) = 60.57 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90      0   0.00  75.43 -11.86  -3.01   0.00   0.00  -1.39  59.18*
  -90      0   0.00  75.43 -11.86  -3.01   0.00   0.00   0.00  60.57
--------------------------------------------------------------------
```

```
 * Bright Zone !

WHEEL (0.00 + 50.48 + 0.00) = 50.48 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
   -90      0   0.00  71.54 -11.86  -3.01   0.00   0.00  -6.20   50.48
----------------------------------------------------------------------

Segment Leq : 60.98 dBA

Total Leq All Segments: 60.98 dBA


Barrier table for segment # 1: Rail (day)
-------------------------------------------

Barrier ! Elev of ! Loco    ! Wheel   ! Whistle ! Whistle ! Tot Leq !
Height  ! Barr Top! dBA     ! dBA     ! left dBA!right dBA!  dBA    !
--------+---------+---------+---------+---------+---------+---------+
   7.50 !    7.50 !   60.57 !   48.00 !     -- !     -- !   60.80 !
   8.00 !    8.00 !   55.53 !   47.22 !     -- !     -- !   56.13 !
   8.50 !    8.50 !   55.20 !   46.49 !     -- !     -- !   55.75 !
   9.00 !    9.00 !   54.58 !   45.81 !     -- !     -- !   55.12 !
   9.50 !    9.50 !   53.80 !   45.18 !     -- !     -- !   54.36 !
  10.00 !   10.00 !   52.96 !   44.60 !     -- !     -- !   53.55 !
  10.50 !   10.50 !   52.12 !   44.05 !     -- !     -- !   52.75 !
  11.00 !   11.00 !   51.31 !   43.55 !     -- !     -- !   51.98 !
  11.50 !   11.50 !   50.56 !   43.07 !     -- !     -- !   51.27 !
  12.00 !   12.00 !   49.87 !   42.63 !     -- !     -- !   50.62 !


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
     4.00 !        42.00 !        7.80 !        7.80
     0.50 !        42.00 !        4.65 !        4.65

LOCOMOTIVE (0.00 + 51.97 + 0.00) = 51.97 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
   -90      0   0.00  66.83 -11.86  -3.01   0.00   0.00  -1.39   50.58*
   -90      0   0.00  66.83 -11.86  -3.01   0.00   0.00   0.00   51.97
----------------------------------------------------------------------

 * Bright Zone !
```

```
WHEEL (0.00 + 41.94 + 0.00) = 41.94 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90      0   0.00  63.00 -11.86 -3.01   0.00   0.00  -6.20  41.94
--------------------------------------------------------------------

Segment Leq : 52.38 dBA

Total Leq All Segments: 52.38 dBA


Road data, segment # 1: Haines (day/night)
-------------------------------------------
Car traffic volume   :  6477/563   veh/TimePeriod
Medium truck volume  :   515/45    veh/TimePeriod
Heavy truck volume   :   368/32    veh/TimePeriod
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

Data for Segment # 1: Haines (day/night)
----------------------------------------
Angle1   Angle2       : -72.00 deg   90.00 deg
Wood depth           :     0       (No woods.)
No of house rows     :     0 / 0
Surface              :     2       (Reflective ground surface)
Receiver source distance :  19.00 / 19.00  m
Receiver height      :  42.00 / 42.00  m
Topography           :     1       (Flat/gentle slope; no barrier)
Reference angle      :   0.00


Road data, segment # 2: Dundas (day/night)
-------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth       :   0.00
    Number of Years of Growth         :   0.00
    Medium Truck % of Total Volume    :   7.00
    Heavy Truck  % of Total Volume    :   5.00
    Day (16 hrs) % of Total Volume    :  90.00
```

```
Data for Segment # 2: Dundas (day/night)
-------------------------------------------
Angle1   Angle2          : -90.00 deg   0.00 deg
Wood depth              :      0        (No woods.)
No of house rows        :      0 / 0
Surface                 :      2        (Reflective ground surface)
Receiver source distance : 46.00 / 46.00  m
Receiver height         : 42.00 / 42.00  m
Topography              :      1        (Flat/gentle slope; no barrier)
Reference angle         :   0.00


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

Source height = 1.50 m

ROAD (0.00 + 64.27 + 0.00) = 64.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -72     90   0.00  65.75   0.00  -1.03  -0.46   0.00   0.00   0.00
64.27
------------------------------------------------------------------------
--

Segment Leq : 64.27 dBA


Results segment # 2: Dundas (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.52 + 0.00) = 63.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90      0   0.00  71.39   0.00  -4.87  -3.01   0.00   0.00   0.00
63.52
------------------------------------------------------------------------
--

Segment Leq : 63.52 dBA

Total Leq All Segments: 66.92 dBA


Results segment # 1: Haines (night)
```

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

Source height = 1.50 m

ROAD (0.00 + 56.67 + 0.00) = 56.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -72      90   0.00  58.16   0.00  -1.03  -0.46   0.00   0.00   0.00
56.67
------------------------------------------------------------------------
--

Segment Leq : 56.67 dBA


Results segment # 2: Dundas (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.99 + 0.00) = 56.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90       0   0.00  64.86   0.00  -4.87  -3.01   0.00   0.00   0.00
56.99
------------------------------------------------------------------------
--

Segment Leq : 56.99 dBA

Total Leq All Segments: 59.84 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 67.91
                          (NIGHT): 60.56
```

```
STAMSON 5.0          NORMAL REPORT       Date: 01-09-2022 16:26:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te                Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+------------+------+------+------+------+----
  1. CP          ! 11.0/8.0    ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2          : -90.00 deg   48.00 deg
Wood depth              :     0       (No woods.)
No of house rows        :     0 / 0
Surface                 :     2       (Reflective ground surface)
Receiver source distance : 214.00 / 214.00 m
Receiver height         :  42.00 / 42.00  m
Topography              :     2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1          : -90.00 deg   Angle2 : 48.00 deg
Barrier height          :   6.00 m
Barrier receiver distance : 192.00 / 192.00 m
Source elevation        :   0.00 m
Receiver elevation      :   0.00 m
Barrier elevation       :   0.00 m
Reference angle         :   0.00


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

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
    4.00 !       42.00 !        7.91 !        7.91
    0.50 !       42.00 !        4.77 !        4.77

LOCOMOTIVE (0.00 + 62.74 + 0.00) = 62.74 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90     48   0.00  75.43 -11.54  -1.15   0.00   0.00  -0.71  62.03*
  -90     48   0.00  75.43 -11.54  -1.15   0.00   0.00   0.00  62.74
--------------------------------------------------------------------
```

```
 * Bright Zone !

WHEEL (0.00 + 52.64 + 0.00) = 52.64 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90     48   0.00  71.54 -11.54  -1.15   0.00   0.00  -6.21  52.64
---------------------------------------------------------------------

Segment Leq : 63.14 dBA

Total Leq All Segments: 63.14 dBA


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver     ! Barrier      ! Elevation of
Height  (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
      4.00 !        42.00 !        7.91 !         7.91
      0.50 !        42.00 !        4.77 !         4.77

LOCOMOTIVE (0.00 + 63.17 + 0.00) = 63.17 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90     48   0.00  75.86 -11.54  -1.15   0.00   0.00  -0.71  62.46*
   -90     48   0.00  75.86 -11.54  -1.15   0.00   0.00   0.00  63.17
---------------------------------------------------------------------

 * Bright Zone !

WHEEL (0.00 + 53.13 + 0.00) = 53.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90     48   0.00  72.03 -11.54  -1.15   0.00   0.00  -6.21  53.13
---------------------------------------------------------------------

Segment Leq : 63.58 dBA

Total Leq All Segments: 63.58 dBA


Road data, segment # 1: Haines (day/night)
-------------------------------------------
Car traffic volume   :   6477/563   veh/TimePeriod
Medium truck volume  :    515/45    veh/TimePeriod
Heavy truck volume   :    368/32    veh/TimePeriod
Posted speed limit   :     50 km/h
```

```
Road gradient          :      0 %
Road pavement          :      1 (Typical asphalt or concrete)

Data for Segment # 1: Haines (day/night)
----------------------------------------
Angle1   Angle2         : -48.00 deg   90.00 deg
Wood depth              :      0      (No woods.)
No of house rows        :      0 / 0
Surface                 :      2      (Reflective ground surface)
Receiver source distance :  27.00 / 27.00  m
Receiver height         :  42.00 / 42.00  m
Topography              :      1      (Flat/gentle slope; no barrier)
Reference angle         :   0.00


Road data, segment # 2: Dundas (day/night)
------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dundas (day/night)
----------------------------------------
Angle1   Angle2         : -90.00 deg   48.00 deg
Wood depth              :      0      (No woods.)
No of house rows        :      0 / 0
Surface                 :      2      (Reflective ground surface)
Receiver source distance :  31.00 / 31.00  m
Receiver height         :  42.00 / 42.00  m
Topography              :      1      (Flat/gentle slope; no barrier)
Reference angle         :   0.00


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


Source height = 1.50 m

ROAD (0.00 + 62.04 + 0.00) = 62.04 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -48      90   0.00  65.75   0.00  -2.55  -1.15   0.00   0.00   0.00
62.04
--------------------------------------------------------------------------
--
```

Segment Leq : 62.04 dBA

Results segment # 2: Dundas (day)

Source height = 1.50 m

ROAD (0.00 + 67.09 + 0.00) = 67.09 dBA
```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      48   0.00  71.39   0.00  -3.15  -1.15   0.00   0.00   0.00
67.09
--------------------------------------------------------------------------
--
```

Segment Leq : 67.09 dBA

Total Leq All Segments: 68.27 dBA

Results segment # 1: Haines (night)

Source height = 1.50 m

ROAD (0.00 + 54.45 + 0.00) = 54.45 dBA
```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -48      90   0.00  58.16   0.00  -2.55  -1.15   0.00   0.00   0.00
54.45
--------------------------------------------------------------------------
--
```

Segment Leq : 54.45 dBA

Results segment # 2: Dundas (night)

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

Source height = 1.50 m

ROAD (0.00 + 60.56 + 0.00) = 60.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -90     48   0.00  64.86   0.00  -3.15  -1.15   0.00   0.00   0.00
60.56
-----------------------------------------------------------------------
--

Segment Leq : 60.56 dBA

Total Leq All Segments: 61.51 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 69.43
                         (NIGHT): 65.68
```

```
STAMSON 5.0         NORMAL REPORT       Date: 01-09-2022 16:31:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te                 Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train             ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type              !             !(km/h) !/Train!/Train! type !weld
----------------+------------+------+------+------+------+----
  1. CP          ! 11.0/8.0   ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2        : -90.00 deg   90.00 deg
Wood depth            :      0       (No woods.)
No of house rows      :      0 / 0
Surface               :      2       (Reflective ground surface)
Receiver source distance : 202.00 / 202.00 m
Receiver height       :  42.00 / 42.00  m
Topography            :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1        : -90.00 deg   Angle2 : 90.00 deg
Barrier height        :   6.00 m
Barrier receiver distance : 167.00 / 167.00 m
Source elevation      :   0.00 m
Receiver elevation    :   0.00 m
Barrier elevation     :   0.00 m
Reference angle       :   0.00


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

Barrier height for grazing incidence
------------------------------------
Source     ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
-----------+------------+------------+--------------
    4.00 !      42.00 !      10.58 !       10.58
    0.50 !      42.00 !       7.69 !        7.69

LOCOMOTIVE (0.00 + 64.14 + 0.00) = 64.14 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90     90   0.00  75.43 -11.29   0.00   0.00   0.00  -0.24  63.90*
  -90     90   0.00  75.43 -11.29   0.00   0.00   0.00   0.00  64.14
---------------------------------------------------------------------
```

* Bright Zone !

```
WHEEL (0.00 + 60.25 + 0.00) = 60.25 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
   -90     90   0.00  71.54 -11.29   0.00   0.00   0.00  -3.00  57.25*
   -90     90   0.00  71.54 -11.29   0.00   0.00   0.00   0.00  60.25
----------------------------------------------------------------------
```

* Bright Zone !

Segment Leq : 65.63 dBA

Total Leq All Segments: 65.63 dBA

Results segment # 1: Rail (night)

Barrier height for grazing incidence

```
Source     ! Receiver    ! Barrier     ! Elevation of
Height (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
-----------+------------+------------+--------------
      4.00 !       42.00 !       10.58 !          10.58
      0.50 !       42.00 !        7.69 !           7.69
```

```
LOCOMOTIVE (0.00 + 64.57 + 0.00) = 64.57 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
   -90     90   0.00  75.86 -11.29   0.00   0.00   0.00  -0.24  64.33*
   -90     90   0.00  75.86 -11.29   0.00   0.00   0.00   0.00  64.57
----------------------------------------------------------------------
```

* Bright Zone !

```
WHEEL (0.00 + 60.74 + 0.00) = 60.74 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
   -90     90   0.00  72.03 -11.29   0.00   0.00   0.00  -3.00  57.74*
   -90     90   0.00  72.03 -11.29   0.00   0.00   0.00   0.00  60.74
----------------------------------------------------------------------
```

* Bright Zone !

Segment Leq : 66.07 dBA

Total Leq All Segments: 66.07 dBA

```
Road data, segment # 1: Haines (day/night)
--------------------------------------------
Car traffic volume   :  6477/563   veh/TimePeriod
Medium truck volume  :   515/45    veh/TimePeriod
Heavy truck volume   :   368/32    veh/TimePeriod
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

Data for Segment # 1: Haines (day/night)
-----------------------------------------
Angle1   Angle2         : -90.00 deg   0.00 deg
Wood depth             :      0       (No woods.)
No of house rows       :      0 / 0
Surface                :      2        (Reflective ground surface)
Receiver source distance :  71.00 / 71.00  m
Receiver height        :  42.00 / 42.00  m
Topography             :      1        (Flat/gentle slope; no barrier)
Reference angle        :   0.00


Road data, segment # 2: Dundas (day/night)
--------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Dundas (day/night)
-----------------------------------------
Angle1   Angle2         : -90.00 deg  90.00 deg
Wood depth             :      0       (No woods.)
No of house rows       :      0 / 0
Surface                :      2        (Reflective ground surface)
Receiver source distance :  25.00 / 25.00  m
Receiver height        :  42.00 / 42.00  m
Topography             :      1        (Flat/gentle slope; no barrier)
Reference angle        :   0.00
```

```
Results segment # 1: Haines (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.99 + 0.00) = 55.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90     0   0.00  65.75   0.00  -6.75  -3.01   0.00   0.00   0.00
55.99
------------------------------------------------------------------------
--

Segment Leq : 55.99 dBA


Results segment # 2: Dundas (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 69.18 + 0.00) = 69.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90    90   0.00  71.39   0.00  -2.22   0.00   0.00   0.00   0.00
69.18
------------------------------------------------------------------------
--

Segment Leq : 69.18 dBA

Total Leq All Segments: 69.38 dBA


Results segment # 1: Haines (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.40 + 0.00) = 48.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90     0   0.00  58.16   0.00  -6.75  -3.01   0.00   0.00   0.00
48.40
```
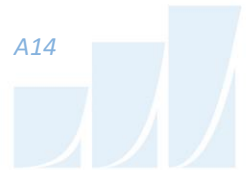
```
----------------------------------------------------------------------
--

Segment Leq : 48.40 dBA


Results segment # 2: Dundas (night)
-----------------------------------

Source height = 1.50 m

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   0.00  64.86   0.00  -2.22   0.00   0.00   0.00   0.00
62.64
----------------------------------------------------------------------
--

Segment Leq : 62.64 dBA

Total Leq All Segments: 62.80 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 70.91
                        (NIGHT): 67.75
```

```
STAMSON 5.0          NORMAL REPORT        Date: 01-09-2022 16:32:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te                  Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
------------------------------------------
Train            ! Trains       ! Speed !# loc !# Cars! Eng  !Cont
Type             !              !(km/h) !/Train!/Train! type !weld
-----------------+------------+-------+------+------+------+----
  1. CP          ! 11.0/8.0   ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2          : -21.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      2       (Reflective ground surface)
Receiver source distance : 202.00 / 202.00 m
Receiver height          :  42.00 / 42.00  m
Topography               :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1           : -21.00 deg   Angle2 : 90.00 deg
Barrier height           :   6.00 m
Barrier receiver distance : 169.00 / 169.00 m
Source elevation         :   0.00 m
Receiver elevation       :   0.00 m
Barrier elevation        :   0.00 m
Reference angle          :   0.00


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

Barrier height for grazing incidence
--------------------------------------
Source      ! Receiver     ! Barrier      ! Elevation of
Height  (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !      42.00 !      10.21 !       10.21
      0.50 !      42.00 !       7.28 !        7.28

LOCOMOTIVE (0.00 + 62.04 + 0.00) = 62.04 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -21     90   0.00  75.43 -11.29  -2.10   0.00   0.00  -0.22  61.82*
  -21     90   0.00  75.43 -11.29  -2.10   0.00   0.00   0.00  62.04
```

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

 * Bright Zone !

WHEEL (0.00 + 58.15 + 0.00) = 58.15 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   -21     90   0.00  71.54 -11.29  -2.10   0.00   0.00  -3.81  54.35*
   -21     90   0.00  71.54 -11.29  -2.10   0.00   0.00   0.00  58.15
--------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 63.53 dBA

Total Leq All Segments: 63.53 dBA


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
     4.00 !        42.00 !       10.21 !        10.21
     0.50 !        42.00 !        7.28 !         7.28

LOCOMOTIVE (0.00 + 62.47 + 0.00) = 62.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   -21     90   0.00  75.86 -11.29  -2.10   0.00   0.00  -0.22  62.25*
   -21     90   0.00  75.86 -11.29  -2.10   0.00   0.00   0.00  62.47
--------------------------------------------------------------------

 * Bright Zone !

WHEEL (0.00 + 58.64 + 0.00) = 58.64 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   -21     90   0.00  72.03 -11.29  -2.10   0.00   0.00  -3.81  54.84*
   -21     90   0.00  72.03 -11.29  -2.10   0.00   0.00   0.00  58.64
--------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 63.97 dBA

Total Leq All Segments: 63.97 dBA
```

```
Road data, segment # 1: Dundas (day/night)
---------------------------------------------
Car traffic volume  : 23760/2640  veh/TimePeriod  *
Medium truck volume :  1890/210   veh/TimePeriod  *
Heavy truck volume  :  1350/150   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth       :    0.00
    Number of Years of Growth         :    0.00
    Medium Truck % of Total Volume    :    7.00
    Heavy Truck  % of Total Volume    :    5.00
    Day (16 hrs) % of Total Volume    :   90.00

Data for Segment # 1: Dundas (day/night)
-------------------------------------------
Angle1   Angle2           : -21.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      2       (Reflective ground surface)
Receiver source distance :  32.00 / 32.00  m
Receiver height          :  42.00 / 42.00  m
Topography               :      1       (Flat/gentle slope; no barrier)
Reference angle          :   0.00


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


Source height = 1.50 m

ROAD (0.00 + 66.00 + 0.00) = 66.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -21     90  0.00  71.39   0.00  -3.29  -2.10   0.00   0.00   0.00
66.00
-------------------------------------------------------------------------
--

Segment Leq : 66.00 dBA

Total Leq All Segments: 66.00 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 59.47 + 0.00) = 59.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -21     90   0.00  64.86   0.00  -3.29  -2.10   0.00   0.00   0.00
59.47
-------------------------------------------------------------------------
--

Segment Leq : 59.47 dBA

Total Leq All Segments: 59.47 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 67.95
                         (NIGHT): 65.29
```

STAMSON 5.0   NORMAL REPORT   Date: 01-09-2022 16:33:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te   Time Period: Day/Night 16/8 hours
Description:

Rail data, segment # 1: Rail (day/night)

Train   ! Trains   ! Speed !# loc !# Cars! Eng !Cont
Type   !   !(km/h) !/Train!/Train! type !weld
-----------------+-------------+------+------+------+------+----
  1. CP   ! 11.0/8.0   ! 80.0 ! 4.0 !164.0 !Diesel! No
  2. GO   ! 23.0/0.0   ! 113.0 ! 1.0 ! 13.0 !Diesel! No

Data for Segment # 1: Rail (day/night)

Angle1   Angle2   : -90.00 deg   0.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   0 / 0
Surface   :   2   (Reflective ground surface)
Receiver source distance   : 282.00 / 282.00 m
Receiver height   :   7.70 / 7.70   m
Topography   :   2   (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1   : -90.00 deg   Angle2 : 0.00 deg
Barrier height   :   6.00 m
Barrier receiver distance : 259.00 / 259.00 m
Source elevation   :   0.00 m
Receiver elevation   :   0.00 m
Barrier elevation   :   0.00 m
Reference angle   :   0.00

Results segment # 1: Rail (day)

Barrier height for grazing incidence

Source   ! Receiver   ! Barrier   ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----------+-------------+-------------+--------------
     4.00 !   7.70 !   4.30 !   4.30
     0.50 !   7.70 !   1.09 !   1.09

LOCOMOTIVE (0.00 + 52.87 + 0.00) = 52.87 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
----
  -90   0   0.00 75.43 -12.74 -3.01   0.00   0.00 -6.81 52.87

```
WHEEL (0.00 + 44.06 + 0.00) = 44.06 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90      0   0.00  71.54 -12.74  -3.01   0.00   0.00 -11.74  44.06
---------------------------------------------------------------------

Segment Leq : 53.41 dBA

Total Leq All Segments: 53.41 dBA


Results segment # 1: Rail (night)
----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
     4.00 !       7.70 !       4.30 !       4.30
     0.50 !       7.70 !       1.09 !       1.09

LOCOMOTIVE (0.00 + 53.31 + 0.00) = 53.31 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90      0   0.00  75.86 -12.74  -3.01   0.00   0.00  -6.81  53.31
---------------------------------------------------------------------

WHEEL (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      0   0.00  72.03 -12.74  -3.01   0.00   0.00 -11.74  44.55
---------------------------------------------------------------------

Segment Leq : 53.85 dBA

Total Leq All Segments: 53.85 dBA


Road data, segment # 1: Haines (day/night)
-------------------------------------------
Car traffic volume   :  6336/704   veh/TimePeriod  *
Medium truck volume  :   504/56    veh/TimePeriod  *
Heavy truck volume   :   360/40    veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
```
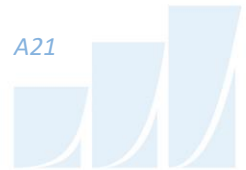
```
        Percentage of Annual Growth        :    0.00
        Number of Years of Growth          :    0.00
        Medium Truck % of Total Volume     :    7.00
        Heavy Truck  % of Total Volume     :    5.00
        Day (16 hrs) % of Total Volume     :   90.00


Data for Segment # 1: Haines (day/night)
----------------------------------------
Angle1   Angle2           : -47.00 deg   90.00 deg
Wood depth                :     0       (No woods.)
No of house rows          :      0 / 0
Surface                   :     2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   7.70 / 7.70   m
Topography                :     1       (Flat/gentle slope; no barrier)
Reference angle           :    0.00



Road data, segment # 2: Dundas (day/night)
-------------------------------------------
Car traffic volume  : 23760/2640  veh/TimePeriod  *
Medium truck volume : 1890/210    veh/TimePeriod  *
Heavy truck volume  : 1350/150    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :    0.00
    Number of Years of Growth          :    0.00
    Medium Truck % of Total Volume     :    7.00
    Heavy Truck  % of Total Volume     :    5.00
    Day (16 hrs) % of Total Volume     :   90.00

Data for Segment # 2: Dundas (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :     0       (No woods.)
No of house rows          :      0 / 0
Surface                   :     2       (Reflective ground surface)
Receiver source distance  :  97.00 / 97.00  m
Receiver height           :   7.70 / 7.70   m
Topography                :     1       (Flat/gentle slope; no barrier)
Reference angle           :    0.00



Results segment # 1: Haines (day)
---------------------------------
```
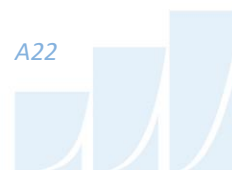
```
Source height = 1.50 m

ROAD (0.00 + 64.47 + 0.00) = 64.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -47     90   0.00  65.65   0.00   0.00  -1.19   0.00   0.00   0.00
64.47
--------------------------------------------------------------------------
--

Segment Leq : 64.47 dBA


Results segment # 2: Dundas (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.28 + 0.00) = 60.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90      0   0.00  71.39   0.00  -8.11  -3.01   0.00   0.00   0.00
60.28
--------------------------------------------------------------------------
--

Segment Leq : 60.28 dBA

Total Leq All Segments: 65.87 dBA


Results segment # 1: Haines (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.94 + 0.00) = 57.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -47     90   0.00  59.12   0.00   0.00  -1.19   0.00   0.00   0.00
57.94
--------------------------------------------------------------------------
--

Segment Leq : 57.94 dBA
```

```
Results segment # 2: Dundas (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.75 + 0.00) = 53.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -90      0   0.00  64.86   0.00  -8.11  -3.01   0.00   0.00   0.00
53.75
-------------------------------------------------------------------------
--

Segment Leq : 53.75 dBA

Total Leq All Segments: 59.34 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 66.11
                          (NIGHT): 60.42
```

```
STAMSON 5.0         NORMAL REPORT        Date: 01-09-2022 16:36:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6.te                Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
----------------+------------+------+------+------+------+----
  1. CP         ! 11.0/8.0   ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO         ! 23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2          : -90.00 deg   0.00 deg
Wood depth              :      0       (No woods.)
No of house rows        :      0 / 0
Surface                 :      2       (Reflective ground surface)
Receiver source distance : 275.00 / 275.00 m
Receiver height         :    7.70 / 7.70   m
Topography              :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1          : -90.00 deg   Angle2 : 0.00 deg
Barrier height          :    6.00 m
Barrier receiver distance : 252.00 / 252.00 m
Source elevation        :    0.00 m
Receiver elevation      :    0.00 m
Barrier elevation       :    0.00 m
Reference angle         :    0.00


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

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver     ! Barrier      ! Elevation of
Height  (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
-----------+------------+------------+--------------
     4.00 !        7.70 !        4.31 !         4.31
     0.50 !        7.70 !        1.10 !         1.10

LOCOMOTIVE (0.00 + 52.99 + 0.00) = 52.99 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
  -90     0   0.00  75.43 -12.63  -3.01   0.00   0.00  -6.80  52.99
-------------------------------------------------------------------
```

```
WHEEL (0.00 + 44.18 + 0.00) = 44.18 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90      0   0.00  71.54 -12.63  -3.01   0.00   0.00 -11.72  44.18
---------------------------------------------------------------------

Segment Leq : 53.53 dBA

Total Leq All Segments: 53.53 dBA


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
     4.00 !        7.70 !        4.31 !        4.31
     0.50 !        7.70 !        1.10 !        1.10

LOCOMOTIVE (0.00 + 53.43 + 0.00) = 53.43 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90      0   0.00  75.86 -12.63  -3.01   0.00   0.00  -6.80  53.43
---------------------------------------------------------------------

WHEEL (0.00 + 44.67 + 0.00) = 44.67 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90      0   0.00  72.03 -12.63  -3.01   0.00   0.00 -11.72  44.67
---------------------------------------------------------------------

Segment Leq : 53.97 dBA

Total Leq All Segments: 53.97 dBA


Road data, segment # 1: Haines (day/night)
------------------------------------------
Car traffic volume   :  6336/704   veh/TimePeriod  *
Medium truck volume  :   504/56    veh/TimePeriod  *
Heavy truck volume   :   360/40    veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

   24 hr Traffic Volume (AADT or SADT):   8000
```

```
        Percentage of Annual Growth         :     0.00
        Number of Years of Growth           :     0.00
        Medium Truck % of Total Volume      :     7.00
        Heavy Truck  % of Total Volume      :     5.00
        Day (16 hrs) % of Total Volume      :    90.00

Data for Segment # 1: Haines (day/night)
-------------------------------------------
Angle1   Angle2                 :     0.00 deg   90.00 deg
Wood depth                      :       0        (No woods.)
No of house rows                :       0 / 0
Surface                         :       2        (Reflective ground surface)
Receiver source distance        :   21.00 / 21.00   m
Receiver height                 :    7.70 / 7.70    m
Topography                      :       1        (Flat/gentle slope; no barrier)
Reference angle                 :     0.00


Road data, segment # 2: Dundas (day/night)
---------------------------------------------
Car traffic volume   : 23760/2640   veh/TimePeriod  *
Medium truck volume  :  1890/210    veh/TimePeriod  *
Heavy truck volume   :  1350/150    veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

     24 hr Traffic Volume (AADT or SADT):   30000
     Percentage of Annual Growth         :     0.00
     Number of Years of Growth           :     0.00
     Medium Truck % of Total Volume      :     7.00
     Heavy Truck  % of Total Volume      :     5.00
     Day (16 hrs) % of Total Volume      :    90.00

Data for Segment # 2: Dundas (day/night)
-------------------------------------------
Angle1   Angle2                 :   -90.00 deg    0.00 deg
Wood depth                      :       0        (No woods.)
No of house rows                :       0 / 0
Surface                         :       2        (Reflective ground surface)
Receiver source distance        :   90.00 / 90.00   m
Receiver height                 :    7.70 / 7.70    m
Topography                      :       1        (Flat/gentle slope; no barrier)
Reference angle                 :     0.00


Results segment # 1: Haines (day)
---------------------------------
```
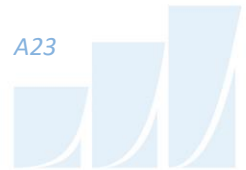
Source height = 1.50 m

ROAD (0.00 + 61.18 + 0.00) = 61.18 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

--
     0   90   0.00 65.65   0.00 -1.46 -3.01   0.00   0.00   0.00
61.18

--

Segment Leq : 61.18 dBA

Results segment # 2: Dundas (day)

Source height = 1.50 m

ROAD (0.00 + 60.60 + 0.00) = 60.60 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

--
   -90   0   0.00 71.39   0.00 -7.78 -3.01   0.00   0.00   0.00
60.60

--

Segment Leq : 60.60 dBA

Total Leq All Segments: 63.91 dBA

Results segment # 1: Haines (night)

Source height = 1.50 m

ROAD (0.00 + 54.65 + 0.00) = 54.65 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

--
     0   90   0.00 59.12   0.00 -1.46 -3.01   0.00   0.00   0.00
54.65

--

Segment Leq : 54.65 dBA

```
Results segment # 2: Dundas (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.07 + 0.00) = 54.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
----------------------------------------------------------------------
--
   -90      0  0.00  64.86   0.00  -7.78  -3.01   0.00   0.00   0.00
54.07
----------------------------------------------------------------------
--

Segment Leq : 54.07 dBA

Total Leq All Segments: 57.38 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 64.29
                         (NIGHT): 59.01
```

GRADIENTWIND
ENGINEERS & SCIENTISTS

```
STAMSON 5.0         NORMAL REPORT        Date: 01-09-2022 16:38:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7.te                  Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train            ! Trains     ! Speed !# loc !# Cars! Eng  !Cont
Type             !            !(km/h) !/Train!/Train! type !weld
----------------+------------+------+------+------+------+----
  1. CP         ! 11.0/8.0   ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO         ! 23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2         : -90.00 deg   90.00 deg
Wood depth              :      0       (No woods.)
No of house rows        :      0 / 0
Surface                 :      2       (Reflective ground surface)
Receiver source distance : 270.00 / 270.00 m
Receiver height         :   7.70 / 7.70   m
Topography              :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1          : -90.00 deg   Angle2 : 90.00 deg
Barrier height          :  43.90 m
Barrier receiver distance : 66.00 / 66.00  m
Source elevation        :   0.00 m
Receiver elevation      :   0.00 m
Barrier elevation       :   0.00 m
Reference angle         :   0.00


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

Barrier height for grazing incidence
------------------------------------
Source     ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
-----------+------------+------------+--------------
     4.00 !        7.70 !        6.80 !        6.80
     0.50 !        7.70 !        5.94 !        5.94

LOCOMOTIVE (0.00 + 43.82 + 0.00) = 43.82 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90     90   0.00  75.43 -12.55   0.00   0.00   0.00 -19.06  43.82
--------------------------------------------------------------------
```
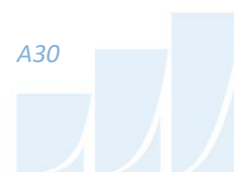
```
WHEEL (0.00 + 39.89 + 0.00) = 39.89 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -90     90   0.00  71.54 -12.55   0.00   0.00   0.00 -19.10  39.89
----------------------------------------------------------------------

Segment Leq : 45.30 dBA

Total Leq All Segments: 45.30 dBA


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver     ! Barrier      ! Elevation of
Height  (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
------------+--------------+--------------+--------------
     4.00 !          7.70 !          6.80 !          6.80
     0.50 !          7.70 !          5.94 !          5.94

LOCOMOTIVE (0.00 + 44.25 + 0.00) = 44.25 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -90     90   0.00  75.86 -12.55   0.00   0.00   0.00 -19.06  44.25
----------------------------------------------------------------------

WHEEL (0.00 + 40.38 + 0.00) = 40.38 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -90     90   0.00  72.03 -12.55   0.00   0.00   0.00 -19.10  40.38
----------------------------------------------------------------------

Segment Leq : 45.74 dBA

Total Leq All Segments: 45.74 dBA

Road data, segment # 1: Haines (day/night)
------------------------------------------
Car traffic volume   : 6336/704   veh/TimePeriod  *
Medium truck volume  :  504/56    veh/TimePeriod  *
Heavy truck volume   :  360/40    veh/TimePeriod  *
Posted speed limit   :   50 km/h
Road gradient        :    0 %
Road pavement        :    1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth       :   0.00
```

```
            Number of Years of Growth           :      0.00
            Medium Truck % of Total Volume       :      7.00
            Heavy Truck  % of Total Volume       :      5.00
            Day (16 hrs) % of Total Volume       :     90.00

    Data for Segment # 1: Haines (day/night)
    ----------------------------------------
    Angle1   Angle2          :      0.00 deg   19.00 deg
    Wood depth               :        0        (No woods.)
    No of house rows         :        0 / 0
    Surface                  :        2        (Reflective ground surface)
    Receiver source distance :  69.00 / 69.00  m
    Receiver height          :    7.70 / 7.70  m
    Topography               :        1        (Flat/gentle slope; no barrier)
    Reference angle          :      0.00


    Road data, segment # 2: Dundas (day/night)
    ---------------------------------------------
    Car traffic volume  : 23760/2640  veh/TimePeriod  *
    Medium truck volume :  1890/210   veh/TimePeriod  *
    Heavy truck volume  :  1350/150   veh/TimePeriod  *
    Posted speed limit  :    50 km/h
    Road gradient       :     0 %
    Road pavement       :     1 (Typical asphalt or concrete)

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

        24 hr Traffic Volume (AADT or SADT):   30000
        Percentage of Annual Growth         :      0.00
        Number of Years of Growth           :      0.00
        Medium Truck % of Total Volume       :      7.00
        Heavy Truck  % of Total Volume       :      5.00
        Day (16 hrs) % of Total Volume       :     90.00

    Data for Segment # 2: Dundas (day/night)
    ----------------------------------------
    Angle1   Angle2          :    -90.00 deg   90.00 deg
    Wood depth               :        0        (No woods.)
    No of house rows         :        0 / 0
    Surface                  :        2        (Reflective ground surface)
    Receiver source distance :  92.00 / 92.00  m
    Receiver height          :    7.70 / 7.70  m
    Topography               :        2        (Flat/gentle slope; with barrier)
    Barrier angle1           :    -90.00 deg   Angle2 : 90.00 deg
    Barrier height           :   43.90 m
    Barrier receiver distance :  66.00 / 66.00  m
    Source elevation         :     0.00 m
    Receiver elevation       :     0.00 m
    Barrier elevation        :     0.00 m
    Reference angle          :     0.00
```

```
Results segment # 1: Haines (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.26 + 0.00) = 49.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
     0     19   0.00  65.65   0.00  -6.63  -9.77   0.00   0.00   0.00
49.26
------------------------------------------------------------------------
--

Segment Leq : 49.26 dBA


Results segment # 2: Dundas (day)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source       ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
     1.50 !        7.70 !       3.25 !         3.25

ROAD (0.00 + 43.92 + 0.00) = 43.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90     90   0.00  71.39   0.00  -7.88   0.00   0.00   0.00 -19.60
43.92
------------------------------------------------------------------------
--

Segment Leq : 43.92 dBA

Total Leq All Segments: 50.37 dBA


Results segment # 1: Haines (night)
------------------------------------

Source height = 1.50 m
```
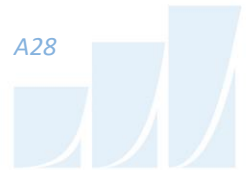
```
ROAD (0.00 + 42.73 + 0.00) = 42.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    0      19   0.00  59.12   0.00  -6.63  -9.77   0.00   0.00   0.00
42.73
--------------------------------------------------------------------------
--

Segment Leq : 42.73 dBA


Results segment # 2: Dundas (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver     ! Barrier      ! Elevation of
Height  (m) ! Height  (m)  ! Height  (m)  ! Barrier Top  (m)
------------+-------------+-------------+-------------
    1.50 !          7.70 !         3.25 !          3.25

ROAD (0.00 + 37.38 + 0.00) = 37.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
  -90      90   0.00  64.86   0.00  -7.88   0.00   0.00   0.00 -19.60
37.38
--------------------------------------------------------------------------
--

Segment Leq : 37.38 dBA

Total Leq All Segments: 43.84 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 51.55
                        (NIGHT): 47.90
```
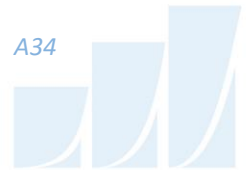
```
STAMSON 5.0          NORMAL REPORT          Date: 01-09-2022 16:40:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8.te                 Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+------+------+------+------+----
  1. CP          ! 11.0/8.0    ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
----------------------------------------
Angle1   Angle2          :   0.00 deg   90.00 deg
Wood depth              :      0        (No woods.)
No of house rows        :      0 / 0
Surface                 :      2        (Reflective ground surface)
Receiver source distance : 263.00 / 263.00 m
Receiver height         :   7.70 / 7.70   m
Topography              :      2        (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1          :   0.00 deg   Angle2 : 90.00 deg
Barrier height          :   6.00 m
Barrier receiver distance : 231.00 / 231.00 m
Source elevation        :   0.00 m
Receiver elevation      :   0.00 m
Barrier elevation       :   0.00 m
Reference angle         :   0.00


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

Barrier height for grazing incidence
------------------------------------
Source     ! Receiver    ! Barrier     ! Elevation of
Height (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
-----------+-------------+-------------+--------------
     4.00  !      7.70   !      4.45   !        4.45
     0.50  !      7.70   !      1.38   !        1.38

LOCOMOTIVE (0.00 + 53.76 + 0.00) = 53.76 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
   0      90   0.00  75.43 -12.44  -3.01   0.00   0.00  -6.23  53.76
-----------------------------------------------------------------------
```

```
WHEEL (0.00 + 45.54 + 0.00) = 45.54 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
    0     90   0.00  71.54 -12.44  -3.01   0.00   0.00 -10.56  45.54
---------------------------------------------------------------------

Segment Leq : 54.37 dBA

Total Leq All Segments: 54.37 dBA


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver     ! Barrier      ! Elevation of
Height  (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
------------+--------------+--------------+--------------
     4.00 !          7.70 !          4.45 !          4.45
     0.50 !          7.70 !          1.38 !          1.38

LOCOMOTIVE (0.00 + 54.19 + 0.00) = 54.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
    0     90   0.00  75.86 -12.44  -3.01   0.00   0.00  -6.23  54.19
---------------------------------------------------------------------

WHEEL (0.00 + 46.03 + 0.00) = 46.03 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
    0     90   0.00  72.03 -12.44  -3.01   0.00   0.00 -10.56  46.03
---------------------------------------------------------------------

Segment Leq : 54.81 dBA

Total Leq All Segments: 54.81 dBA


Road data, segment # 1: Dundas (day/night)
-------------------------------------------
Car traffic volume  : 23760/2640  veh/TimePeriod  *
Medium truck volume : 1890/210   veh/TimePeriod  *
Heavy truck volume  : 1350/150   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
```
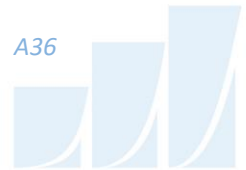
```
      Percentage of Annual Growth        :     0.00
      Number of Years of Growth          :     0.00
      Medium Truck % of Total Volume     :     7.00
      Heavy Truck  % of Total Volume     :     5.00
      Day (16 hrs) % of Total Volume     :    90.00

Data for Segment # 1: Dundas (day/night)
----------------------------------------
Angle1   Angle2             :     0.00 deg   90.00 deg
Wood depth                  :        0       (No woods.)
No of house rows            :        0 / 0
Surface                     :        2       (Reflective ground surface)
Receiver source distance    :    95.00 / 95.00   m
Receiver height             :     7.70 / 7.70   m
Topography                  :        1       (Flat/gentle slope; no barrier)
Reference angle             :     0.00


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

Source height = 1.50 m

ROAD (0.00 + 60.37 + 0.00) = 60.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    0     90   0.00  71.39   0.00  -8.02  -3.01   0.00   0.00   0.00
60.37
-----------------------------------------------------------------------
--

Segment Leq : 60.37 dBA

Total Leq All Segments: 60.37 dBA


Results segment # 1: Dundas (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.84 + 0.00) = 53.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    0     90   0.00  64.86   0.00  -8.02  -3.01   0.00   0.00   0.00
53.84
```

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

Segment Leq : 53.84 dBA

Total Leq All Segments: 53.84 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 61.34
                         (NIGHT): 57.36
```

```
STAMSON 5.0          NORMAL REPORT        Date: 02-09-2022 09:58:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te              Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail1 (day/night)
------------------------------------------
Train             ! Trains       ! Speed !# loc !# Cars! Eng  !Cont
Type              !              !(km/h) !/Train!/Train! type !weld
----------------+------------+------+-----+------+------+----
  1. CP          !  11.0/8.0   !  80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          !  23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail1 (day/night)
-----------------------------------------
Angle1   Angle2            : -90.00 deg   48.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 235.00 / 235.00 m
Receiver height            :  32.00 / 32.00  m
Topography                 :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1             : -90.00 deg   Angle2 : 48.00 deg
Barrier height             :  44.00 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


Rail data, segment # 2: Rail2 (day/night)
------------------------------------------
Train             ! Trains       ! Speed !# loc !# Cars! Eng  !Cont
Type              !              !(km/h) !/Train!/Train! type !weld
----------------+------------+------+-----+------+------+----
  1. CP          !  11.0/8.0   !  80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          !  23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 2: Rail2 (day/night)
-----------------------------------------
Angle1   Angle2            :  48.00 deg   90.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 235.00 / 235.00 m
Receiver height            :  32.00 / 32.00  m
Topography                 :      2       (Flat/gentle slope; with barrier)
```

```
No Whistle
Barrier angle1            :   48.00 deg    Angle2 : 90.00 deg
Barrier height           :   30.50 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: Rail1 (day)
--------------------------------

Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier     ! Elevation of
Height  (m)  ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !       32.00 !       31.52 !       31.52
      0.50 !       32.00 !       31.46 !       31.46

LOCOMOTIVE (0.00 + 43.11 + 0.00) = 43.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90     48   0.00  75.43 -11.95  -1.15   0.00   0.00 -19.22  43.11
---------------------------------------------------------------------


WHEEL (0.00 + 39.21 + 0.00) = 39.21 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90     48   0.00  71.54 -11.95  -1.15   0.00   0.00 -19.23  39.21
---------------------------------------------------------------------


Segment Leq : 44.59 dBA


Results segment # 2: Rail2 (day)
--------------------------------

Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier     ! Elevation of
Height  (m)  ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !       32.00 !       31.52 !       31.52
      0.50 !       32.00 !       31.46 !       31.46

LOCOMOTIVE (0.00 + 57.16 + 0.00) = 57.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
    48     90   0.00  75.43 -11.95  -6.32   0.00   0.00  -1.75  55.41*
```
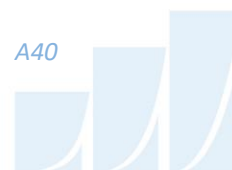
```
    48        90    0.00  75.43 -11.95  -6.32   0.00   0.00   0.00  57.16
-----------------------------------------------------------------------

 * Bright Zone !

WHEEL (0.00 + 53.27 + 0.00) = 53.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
    48        90    0.00  71.54 -11.95  -6.32   0.00   0.00  -2.07  51.20*
    48        90    0.00  71.54 -11.95  -6.32   0.00   0.00   0.00  53.27
-----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.65 dBA

Total Leq All Segments: 58.82 dBA


Barrier table for segment # 1: Rail1 (day)
--------------------------------------------

Barrier ! Elev of ! Loco    ! Wheel   ! Whistle ! Whistle ! Tot Leq !
Height  ! Barr Top! dBA     ! dBA     ! left dBA!right dBA! dBA     !
--------+---------+---------+---------+---------+---------+---------+
 45.50  !  45.50  !  43.01  !  39.11  !    --   !    --   !  44.49  !
 46.00  !  46.00  !  42.98  !  39.08  !    --   !    --   !  44.46  !
 46.50  !  46.50  !  42.96  !  39.06  !    --   !    --   !  44.44  !
 47.00  !  47.00  !  42.93  !  39.03  !    --   !    --   !  44.41  !
 47.50  !  47.50  !  42.91  !  39.01  !    --   !    --   !  44.39  !
 48.00  !  48.00  !  42.89  !  38.99  !    --   !    --   !  44.37  !
 48.50  !  48.50  !  42.87  !  38.97  !    --   !    --   !  44.35  !
 49.00  !  49.00  !  42.85  !  38.95  !    --   !    --   !  44.33  !
 49.50  !  49.50  !  42.83  !  38.94  !    --   !    --   !  44.32  !
 50.00  !  50.00  !  42.82  !  38.92  !    --   !    --   !  44.30  !

Barrier table for segment # 2: Rail2 (day)
--------------------------------------------

Barrier ! Elev of ! Loco    ! Wheel   ! Whistle ! Whistle ! Tot Leq !
Height  ! Barr Top! dBA     ! dBA     ! left dBA!right dBA! dBA     !
--------+---------+---------+---------+---------+---------+---------+
 32.00  !  32.00  !  51.67  !  47.66  !    --   !    --   !  53.12  !
 32.50  !  32.50  !  50.43  !  46.38  !    --   !    --   !  51.87  !
 33.00  !  33.00  !  49.02  !  44.97  !    --   !    --   !  50.46  !
 33.50  !  33.50  !  47.71  !  43.67  !    --   !    --   !  49.15  !
 34.00  !  34.00  !  46.56  !  42.54  !    --   !    --   !  48.01  !
 34.50  !  34.50  !  45.57  !  41.56  !    --   !    --   !  47.02  !
 35.00  !  35.00  !  44.71  !  40.72  !    --   !    --   !  46.17  !
 35.50  !  35.50  !  43.97  !  39.98  !    --   !    --   !  45.43  !
 36.00  !  36.00  !  43.31  !  39.33  !    --   !    --   !  44.77  !
```

```
    36.50 !   36.50 !   42.72 !   38.75 !        -- !        -- !   44.18 !
```

Results segment # 1: Rail1 (night)

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
        4.00 !       32.00 !       31.52 !       31.52
        0.50 !       32.00 !       31.46 !       31.46
```

LOCOMOTIVE (0.00 + 43.54 + 0.00) = 43.54 dBA
```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -90     48   0.00  75.86 -11.95  -1.15   0.00   0.00 -19.22  43.54
----------------------------------------------------------------------
```

WHEEL (0.00 + 39.70 + 0.00) = 39.70 dBA
```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -90     48   0.00  72.03 -11.95  -1.15   0.00   0.00 -19.23  39.70
----------------------------------------------------------------------
```

Segment Leq : 45.04 dBA

Results segment # 2: Rail2 (night)

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
        4.00 !       32.00 !       31.52 !       31.52
        0.50 !       32.00 !       31.46 !       31.46
```

LOCOMOTIVE (0.00 + 57.59 + 0.00) = 57.59 dBA
```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    48     90   0.00  75.86 -11.95  -6.32   0.00   0.00  -1.75  55.85*
    48     90   0.00  75.86 -11.95  -6.32   0.00   0.00   0.00  57.59
----------------------------------------------------------------------
```

 * Bright Zone !

WHEEL (0.00 + 53.76 + 0.00) = 53.76 dBA
```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------
   48       90    0.00  72.03  -11.95   -6.32    0.00    0.00   -2.07  51.69*
   48       90    0.00  72.03  -11.95   -6.32    0.00    0.00    0.00  53.76
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 59.09 dBA

Total Leq All Segments: 59.26 dBA


Road data, segment # 1: Dundas 1 (day/night)
-----------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth       :    0.00
    Number of Years of Growth         :    0.00
    Medium Truck % of Total Volume    :    7.00
    Heavy Truck  % of Total Volume    :    5.00
    Day (16 hrs) % of Total Volume    :   90.00

Data for Segment # 1: Dundas 1 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   56.00 deg
Wood depth               :     0       (No woods.)
No of house rows         :     0 / 0
Surface                  :     2       (Reflective ground surface)
Receiver source distance : 65.00 / 65.00  m
Receiver height          : 32.00 / 32.00  m
Topography               :     2       (Flat/gentle slope; with barrier)
Barrier angle1           : -90.00 deg   Angle2 : 56.00 deg
Barrier height           : 44.00 m
Barrier receiver distance : 40.00 / 40.00  m
Source elevation         :  0.00 m
Receiver elevation       :  0.00 m
Barrier elevation        :  0.00 m
Reference angle          :  0.00


Road data, segment # 2: Dundas 2 (day/night)
-----------------------------------------------
Car traffic volume  :  1600/800   veh/TimePeriod
```

```
Medium truck volume    :    320/160    veh/TimePeriod
Heavy truck volume     :    160/80     veh/TimePeriod
Posted speed limit     :     50 km/h
Road gradient          :      0 %
Road pavement          :      1 (Typical asphalt or concrete)

Data for Segment # 2: Dundas 2 (day/night)
-----------------------------------
Angle1   Angle2          :   56.00 deg   90.00 deg
Wood depth              :      0        (No woods.)
No of house rows        :      0 / 0
Surface                 :      2        (Reflective ground surface)
Receiver source distance :  65.00 / 65.00  m
Receiver height         :   32.00 / 32.00  m
Topography              :      2        (Flat/gentle slope; with barrier)
Barrier angle1          :   56.00 deg   Angle2 : 90.00 deg
Barrier height          :   30.50 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation        :    0.00 m
Receiver elevation      :    0.00 m
Barrier elevation       :    0.00 m
Reference angle         :    0.00


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+------------+--------------
    1.50 !        32.00 !       13.23 !        13.23

ROAD (0.00 + 44.53 + 0.00) = 44.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
  -90     56   0.00  71.39   0.00  -6.37  -0.91   0.00   0.00 -19.58
44.53
------------------------------------------------------------------------
--

Segment Leq : 44.53 dBA


Results segment # 2: Dundas 2 (day)
-----------------------------------
```

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```
Source height = 1.67 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
      1.67 !        32.00 !       27.80 !        27.80

ROAD (0.00 + 40.16 + 0.00) = 40.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
    56     90   0.00  62.18   0.00  -6.37  -7.24   0.00   0.00  -8.42
40.16
------------------------------------------------------------------------
--

Segment Leq : 40.16 dBA

Total Leq All Segments: 45.88 dBA


Barrier table for segment # 1: Dundas 1 (day)
---------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !  dBA    !
--------+---------+---------+---------+
  45.50 !   45.50 !   44.50 !   44.50 !
  46.00 !   46.00 !   44.49 !   44.49 !
  46.50 !   46.50 !   44.48 !   44.48 !
  47.00 !   47.00 !   44.47 !   44.47 !
  47.50 !   47.50 !   44.46 !   44.46 !
  48.00 !   48.00 !   44.45 !   44.45 !
  48.50 !   48.50 !   44.45 !   44.45 !
  49.00 !   49.00 !   44.44 !   44.44 !
  49.50 !   49.50 !   44.43 !   44.43 !
  50.00 !   50.00 !   44.42 !   44.42 !

Barrier table for segment # 2: Dundas 2 (day)
---------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !  dBA    !
--------+---------+---------+---------+
  32.00 !   32.00 !   37.86 !   37.86 !
  32.50 !   32.50 !   37.19 !   37.19 !
  33.00 !   33.00 !   36.57 !   36.57 !
```
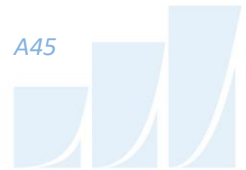
```
33.50 !    33.50 !    35.99 !    35.99 !
34.00 !    34.00 !    35.45 !    35.45 !
34.50 !    34.50 !    34.94 !    34.94 !
35.00 !    35.00 !    34.47 !    34.47 !
35.50 !    35.50 !    34.03 !    34.03 !
36.00 !    36.00 !    33.64 !    33.64 !
36.50 !    36.50 !    33.29 !    33.29 !


Results segment # 1: Dundas 1 (night)
--------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver   ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     1.50 !        32.00 !        13.23 !        13.23

ROAD (0.00 + 38.00 + 0.00) = 38.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -90     56   0.00  64.86   0.00  -6.37  -0.91   0.00   0.00 -19.58
38.00
-----------------------------------------------------------------------
--

Segment Leq : 38.00 dBA


Results segment # 2: Dundas 2 (night)
--------------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver   ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     1.67 !        32.00 !        27.80 !        27.80

ROAD (0.00 + 40.16 + 0.00) = 40.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
```

```
    56      90    0.00  62.18    0.00   -6.37  -7.24    0.00    0.00  -8.42
40.16
------------------------------------------------------------------------
--

Segment Leq : 40.16 dBA

Total Leq All Segments: 42.22 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 59.03
                        (NIGHT): 59.34
```

```
STAMSON 5.0        NORMAL REPORT        Date: 02-09-2022 09:37:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9b.te            Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail1 (day/night)
-----------------------------------------
Train           ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type            !             !(km/h) !/Train!/Train! type !weld
----------------+-------------+------+-----+------+------+----
  1. CP         ! 11.0/8.0    ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO         ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail1 (day/night)
---------------------------------------
Angle1   Angle2            : -90.00 deg   48.00 deg
Wood depth                 :     0        (No woods.)
No of house rows           :     0 / 0
Surface                    :     2        (Reflective ground surface)
Receiver source distance   : 235.00 / 235.00 m
Receiver height            :  32.00 / 32.00  m
Topography                 :     2        (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1             : -90.00 deg   Angle2 : 48.00 deg
Barrier height             :  44.00 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


Rail data, segment # 2: Rail2 (day/night)
-----------------------------------------
Train           ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type            !             !(km/h) !/Train!/Train! type !weld
----------------+-------------+------+-----+------+------+----
  1. CP         ! 11.0/8.0    ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO         ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 2: Rail2 (day/night)
---------------------------------------
Angle1   Angle2            :  48.00 deg   90.00 deg
Wood depth                 :     0        (No woods.)
No of house rows           :     0 / 0
Surface                    :     2        (Reflective ground surface)
Receiver source distance   : 235.00 / 235.00 m
Receiver height            :  32.00 / 32.00  m
Topography                 :     2        (Flat/gentle slope; with barrier)
```

```
No Whistle
Barrier angle1              :   48.00 deg   Angle2 : 90.00 deg
Barrier height             :   31.60 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: Rail1 (day)
--------------------------------

Barrier height for grazing incidence
------------------------------------
Source       ! Receiver     ! Barrier      ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !        32.00 !       31.52 !         31.52
      0.50 !        32.00 !       31.46 !         31.46

LOCOMOTIVE (0.00 + 43.11 + 0.00) = 43.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90      48   0.00  75.43 -11.95  -1.15   0.00   0.00 -19.22  43.11
---------------------------------------------------------------------


WHEEL (0.00 + 39.21 + 0.00) = 39.21 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90      48   0.00  71.54 -11.95  -1.15   0.00   0.00 -19.23  39.21
---------------------------------------------------------------------


Segment Leq : 44.59 dBA


Results segment # 2: Rail2 (day)
--------------------------------

Barrier height for grazing incidence
------------------------------------
Source       ! Receiver     ! Barrier      ! Elevation of
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !        32.00 !       31.52 !         31.52
      0.50 !        32.00 !       31.46 !         31.46

LOCOMOTIVE (0.00 + 52.15 + 0.00) = 52.15 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
    48      90   0.00  75.43 -11.95  -6.32   0.00   0.00  -5.01  52.15
```
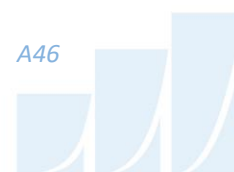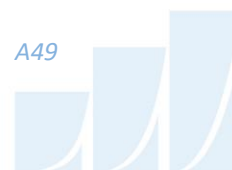
```
--------------------------------------------------------------------

WHEEL (0.00 + 48.23 + 0.00) = 48.23 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   48     90   0.00  71.54 -11.95  -6.32   0.00   0.00  -5.04  48.23
--------------------------------------------------------------------

Segment Leq : 53.63 dBA

Total Leq All Segments: 54.14 dBA

Results segment # 1: Rail1 (night)
----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     4.00 !       32.00 !       31.52 !       31.52
     0.50 !       32.00 !       31.46 !       31.46

LOCOMOTIVE (0.00 + 43.54 + 0.00) = 43.54 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90     48   0.00  75.86 -11.95  -1.15   0.00   0.00 -19.22  43.54
--------------------------------------------------------------------

WHEEL (0.00 + 39.70 + 0.00) = 39.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90     48   0.00  72.03 -11.95  -1.15   0.00   0.00 -19.23  39.70
--------------------------------------------------------------------

Segment Leq : 45.04 dBA


Results segment # 2: Rail2 (night)
----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     4.00 !       32.00 !       31.52 !       31.52
     0.50 !       32.00 !       31.46 !       31.46

LOCOMOTIVE (0.00 + 52.58 + 0.00) = 52.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```
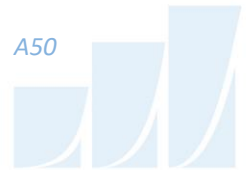
```
-------------------------------------------------------------------------
    48      90   0.00  75.86 -11.95  -6.32   0.00   0.00  -5.01  52.58
-------------------------------------------------------------------------


WHEEL (0.00 + 48.72 + 0.00) = 48.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    48      90   0.00  72.03 -11.95  -6.32   0.00   0.00  -5.04  48.72
-------------------------------------------------------------------------


Segment Leq : 54.08 dBA

Total Leq All Segments: 54.59 dBA


Road data, segment # 1: Dundas 1 (day/night)
----------------------------------------------
Car traffic volume  : 23760/2640   veh/TimePeriod  *
Medium truck volume : 1890/210   veh/TimePeriod  *
Heavy truck volume  : 1350/150   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth       :   0.00
    Number of Years of Growth         :   0.00
    Medium Truck % of Total Volume    :   7.00
    Heavy Truck  % of Total Volume    :   5.00
    Day (16 hrs) % of Total Volume    :  90.00

Data for Segment # 1: Dundas 1 (day/night)
----------------------------------------------
Angle1   Angle2          : -90.00 deg   56.00 deg
Wood depth              :     0      (No woods.)
No of house rows       :     0 / 0
Surface                :     2      (Reflective ground surface)
Receiver source distance : 65.00 / 65.00  m
Receiver height        : 32.00 / 32.00  m
Topography             :     2      (Flat/gentle slope; with barrier)
Barrier angle1         : -90.00 deg   Angle2 : 56.00 deg
Barrier height         : 44.00 m
Barrier receiver distance : 40.00 / 40.00  m
Source elevation       :   0.00 m
Receiver elevation     :   0.00 m
Barrier elevation      :   0.00 m
Reference angle        :   0.00
```

```
Road data, segment # 2: Dundas 2 (day/night)
------------------------------------------------
Car traffic volume    :  1600/800   veh/TimePeriod
Medium truck volume   :   320/160   veh/TimePeriod
Heavy truck volume    :   160/80    veh/TimePeriod
Posted speed limit    :    50 km/h
Road gradient         :     0 %
Road pavement         :     1 (Typical asphalt or concrete)


Data for Segment # 2: Dundas 2 (day/night)
------------------------------------------------
Angle1   Angle2          :  56.00 deg   90.00 deg
Wood depth              :     0        (No woods.)
No of house rows        :     0 / 0
Surface                 :     2        (Reflective ground surface)
Receiver source distance :  65.00 / 65.00  m
Receiver height         :  32.00 / 32.00  m
Topography              :     2        (Flat/gentle slope; with barrier)
Barrier angle1          :  56.00 deg   Angle2 : 90.00 deg
Barrier height          :  31.60 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation        :   0.00 m
Receiver elevation      :   0.00 m
Barrier elevation       :   0.00 m
Reference angle         :   0.00


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

Source height = 1.50 m

Barrier height for grazing incidence
--------------------------------------
Source       ! Receiver     ! Barrier       ! Elevation of
Height  (m)  ! Height  (m)  ! Height  (m)   ! Barrier Top  (m)
------------+-------------+------------+--------------
     1.50 !          32.00 !          13.23 !          13.23

ROAD (0.00 + 44.53 + 0.00) = 44.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
----------------------------------------------------------------------
--
   -90     56   0.00  71.39   0.00  -6.37  -0.91   0.00   0.00 -19.58
44.53
----------------------------------------------------------------------
--

Segment Leq : 44.53 dBA
```

```
Results segment # 2: Dundas 2 (day)
------------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+------------+--------------
     1.67 !        32.00 !        27.80 !        27.80

ROAD (0.00 + 38.43 + 0.00) = 38.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    56      90   0.00  62.18   0.00  -6.37  -7.24   0.00   0.00 -10.15
38.43
-----------------------------------------------------------------------
--

Segment Leq : 38.43 dBA

Total Leq All Segments: 45.48 dBA


Results segment # 1: Dundas 1 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+------------+--------------
     1.50 !        32.00 !        13.23 !        13.23

ROAD (0.00 + 38.00 + 0.00) = 38.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -90      56   0.00  64.86   0.00  -6.37  -0.91   0.00   0.00 -19.58
38.00
-----------------------------------------------------------------------
--

Segment Leq : 38.00 dBA
```

```
Results segment # 2: Dundas 2 (night)
---------------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
    1.67 !        32.00 !        27.80 !        27.80

ROAD (0.00 + 38.43 + 0.00) = 38.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    56     90   0.00  62.18   0.00  -6.37  -7.24   0.00   0.00 -10.15
38.43
-----------------------------------------------------------------------
--

Segment Leq : 38.43 dBA

Total Leq All Segments: 41.23 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 54.70
                          (NIGHT): 54.79
```

```
STAMSON 5.0         NORMAL REPORT         Date: 02-09-2022 09:28:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10.te                Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail1 (day/night)
------------------------------------------
Train           ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type            !             !(km/h) !/Train!/Train! type !weld
----------------+-------------+------+------+------+------+----
  1. CP         !  11.0/8.0   !  80.0 !  4.0 !164.0 !Diesel!  No
  2. GO         !  23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail1 (day/night)
----------------------------------------
Angle1   Angle2          : -90.00 deg   43.00 deg
Wood depth              :     0        (No woods.)
No of house rows        :     0 / 0
Surface                 :     2        (Reflective ground surface)
Receiver source distance : 239.00 / 239.00 m
Receiver height         :  25.70 / 25.70  m
Topography              :     2        (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1          : -90.00 deg   Angle2 : 43.00 deg
Barrier height          :  44.00 m
Barrier receiver distance :  9.00 / 9.00   m
Source elevation        :   0.00 m
Receiver elevation      :   0.00 m
Barrier elevation       :   0.00 m
Reference angle         :   0.00


Rail data, segment # 2: Rail2 (day/night)
------------------------------------------
Train           ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type            !             !(km/h) !/Train!/Train! type !weld
----------------+-------------+------+------+------+------+----
  1. CP         !  11.0/8.0   !  80.0 !  4.0 !164.0 !Diesel!  No
  2. GO         !  23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 2: Rail2 (day/night)
----------------------------------------
Angle1   Angle2          :  43.00 deg   90.00 deg
Wood depth              :     0        (No woods.)
No of house rows        :     0 / 0
Surface                 :     2        (Reflective ground surface)
Receiver source distance : 239.00 / 239.00 m
Receiver height         :  25.70 / 25.70  m
Topography              :     2        (Flat/gentle slope; with barrier)
```
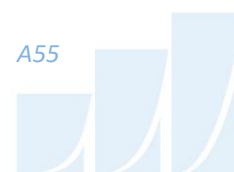
```
No Whistle
Barrier angle1              :   43.00 deg   Angle2 : 90.00 deg
Barrier height             :   24.20 m
Barrier receiver distance :   10.00 / 10.00  m
Source elevation           :    0.00 m
Receiver elevation         :    0.00 m
Barrier elevation          :    0.00 m
Reference angle            :    0.00


Results segment # 1: Rail1 (day)
--------------------------------


Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !       25.70 !      24.88 !       24.88
      0.50 !       25.70 !      24.75 !       24.75

LOCOMOTIVE (0.00 + 42.72 + 0.00) = 42.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90      43   0.00  75.43 -12.02  -1.31   0.00   0.00 -19.38  42.72
---------------------------------------------------------------------


WHEEL (0.00 + 38.82 + 0.00) = 38.82 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90      43   0.00  71.54 -12.02  -1.31   0.00   0.00 -19.39  38.82
---------------------------------------------------------------------


Segment Leq : 44.20 dBA


Results segment # 2: Rail2 (day)
--------------------------------


Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !       25.70 !      24.79 !       24.79
      0.50 !       25.70 !      24.65 !       24.65

LOCOMOTIVE (0.00 + 57.58 + 0.00) = 57.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
    43      90   0.00  75.43 -12.02  -5.83   0.00   0.00  -4.61  52.97*
```

```
     43       90    0.00   75.43  -12.02   -5.83    0.00    0.00    0.00   57.58
    ------------------------------------------------------------------

    * Bright Zone !

WHEEL (0.00 + 53.69 + 0.00) = 53.69 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj   F.Adj   W.Adj   H.Adj   B.Adj  SubLeq
    ------------------------------------------------------------------
     43       90    0.00   71.54  -12.02   -5.83    0.00    0.00   -4.79   48.90*
     43       90    0.00   71.54  -12.02   -5.83    0.00    0.00    0.00   53.69
    ------------------------------------------------------------------

    * Bright Zone !

Segment Leq : 59.07 dBA

Total Leq All Segments: 59.21 dBA


Results segment # 1: Rail1 (night)
----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m)  ! Barrier Top  (m)
------------+------------+------------+-------------
     4.00 !        25.70 !        24.88 !        24.88
     0.50 !        25.70 !        24.75 !        24.75

LOCOMOTIVE (0.00 + 43.15 + 0.00) = 43.15 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj   F.Adj   W.Adj   H.Adj   B.Adj  SubLeq
    ------------------------------------------------------------------
    -90       43    0.00   75.86  -12.02   -1.31    0.00    0.00  -19.38   43.15
    ------------------------------------------------------------------

WHEEL (0.00 + 39.31 + 0.00) = 39.31 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj   F.Adj   W.Adj   H.Adj   B.Adj  SubLeq
    ------------------------------------------------------------------
    -90       43    0.00   72.03  -12.02   -1.31    0.00    0.00  -19.39   39.31
    ------------------------------------------------------------------

Segment Leq : 44.65 dBA


Results segment # 2: Rail2 (night)
----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
```

```
     Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
     -----------+-------------+------------+-------------
         4.00 !        25.70 !        24.79 !        24.79
         0.50 !        25.70 !        24.65 !        24.65


LOCOMOTIVE (0.00 + 58.01 + 0.00) = 58.01 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
    43      90   0.00  75.86 -12.02  -5.83   0.00   0.00  -4.61  53.40*
    43      90   0.00  75.86 -12.02  -5.83   0.00   0.00   0.00  58.01
----------------------------------------------------------------------

 * Bright Zone !

WHEEL (0.00 + 54.18 + 0.00) = 54.18 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj  SubLeq
----------------------------------------------------------------------
    43      90   0.00  72.03 -12.02  -5.83   0.00   0.00  -4.79  49.39*
    43      90   0.00  72.03 -12.02  -5.83   0.00   0.00   0.00  54.18
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 59.51 dBA

Total Leq All Segments: 59.65 dBA


Road data, segment # 1: Dundas 1 (day/night)
---------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Dundas 1 (day/night)
---------------------------------------------
Angle1   Angle2            : -90.00 deg   52.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
```

```
Surface                       :        2         (Reflective ground surface)
Receiver source distance : 70.00 / 70.00   m
Receiver height            : 25.70 / 25.70   m
Topography                 :        2         (Flat/gentle slope; with barrier)
Barrier angle1             : -90.00 deg   Angle2 : 52.00 deg
Barrier height             :   44.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation           :    0.00 m
Receiver elevation         :    0.00 m
Barrier elevation          :    0.00 m
Reference angle            :    0.00


Road data, segment # 2: Dundas 2 (day/night)
----------------------------------------------
Car traffic volume   :  1600/800    veh/TimePeriod
Medium truck volume  :   320/160    veh/TimePeriod
Heavy truck volume   :   160/80     veh/TimePeriod
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

Data for Segment # 2: Dundas 2 (day/night)
---------------------------------------------
Angle1   Angle2        : 52.00 deg   90.00 deg
Wood depth                 :     0         (No woods.)
No of house rows           :     0 / 0
Surface                    :     2         (Reflective ground surface)
Receiver source distance : 70.00 / 70.00   m
Receiver height            : 25.70 / 25.70   m
Topography                 :     2         (Flat/gentle slope; with barrier)
Barrier angle1             : 52.00 deg   Angle2 : 90.00 deg
Barrier height             : 24.30 m
Barrier receiver distance : 10.00 / 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: Dundas 1 (day)
------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
--------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m)  ! Barrier Top  (m)
------------+-------------+-------------+--------------
     1.50 !        25.70 !       22.59 !        22.59
```

```
ROAD (0.00 + 44.08 + 0.00) = 44.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------------
--
   -90     52   0.00  71.39   0.00  -6.69  -1.03   0.00   0.00 -19.60
44.08
------------------------------------------------------------------------------
--

Segment Leq : 44.08 dBA


Results segment # 2: Dundas 2 (day)
-----------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     1.67 !        25.70 !        22.27 !        22.27

ROAD (0.00 + 41.25 + 0.00) = 41.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------------
--
    52     90   0.00  62.18   0.00  -6.69  -6.75   0.00   0.00  -7.48
41.25
------------------------------------------------------------------------------
--

Segment Leq : 41.25 dBA

Total Leq All Segments: 45.90 dBA


Results segment # 1: Dundas 1 (night)
-------------------------------------

Source height = 1.50 m

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

```
         1.50 !          25.70 !          22.59 !            22.59

ROAD (0.00 + 37.54 + 0.00) = 37.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------
--
   -90     52   0.00  64.86   0.00  -6.69  -1.03   0.00   0.00 -19.60
37.54
--------------------------------------------------------------------
--

Segment Leq : 37.54 dBA


Results segment # 2: Dundas 2 (night)
--------------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m)  ! Barrier Top  (m)
------------+------------+------------+--------------
      1.67 !          25.70 !          22.27 !            22.27

ROAD (0.00 + 41.25 + 0.00) = 41.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------
--
    52     90   0.00  62.18   0.00  -6.69  -6.75   0.00   0.00  -7.48
41.25
--------------------------------------------------------------------
--

Segment Leq : 41.25 dBA

Total Leq All Segments: 42.79 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 59.41
                          (NIGHT): 59.74
```

STAMSON 5.0   NORMAL REPORT   Date: 02-09-2022 09:36:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10b.te   Time Period: Day/Night 16/8 hours
Description:

Rail data, segment # 1: Rail1 (day/night)

Train   ! Trains   ! Speed !# loc !# Cars! Eng !Cont
Type   !   !(km/h) !/Train!/Train! type !weld
----------------+-------------+------+-----+------+------+----
  1. CP   ! 11.0/8.0   ! 80.0 ! 8.0 !164.0 !Diesel! No
  2. GO   ! 23.0/0.0   ! 113.0 ! 1.0 ! 13.0 !Diesel! No

Data for Segment # 1: Rail1 (day/night)

Angle1   Angle2   : -90.00 deg   43.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   0 / 0
Surface   :   2   (Reflective ground surface)
Receiver source distance : 239.00 / 239.00 m
Receiver height   : 25.70 / 25.70 m
Topography   :   2   (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1   : -90.00 deg   Angle2 : 43.00 deg
Barrier height   : 44.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation   :   0.00 m
Receiver elevation   :   0.00 m
Barrier elevation   :   0.00 m
Reference angle   :   0.00

Rail data, segment # 2: Rail2 (day/night)

Train   ! Trains   ! Speed !# loc !# Cars! Eng !Cont
Type   !   !(km/h) !/Train!/Train! type !weld
----------------+-------------+------+-----+------+------+----
  1. CP   ! 11.0/8.0   ! 80.0 ! 4.0 !164.0 !Diesel! No
  2. GO   ! 23.0/0.0   ! 113.0 ! 1.0 ! 13.0 !Diesel! No

Data for Segment # 2: Rail2 (day/night)

Angle1   Angle2   : 43.00 deg   90.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   0 / 0
Surface   :   2   (Reflective ground surface)
Receiver source distance : 239.00 / 239.00 m
Receiver height   : 25.70 / 25.70 m
Topography   :   2   (Flat/gentle slope; with barrier)

```
No Whistle
Barrier angle1              :   43.00 deg    Angle2 : 90.00 deg
Barrier height             :   25.40 m
Barrier receiver distance :   10.00 / 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: Rail1 (day)
--------------------------------


Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !       25.70 !       24.88 !       24.88
      0.50 !       25.70 !       24.75 !       24.75

LOCOMOTIVE (0.00 + 42.67 + 0.00) = 42.67 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   -90     43   0.00  75.38 -12.02  -1.31   0.00   0.00 -19.38  42.67
--------------------------------------------------------------------


WHEEL (0.00 + 38.90 + 0.00) = 38.90 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   -90     43   0.00  71.62 -12.02  -1.31   0.00   0.00 -19.39  38.90
--------------------------------------------------------------------


Segment Leq : 44.19 dBA


Results segment # 2: Rail2 (day)
--------------------------------


Barrier height for grazing incidence
------------------------------------
Source       ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      4.00 !       25.70 !       24.79 !       24.79
      0.50 !       25.70 !       24.65 !       24.65

LOCOMOTIVE (0.00 + 52.20 + 0.00) = 52.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
    43     90   0.00  75.43 -12.02  -5.83   0.00   0.00  -5.37  52.20
```
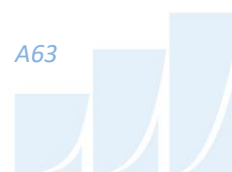
```
--------------------------------------------------------------------

WHEEL (0.00 + 48.13 + 0.00) = 48.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
   43     90   0.00  71.54 -12.02  -5.83   0.00   0.00  -5.56  48.13
--------------------------------------------------------------------

Segment Leq : 53.64 dBA

Total Leq All Segments: 54.11 dBA


Results segment # 1: Rail1 (night)
-----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m)  ! Barrier Top   (m)
------------+------------+------------+-------------
     4.00 !        25.70 !       24.88 !        24.88
     0.50 !        25.70 !       24.75 !        24.75

LOCOMOTIVE (0.00 + 43.08 + 0.00) = 43.08 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90     43   0.00  75.80 -12.02  -1.31   0.00   0.00 -19.38  43.08
--------------------------------------------------------------------

WHEEL (0.00 + 39.41 + 0.00) = 39.41 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90     43   0.00  72.14 -12.02  -1.31   0.00   0.00 -19.39  39.41
--------------------------------------------------------------------

Segment Leq : 44.63 dBA


Results segment # 2: Rail2 (night)
-----------------------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m)  ! Barrier Top   (m)
------------+------------+------------+-------------
     4.00 !        25.70 !       24.79 !        24.79
     0.50 !        25.70 !       24.65 !        24.65

LOCOMOTIVE (0.00 + 52.64 + 0.00) = 52.64 dBA
```
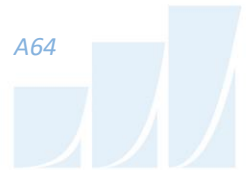
```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    43     90   0.00  75.86 -12.02  -5.83   0.00   0.00  -5.37  52.64
----------------------------------------------------------------------


WHEEL (0.00 + 48.62 + 0.00) = 48.62 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    43     90   0.00  72.03 -12.02  -5.83   0.00   0.00  -5.56  48.62
----------------------------------------------------------------------


Segment Leq : 54.09 dBA

Total Leq All Segments: 54.56 dBA


Road data, segment # 1: Dundas 1 (day/night)
---------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth       :    0.00
    Number of Years of Growth         :    0.00
    Medium Truck % of Total Volume    :    7.00
    Heavy Truck  % of Total Volume    :    5.00
    Day (16 hrs) % of Total Volume    :   90.00

Data for Segment # 1: Dundas 1 (day/night)
---------------------------------------------
Angle1    Angle2          : -90.00 deg   52.00 deg
Wood depth                :      0      (No woods.)
No of house rows          :      0 / 0
Surface                   :      2      (Reflective ground surface)
Receiver source distance  :  70.00 / 70.00  m
Receiver height           :  25.70 / 25.70  m
Topography                :      2      (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 52.00 deg
Barrier height            :  44.00 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Dundas 2 (day/night)
-----------------------------------------------
Car traffic volume    :  1600/800   veh/TimePeriod
Medium truck volume   :   320/160   veh/TimePeriod
Heavy truck volume    :   160/80    veh/TimePeriod
Posted speed limit    :    50 km/h
Road gradient         :     0 %
Road pavement         :     1 (Typical asphalt or concrete)

Data for Segment # 2: Dundas 2 (day/night)
-----------------------------------------------
Angle1   Angle2          :  52.00 deg   90.00 deg
Wood depth              :     0      (No woods.)
No of house rows        :     0 / 0
Surface                 :     2      (Reflective ground surface)
Receiver source distance :  70.00 / 70.00  m
Receiver height         :  25.70 / 25.70  m
Topography              :     2      (Flat/gentle slope; with barrier)
Barrier angle1          :  52.00 deg   Angle2 : 90.00 deg
Barrier height          :  25.40 m
Barrier receiver distance :  10.00 / 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: Dundas 1 (day)
------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
    1.50 !        25.70 !      22.59 !        22.59

ROAD (0.00 + 44.08 + 0.00) = 44.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
   -90     52   0.00  71.39   0.00  -6.69  -1.03   0.00   0.00 -19.60
44.08
------------------------------------------------------------------------
--

Segment Leq : 44.08 dBA
```

```
Results segment # 2: Dundas 2 (day)
-------------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     1.67 !        25.70 !        22.27 !        22.27

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
----------------------------------------------------------------------
--
    52      90   0.00  62.18   0.00  -6.69  -6.75   0.00   0.00  -9.37
39.36
----------------------------------------------------------------------
--

Segment Leq : 39.36 dBA

Total Leq All Segments: 45.34 dBA


Results segment # 1: Dundas 1 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+-------------
     1.50 !        25.70 !        22.59 !        22.59

ROAD (0.00 + 37.54 + 0.00) = 37.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
----------------------------------------------------------------------
--
   -90      52   0.00  64.86   0.00  -6.69  -1.03   0.00   0.00 -19.60
37.54
----------------------------------------------------------------------
--
```

```
Segment Leq : 37.54 dBA


Results segment # 2: Dundas 2 (night)
--------------------------------------

Source height = 1.67 m

Barrier height for grazing incidence
--------------------------------------
Source      ! Receiver    ! Barrier      ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+------------+------------+--------------
      1.67 !        25.70 !       22.27 !        22.27

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
------------------------------------------------------------------------
--
    52     90   0.00  62.18   0.00  -6.69  -6.75   0.00   0.00  -9.37
39.36
------------------------------------------------------------------------
--

Segment Leq : 39.36 dBA

Total Leq All Segments: 41.55 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 54.65
                          (NIGHT): 54.77
```

```
STAMSON 5.0          SUMMARY REPORT        Date: 02-09-2022 09:40:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11.te                  Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
----------------------------------------
Train             ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type              !             !(km/h) !/Train!/Train! type !weld
----------------+-----------+------+-----+-----+-----+---
  1. CP          ! 11.0/8.0   ! 80.0 ! 4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0   ! 80.0 ! 4.0 !164.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
--------------------------------------
Angle1   Angle2         : -90.00 deg   90.00 deg
Wood depth             :      0       (No woods.)
No of house rows       :      0 / 0
Surface                :      2       (Reflective ground surface)
Receiver source distance : 226.00 / 226.00 m
Receiver height        :   6.50 / 6.50   m
Topography             :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1         : -90.00 deg   Angle2 : 90.00 deg
Barrier height         :  44.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation       :   0.00 m
Receiver elevation     :   0.00 m
Barrier elevation      :   0.00 m
Reference angle        :   0.00


Result summary (day)
--------------------

                   !  Loc   !  Wheel  ! Whistle  ! Whistle  !  Total
                   !  Leq   !   Leq   ! Left Leq ! Right Leq!   Leq
                   ! (dBA)  !  (dBA)  !  (dBA)   !  (dBA)   !  (dBA)
-------------------+--------+--------+--------+--------+--------
 1.Rail            !  47.70 !   43.87 !    -- !    -- !   49.20
*
-------------------+--------+--------+--------+--------+--------
                Total                                      49.20
dBA

  * Bright Zone  !
```

Result summary (night)

```
                 !  Loc    !  Wheel  ! Whistle  ! Whistle  ! Total
                 !  Leq    !  Leq    ! Left Leq ! Right Leq!  Leq
                 ! (dBA)   ! (dBA)   ! (dBA)    ! (dBA)    ! (dBA)
-------------------+---------+---------+---------+---------+---------
 1.Rail          !  44.43 !   40.59 !     -- !       -- !   45.93
*
-------------------+---------+---------+---------+---------+---------
                 Total                                      45.93
dBA
```

   * Bright Zone !

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

Car traffic volume : 23760/2640 veh/TimePeriod *
Medium truck volume : 1890/210   veh/TimePeriod *
Heavy truck volume : 1350/150   veh/TimePeriod *
Posted speed limit :   50 km/h
Road gradient   :   0 %
Road pavement   :   1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT): 30000
    Percentage of Annual Growth   :   0.00
    Number of Years of Growth   :   0.00
    Medium Truck % of Total Volume   :   7.00
    Heavy Truck % of Total Volume   :   5.00
    Day (16 hrs) % of Total Volume   : 90.00

Data for Segment # 1: Dundas (day/night)

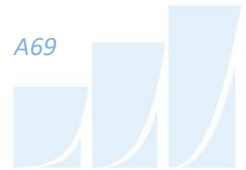Angle1   Angle2   : -90.00 deg   90.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   0 / 0
Surface   :   2   (Reflective ground surface)
Receiver source distance : 50.00 / 50.00 m
Receiver height   :   6.50 / 6.50   m
Topography   :   2   (Flat/gentle slope; with barrier)
Barrier angle1   : -90.00 deg   Angle2 : 90.00 deg
Barrier height   : 44.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation   :   0.00 m
Receiver elevation   :   0.00 m
Barrier elevation   :   0.00 m
Reference angle   :   0.00
```

## GRADIENTWIND
ENGINEERS & SCIENTISTS

Result summary (day)
--------------------

```
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Dundas           !   1.50  !   46.43  !   46.43
--------------------+---------+---------+---------
                    Total                   46.43 dBA
```

Result summary (night)

```
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Dundas           !   1.50  !   39.90  !   39.90
--------------------+---------+---------+---------
                    Total                   39.90 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 51.04
                          (NIGHT): 46.90

```
STAMSON 5.0         SUMMARY REPORT         Date: 02-09-2022 09:42:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12.te                Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
-----------------------------------------
Train            ! Trains     ! Speed !# loc !# Cars! Eng  !Cont
Type             !            !(km/h) !/Train!/Train! type !weld
-----------------+-----------+------+-----+-----+-----+---
  1. CP          ! 11.0/8.0   ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0   ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
-----------------------------------------
Angle1   Angle2          : -90.00 deg   90.00 deg
Wood depth              :      0        (No woods.)
No of house rows        :      0 / 0
Surface                 :      2        (Reflective ground surface)
Receiver source distance : 250.00 / 250.00 m
Receiver height         :  32.00 / 32.00  m
Topography              :      2        (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1          : -90.00 deg   Angle2 : 90.00 deg
Barrier height          :  44.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation        :   0.00 m
Receiver elevation      :   0.00 m
Barrier elevation       :   0.00 m
Reference angle         :   0.00
```

```
Result summary (day)
--------------------

                     !  Loc   !  Wheel  ! Whistle  ! Whistle  !  Total
                     !  Leq   !   Leq   ! Left Leq ! Right Leq!   Leq
                     !  (dBA) !  (dBA)  !  (dBA)   !  (dBA)   !  (dBA)
-------------------+---------+---------+---------+---------+---------
 1.Rail              !   45.65 !   41.66 !     -- !      -- !   47.11
*
-------------------+---------+---------+---------+---------+---------
                     Total                                        47.11
dBA

   * Bright Zone  !


Result summary (night)
----------------------

                     !  Loc   !  Wheel  ! Whistle  ! Whistle  !  Total
                     !  Leq   !   Leq   ! Left Leq ! Right Leq!   Leq
                     !  (dBA) !  (dBA)  !  (dBA)   !  (dBA)   !  (dBA)
-------------------+---------+---------+---------+---------+---------
 1.Rail              !   46.08 !   42.15 !     -- !      -- !   47.56
*
-------------------+---------+---------+---------+---------+---------
                     Total                                        47.56
dBA

   * Bright Zone  !


Road data, segment # 1: Dundas (day/night)
------------------------------------------
Car traffic volume  : 23760/2640  veh/TimePeriod  *
Medium truck volume :  1890/210   veh/TimePeriod  *
Heavy truck volume  :  1350/150   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Dundas (day/night)
```

```
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth               :      0        (No woods.)
No of house rows         :      0 / 0
Surface                  :      2        (Reflective ground surface)
Receiver source distance :  68.00 / 68.00  m
Receiver height          :  32.00 / 32.00  m
Topography               :      2        (Flat/gentle slope; with barrier)
Barrier angle1           : -90.00 deg   Angle2 : 90.00 deg
Barrier height           :  44.00 m
Barrier receiver distance :  44.00 / 44.00  m
Source elevation         :   0.00 m
Receiver elevation       :   0.00 m
Barrier elevation        :   0.00 m
Reference angle          :   0.00


Road data, segment # 2: Haines (day/night)
-------------------------------------------
Car traffic volume   :  6336/704   veh/TimePeriod  *
Medium truck volume  :   504/56    veh/TimePeriod  *
Heavy truck volume   :   360/40    veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth      :    0.00
    Number of Years of Growth        :    0.00
    Medium Truck % of Total Volume   :    7.00
    Heavy Truck  % of Total Volume   :    5.00
    Day (16 hrs) % of Total Volume   :   90.00

Data for Segment # 2: Haines (day/night)
-------------------------------------------
Angle1   Angle2           : -51.00 deg   10.00 deg
Wood depth               :      0        (No woods.)
No of house rows         :      0 / 0
Surface                  :      2        (Reflective ground surface)
Receiver source distance :  33.00 / 33.00  m
Receiver height          :  32.00 / 32.00  m
Topography               :      2        (Flat/gentle slope; with barrier)
Barrier angle1           : -51.00 deg   Angle2 : 10.00 deg
Barrier height           :  30.50 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation         :   0.00 m
Receiver elevation       :   0.00 m
Barrier elevation        :   0.00 m
Reference angle          :   0.00
```

Result summary (day)

```
                    !  source  !  Road   !  Total
                    !  height  !  Leq    !   Leq
                    !   (m)    !  (dBA)  !  (dBA)
-------------------+---------+--------+---------
  1.Dundas         !   1.50   !  45.47  !   45.47
  2.Haines         !   1.50   !  37.63  !   37.63
-------------------+---------+--------+---------
              Total                        46.13 dBA
```

Result summary (night)

```
                    !  source  !  Road   !  Total
                    !  height  !  Leq    !   Leq
                    !   (m)    !  (dBA)  !  (dBA)
-------------------+---------+---------+---------
  1.Dundas         !   1.50   !  38.94  !   38.94
  2.Haines         !   1.50   !  31.10  !   31.10
-------------------+---------+---------+---------
              Total                        39.60 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 49.66
                          (NIGHT): 48.20

STAMSON 5.0        SUMMARY REPORT       Date: 02-09-2022 09:45:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13.te                Time Period: Day/Night 16/8 hours
Description:
```

Rail data, segment # 1: Rail (day/night)

```
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
  1. CP          ! 11.0/8.0    ! 80.0  !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No
```

Data for Segment # 1: Rail (day/night)

```
Angle1   Angle2            : -90.00 deg   90.00 deg
```

```
Wood depth                  :       0        (No woods.)
No of house rows            :       0 / 0
Surface                     :       2        (Reflective ground surface)
Receiver source distance    : 255.00 / 255.00 m
Receiver height             :  25.00 / 25.70  m
Topography                  :       2        (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1              : -90.00 deg   Angle2 : 90.00 deg
Barrier height              :  44.00 m
Barrier receiver distance   :  49.00 / 49.00  m
Source elevation            :   0.00 m
Receiver elevation          :   0.00 m
Barrier elevation           :   0.00 m
Reference angle             :   0.00


Result summary (day)
--------------------


                      !  Loc    !  Wheel  ! Whistle  ! Whistle  !  Total
                      !  Leq    !   Leq   ! Left Leq ! Right Leq!   Leq
                      !  (dBA)  !  (dBA)  !  (dBA)   !  (dBA)   !  (dBA)
-------------------+---------+---------+---------+---------+---------
-
 1.Rail               !   44.84 !   40.87 !    -- !      -- !    46.30
*
-------------------+---------+---------+---------+---------+---------
-
                   Total                                         46.30
dBA

  * Bright Zone  !


Barrier table for segment # 1: Rail (day)
-----------------------------------------

Barrier ! Elev of ! Loco    ! Wheel   ! Whistle ! Whistle ! Tot Leq !
Height  ! Barr Top! dBA     ! dBA     ! left dBA!right dBA!  dBA    !
--------+---------+---------+---------+---------+---------+---------+
  45.50 !   45.50 !  44.67  !  40.72  !    -- !     -- !   46.14 !
  46.00 !   46.00 !  44.62  !  40.67  !    -- !     -- !   46.09 !
  46.50 !   46.50 !  44.57  !  40.62  !    -- !     -- !   46.04 !
  47.00 !   47.00 !  44.53  !  40.58  !    -- !     -- !   46.00 !
  47.50 !   47.50 !  44.49  !  40.54  !    -- !     -- !   45.96 !
  48.00 !   48.00 !  44.44  !  40.50  !    -- !     -- !   45.91 !
  48.50 !   48.50 !  44.40  !  40.46  !    -- !     -- !   45.87 !
  49.00 !   49.00 !  44.37  !  40.43  !    -- !     -- !   45.84 !
  49.50 !   49.50 !  44.33  !  40.40  !    -- !     -- !   45.81 !
  50.00 !   50.00 !  44.30  !  40.36  !    -- !     -- !   45.77 !
```

```
Result summary (night)
----------------------

                       !  Loc    !  Wheel   !  Whistle  !  Whistle  !  Total
                       !  Leq    !   Leq    ! Left Leq  ! Right Leq!   Leq
                       !  (dBA)  !  (dBA)   !  (dBA)    !  (dBA)    !  (dBA)
-------------------+---------+---------+----------+----------+---------
-
 1.Rail                !   45.34 !   41.43 !     -- !      -- !    46.82
*
-------------------+---------+---------+----------+----------+---------
-
                    Total                                           46.82
dBA

  * Bright Zone  !


Road data, segment # 1: Dundas (day/night)
------------------------------------------
Car traffic volume  : 23760/2640  veh/TimePeriod  *
Medium truck volume : 1890/210   veh/TimePeriod  *
Heavy truck volume  : 1350/150   veh/TimePeriod  *
Posted speed limit  :   50 km/h
Road gradient       :    0 %
Road pavement       :    1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth       :   0.00
    Number of Years of Growth         :   0.00
    Medium Truck % of Total Volume    :   7.00
    Heavy Truck  % of Total Volume    :   5.00
    Day (16 hrs) % of Total Volume    :  90.00

Data for Segment # 1: Dundas (day/night)
----------------------------------------
Angle1   Angle2        : -90.00 deg   90.00 deg
Wood depth             :    0       (No woods.)
No of house rows       :    0 / 0
Surface                :    2       (Reflective ground surface)
Receiver source distance : 73.00 / 73.00  m
Receiver height        : 25.70 / 25.70  m
Topography             :    2       (Flat/gentle slope; with barrier)
Barrier angle1         : -90.00 deg   Angle2 : 90.00 deg
Barrier height         :  49.00 m
Barrier receiver distance : 44.00 / 44.00  m
Source elevation       :   0.00 m
Receiver elevation     :   0.00 m
```

```
Barrier elevation            :    0.00 m
Reference angle              :    0.00


Road data, segment # 2: Haines (day/night)
---------------------------------------------
Car traffic volume   :  6336/704   veh/TimePeriod  *
Medium truck volume  :   504/56    veh/TimePeriod  *
Heavy truck volume   :   360/40    veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth      :    0.00
    Number of Years of Growth        :    0.00
    Medium Truck % of Total Volume   :    7.00
    Heavy Truck  % of Total Volume   :    5.00
    Day (16 hrs) % of Total Volume   :   90.00

Data for Segment # 2: Haines (day/night)
-----------------------------------------
Angle1   Angle2          : -48.00 deg   10.00 deg
Wood depth              :     0       (No woods.)
No of house rows       :     0 / 0
Surface                :     2       (Reflective ground surface)
Receiver source distance : 31.00 / 31.00  m
Receiver height        : 25.70 / 25.70  m
Topography             :     2       (Flat/gentle slope; with barrier)
Barrier angle1         : -48.00 deg   Angle2 : 10.00 deg
Barrier height         : 24.20 m
Barrier receiver distance : 10.00 / 10.00  m
Source elevation       :    0.00 m
Receiver elevation     :    0.00 m
Barrier elevation      :    0.00 m
Reference angle        :    0.00
```

```
Result summary (day)
--------------------

                        !  source  !   Road   !  Total
                        !  height  !   Leq    !   Leq
                        !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+----------
  1.Dundas              !    1.50  !   44.98  !   44.98
  2.Haines              !    1.50  !   38.12  !   38.12
--------------------+---------+---------+----------
                        Total                    45.79 dBA


Barrier table for segment # 1: Dundas (day)
-------------------------------------------

Barrier ! Elev of ! Road    ! Tot Leq !
Height  ! Barr Top! dBA     !  dBA    !
--------+---------+---------+---------+
  50.50 !   50.50 !  44.95  !  44.95  !
  51.00 !   51.00 !  44.94  !  44.94  !
  51.50 !   51.50 !  44.93  !  44.93  !
  52.00 !   52.00 !  44.92  !  44.92  !
  52.50 !   52.50 !  44.92  !  44.92  !
  53.00 !   53.00 !  44.91  !  44.91  !
  53.50 !   53.50 !  44.90  !  44.90  !
  54.00 !   54.00 !  44.89  !  44.89  !
  54.50 !   54.50 !  44.89  !  44.89  !
  55.00 !   55.00 !  44.88  !  44.88  !

Barrier table for segment # 2: Haines (day)
-------------------------------------------

Barrier ! Elev of ! Road    ! Tot Leq !
Height  ! Barr Top! dBA     !  dBA    !
--------+---------+---------+---------+
  25.70 !   25.70 !  37.58  !  37.58  !
  26.20 !   26.20 !  37.58  !  37.58  !
  26.70 !   26.70 !  37.58  !  37.58  !
  27.20 !   27.20 !  37.58  !  37.58  !
  27.70 !   27.70 !  37.58  !  37.58  !
  28.20 !   28.20 !  37.58  !  37.58  !
  28.70 !   28.70 !  37.58  !  37.58  !
  29.20 !   29.20 !  37.58  !  37.58  !
  29.70 !   29.70 !  37.58  !  37.58  !
  30.20 !   30.20 !  37.58  !  37.58  !

Result summary (night)
----------------------

                        !  source  !   Road   !  Total
```

```
                    ! height !   Leq   !   Leq
                    !  (m)   !  (dBA)  !  (dBA)
--------------------+---------+---------+----------
  1.Dundas          !  1.50  !  38.45  !   38.45
  2.Haines          !  1.50  !  31.58  !   31.58
--------------------+---------+---------+----------
                    Total                 39.26 dBA
```

TOTAL Leq FROM ALL SOURCES (DAY): 49.06
                          (NIGHT): 47.52

STAMSON 5.0   SUMMARY REPORT   Date: 02-09-2022 09:45:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14.te   Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume   : 6336/704   veh/TimePeriod *
Medium truck volume :   504/56   veh/TimePeriod *
Heavy truck volume   :   360/40   veh/TimePeriod *
Posted speed limit   :   50 km/h
Road gradient   :   0 %
Road pavement   :   1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth   :   0.00
    Number of Years of Growth   :   0.00
    Medium Truck % of Total Volume   :   7.00
    Heavy Truck % of Total Volume   :   5.00
    Day (16 hrs) % of Total Volume   :   90.00

Data for Segment # 1: Haines (day/night)

Angle1   Angle2   : -32.00 deg   6.00 deg
Wood depth   :   0   (No woods.)
No of house rows   :   0 / 0
Surface   :   2   (Reflective ground surface)
Receiver source distance : 27.00 / 27.00 m
Receiver height   :   1.50 / 1.50   m
Topography   :   1   (Flat/gentle slope; no barrier)
Reference angle   :   0.00
```
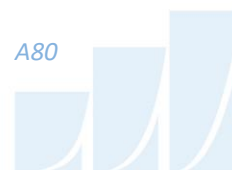
```
Result summary (day)

                    ! source ! Road   ! Total
                    ! height ! Leq   ! Leq
                    !   (m)   ! (dBA) ! (dBA)
--------------------+---------+---------+---------
 1.Haines   !   1.50 ! 56.35 ! 56.35
--------------------+---------+---------+---------
                    Total   56.35 dBA

Result summary (night)

                    ! source ! Road   ! Total
                    ! height ! Leq   ! Leq
                    !   (m)   ! (dBA) ! (dBA)
--------------------+---------+---------+---------
 1.Haines   !   1.50 ! 49.81 ! 49.81
--------------------+---------+---------+---------
                    Total   49.81 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.35
                         (NIGHT): 49.81
```

```
STAMSON 5.0          NORMAL REPORT          Date: 02-09-2022 09:49:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14b.te                 Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Haines (day/night)
-------------------------------------------
Car traffic volume   :  6336/704   veh/TimePeriod  *
Medium truck volume  :   504/56    veh/TimePeriod  *
Heavy truck volume   :   360/40    veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)


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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth      :    0.00
    Number of Years of Growth        :    0.00
    Medium Truck % of Total Volume   :    7.00
    Heavy Truck  % of Total Volume   :    5.00
    Day (16 hrs) % of Total Volume   :   90.00

Data for Segment # 1: Haines (day/night)
----------------------------------------
Angle1   Angle2        : -32.00 deg   6.00 deg
Wood depth            :     0      (No woods.)
No of house rows      :     0 / 0
Surface               :     2      (Reflective ground surface)
Receiver source distance :  27.00 / 27.00  m
Receiver height       :   1.50 / 1.50   m
Topography            :     2      (Flat/gentle slope; with barrier)
Barrier angle1        : -32.00 deg   Angle2 : 6.00 deg
Barrier height        :   2.20 m
Barrier receiver distance :  10.00 / 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: Haines (day)
---------------------------------


Source height = 1.50 m


Barrier height for grazing incidence
------------------------------------
```

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

ROAD (0.00 + 49.63 + 0.00) = 49.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -32      6   0.00  65.65   0.00  -2.55  -6.75   0.00   0.00  -6.71
49.63
-----------------------------------------------------------------------
--

Segment Leq : 49.63 dBA

Total Leq All Segments: 49.63 dBA


Barrier table for segment # 1: Haines (day)
----------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top! dBA     !  dBA    !
--------+---------+---------+---------+
   3.70 !    3.70 !   43.01 !   43.01 !
   4.20 !    4.20 !   41.32 !   41.32 !
   4.70 !    4.70 !   39.89 !   39.89 !
   5.20 !    5.20 !   38.66 !   38.66 !
   5.70 !    5.70 !   37.59 !   37.59 !
   6.20 !    6.20 !   36.65 !   36.65 !
   6.70 !    6.70 !   36.35 !   36.35 !
   7.20 !    7.20 !   36.35 !   36.35 !
   7.70 !    7.70 !   36.35 !   36.35 !
   8.20 !    8.20 !   36.35 !   36.35 !


Results segment # 1: Haines (night)
-----------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 43.10 + 0.00) = 43.10 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------
--
   -32      6  0.00  59.12   0.00  -2.55  -6.75   0.00   0.00  -6.71
43.10
---------------------------------------------------------------------
--

Segment Leq : 43.10 dBA

Total Leq All Segments: 43.10 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 49.63
                         (NIGHT): 43.10
```

```
STAMSON 5.0        NORMAL REPORT        Date: 02-09-2022 09:54:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15.te               Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
-----------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
  1. CP          ! 11.0/8.0    ! 80.0  !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
---------------------------------------
Angle1   Angle2          : -90.00 deg   -66.00 deg
Wood depth              :      0       (No woods.)
No of house rows        :      0 / 0
Surface                 :      2       (Reflective ground surface)
Receiver source distance : 273.00 / 273.00 m
Receiver height         :   1.50 / 1.50   m
Topography              :      1       (Flat/gentle slope; no barrier)
No Whistle
Reference angle         :   0.00


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


LOCOMOTIVE (0.00 + 54.08 + 0.00) = 54.08 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90    -66   0.00  75.43 -12.60  -8.75   0.00   0.00   0.00  54.08
--------------------------------------------------------------------

WHEEL (0.00 + 50.19 + 0.00) = 50.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------
  -90    -66   0.00  71.54 -12.60  -8.75   0.00   0.00   0.00  50.19
--------------------------------------------------------------------

Segment Leq : 55.57 dBA

Total Leq All Segments: 55.57 dBA


Results segment # 1: Rail (night)
---------------------------------
```
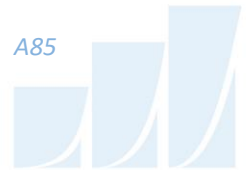
```
LOCOMOTIVE (0.00 + 54.51 + 0.00) = 54.51 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90    -66   0.00  75.86 -12.60  -8.75   0.00   0.00   0.00  54.51
---------------------------------------------------------------------

WHEEL (0.00 + 50.68 + 0.00) = 50.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
  -90    -66   0.00  72.03 -12.60  -8.75   0.00   0.00   0.00  50.68
---------------------------------------------------------------------

Segment Leq : 56.01 dBA

Total Leq All Segments: 56.01 dBA


Road data, segment # 1: Dundas (day/night)
-------------------------------------------
Car traffic volume   : 23760/2640  veh/TimePeriod  *
Medium truck volume  :  1890/210   veh/TimePeriod  *
Heavy truck volume   :  1350/150   veh/TimePeriod  *
Posted speed limit   :    50 km/h
Road gradient        :     0 %
Road pavement        :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Dundas (day/night)
----------------------------------------
Angle1   Angle2        : -90.00 deg   -66.00 deg
Wood depth            :      0       (No woods.)
No of house rows      :      0 / 0
Surface               :      2       (Reflective ground surface)
Receiver source distance : 104.00 / 104.00 m
Receiver height       :    1.50 / 1.50   m
Topography            :      1       (Flat/gentle slope; no barrier)
Reference angle       :    0.00


Results segment # 1: Dundas (day)
---------------------------------
```

```
Source height = 1.50 m

ROAD (0.00 + 54.23 + 0.00) = 54.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -90    -66   0.00  71.39   0.00  -8.41  -8.75   0.00   0.00   0.00
54.23
-----------------------------------------------------------------------
--

Segment Leq : 54.23 dBA

Total Leq All Segments: 54.23 dBA


Results segment # 1: Dundas (night)
------------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.70 + 0.00) = 47.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -90    -66   0.00  64.86   0.00  -8.41  -8.75   0.00   0.00   0.00
47.70
-----------------------------------------------------------------------
--

Segment Leq : 47.70 dBA

Total Leq All Segments: 47.70 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 57.96
                         (NIGHT): 56.61
```

```
STAMSON 5.0          NORMAL REPORT        Date: 02-09-2022 09:55:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15b.te                 Time Period: Day/Night 16/8 hours
Description:


Rail data, segment # 1: Rail (day/night)
-----------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
  1. CP          ! 11.0/8.0    ! 80.0 !  4.0 !164.0 !Diesel!  No
  2. GO          ! 23.0/0.0    ! 113.0 !  1.0 ! 13.0 !Diesel!  No

Data for Segment # 1: Rail (day/night)
---------------------------------------
Angle1   Angle2         : -90.00 deg   -66.00 deg
Wood depth             :      0       (No woods.)
No of house rows       :      0 / 0
Surface                :      2       (Reflective ground surface)
Receiver source distance : 273.00 / 273.00 m
Receiver height        :   1.50 / 1.50   m
Topography             :      2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1         : -90.00 deg   Angle2 : -66.00 deg
Barrier height         :   3.00 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: Rail (day)
-------------------------------

Barrier height for grazing incidence
-------------------------------------
Source     ! Receiver    ! Barrier     ! Elevation of
Height (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
-----------+-------------+-------------+--------------
    4.00 !         1.50 !         1.54 !         1.54
    0.50 !         1.50 !         1.49 !         1.49

LOCOMOTIVE (0.00 + 46.99 + 0.00) = 46.99 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
  -90    -66   0.00  75.43 -12.60  -8.75   0.00   0.00  -7.09  46.99
-------------------------------------------------------------------
```

```
WHEEL (0.00 + 42.99 + 0.00) = 42.99 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90    -66   0.00  71.54 -12.60  -8.75   0.00   0.00  -7.20  42.99
---------------------------------------------------------------------

Segment Leq : 48.45 dBA

Total Leq All Segments: 48.45 dBA


Barrier table for segment # 1: Rail (day)
-------------------------------------------

Barrier ! Elev of !  Loco   !  Wheel  ! Whistle ! Whistle ! Tot Leq !
Height  ! Barr Top!  dBA    !  dBA    ! left dBA!right dBA!  dBA    !
--------+---------+---------+---------+---------+---------+---------+
   4.50 !    4.50 !  44.19  !  40.21  !    --  !    --  !  45.65  !
   5.00 !    5.00 !  43.45  !  39.47  !    --  !    --  !  44.91  !
   5.50 !    5.50 !  42.79  !  38.81  !    --  !    --  !  44.25  !
   6.00 !    6.00 !  42.20  !  38.23  !    --  !    --  !  43.66  !
   6.50 !    6.50 !  41.67  !  37.70  !    --  !    --  !  43.13  !
   7.00 !    7.00 !  41.19  !  37.23  !    --  !    --  !  42.66  !
   7.50 !    7.50 !  40.76  !  36.80  !    --  !    --  !  42.23  !
   8.00 !    8.00 !  40.36  !  36.40  !    --  !    --  !  41.83  !
   8.50 !    8.50 !  40.00  !  36.04  !    --  !    --  !  41.47  !
   9.00 !    9.00 !  39.67  !  35.71  !    --  !    --  !  41.14  !


Results segment # 1: Rail (night)
---------------------------------

Barrier height for grazing incidence
------------------------------------
Source     ! Receiver    ! Barrier     ! Elevation of
Height (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
-----------+-------------+-------------+--------------
      4.00 !       1.50  !       1.54  !       1.54
      0.50 !       1.50  !       1.49  !       1.49

LOCOMOTIVE (0.00 + 47.42 + 0.00) = 47.42 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90    -66   0.00  75.86 -12.60  -8.75   0.00   0.00  -7.09  47.42
---------------------------------------------------------------------


WHEEL (0.00 + 43.48 + 0.00) = 43.48 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
---------------------------------------------------------------------
   -90    -66   0.00  72.03 -12.60  -8.75   0.00   0.00  -7.20  43.48
```

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

Segment Leq : 48.89 dBA

Total Leq All Segments: 48.89 dBA


Road data, segment # 1: Dundas (day/night)
-------------------------------------------
Car traffic volume  : 23760/2640  veh/TimePeriod  *
Medium truck volume :  1890/210   veh/TimePeriod  *
Heavy truck volume  :  1350/150   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth      :   0.00
    Number of Years of Growth        :   0.00
    Medium Truck % of Total Volume   :   7.00
    Heavy Truck  % of Total Volume   :   5.00
    Day (16 hrs) % of Total Volume   :  90.00

Data for Segment # 1: Dundas (day/night)
-------------------------------------------
Angle1   Angle2          : -90.00 deg   -66.00 deg
Wood depth              :     0      (No woods.)
No of house rows        :     0 / 0
Surface                 :     2      (Reflective ground surface)
Receiver source distance : 104.00 / 104.00 m
Receiver height         :   1.50 / 1.50   m
Topography              :     2      (Flat/gentle slope; with barrier)
Barrier angle1          : -90.00 deg   Angle2 : -66.00 deg
Barrier height          :   3.00 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: Dundas (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier    ! Elevation of
```

```
Height   (m) ! Height   (m) ! Height   (m) ! Barrier Top   (m)
-----------+------------+------------+--------------
      1.50 !         1.50 !         1.50 !          1.50

ROAD (0.00 + 47.02 + 0.00) = 47.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -66   0.00  71.39   0.00  -8.41  -8.75   0.00   0.00  -7.21
47.02
--------------------------------------------------------------------------
--

Segment Leq : 47.02 dBA

Total Leq All Segments: 47.02 dBA


Barrier table for segment # 1: Dundas (day)
---------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  4.50 !     4.50 !   44.20 !   44.20 !
  5.00 !     5.00 !   43.46 !   43.46 !
  5.50 !     5.50 !   42.79 !   42.79 !
  6.00 !     6.00 !   42.20 !   42.20 !
  6.50 !     6.50 !   41.67 !   41.67 !
  7.00 !     7.00 !   41.19 !   41.19 !
  7.50 !     7.50 !   40.75 !   40.75 !
  8.00 !     8.00 !   40.35 !   40.35 !
  8.50 !     8.50 !   39.98 !   39.98 !
  9.00 !     9.00 !   39.65 !   39.65 !


Results segment # 1: Dundas (night)
------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 40.49 + 0.00) = 40.49 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
   -90    -66   0.00  64.86   0.00  -8.41  -8.75   0.00   0.00  -7.21
40.49
--------------------------------------------------------------------------

Segment Leq : 40.49 dBA

Total Leq All Segments: 40.49 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 50.80
                         (NIGHT): 49.48
```