

Appendix L

Noise Impact Assessment

**Region of Peel
Winston Churchill Road Expansion
Noise Impact Assessment**




						
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HATCH						Client



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1. Introduction

1.1 Background

The Region of Peel is seeking to expand a 4.5km section of Winston Churchill Boulevard, running north from Highway 401 to Embleton Road. The proposed expansion includes adding an additional through lanes in each direction, turn lanes at new locations, a raised median and pedestrian sidewalks adjacent to the road. The area surrounding these sections of roads are largely bordered agricultural and commercial zoned properties, however several residential structures are located in close proximity to the road.

The purpose of this study is to assess the noise impact of expanding Winston Churchill Boulevard as part of the class EA. This noise study is carried out in accordance with the Region of Peel, General Guidelines for the Preparation of Acoustical Reports [1], with noise control criteria and limits outlined by the City of Brampton taking precedence.

1.2 Scope

The scope of the noise study presented herein evaluates the noise impact at select worse case representative sensitive points of reception resulting from changes in road volume within the study area. The noise impact due to current traffic, projected traffic following network improvements in 2021, and 10 years following construction completion (2031) are evaluated for traffic volume changes over these periods. Traffic volumes were based of the predicted volumes outlined in *Summary of Traffic Data for Noise & Air Quality Analysis* [5].

2. Project Location

The proposed expansion of Winston Churchill Boulevard is shown in Figure 2-1. Major roads that intersect Winston Churchill Boulevard within this study are include:

- Highway 401
- Highway 407
- Meadowpine Boulevard
- Steeles Avenue
- 5 Side Road/ Embleton Road



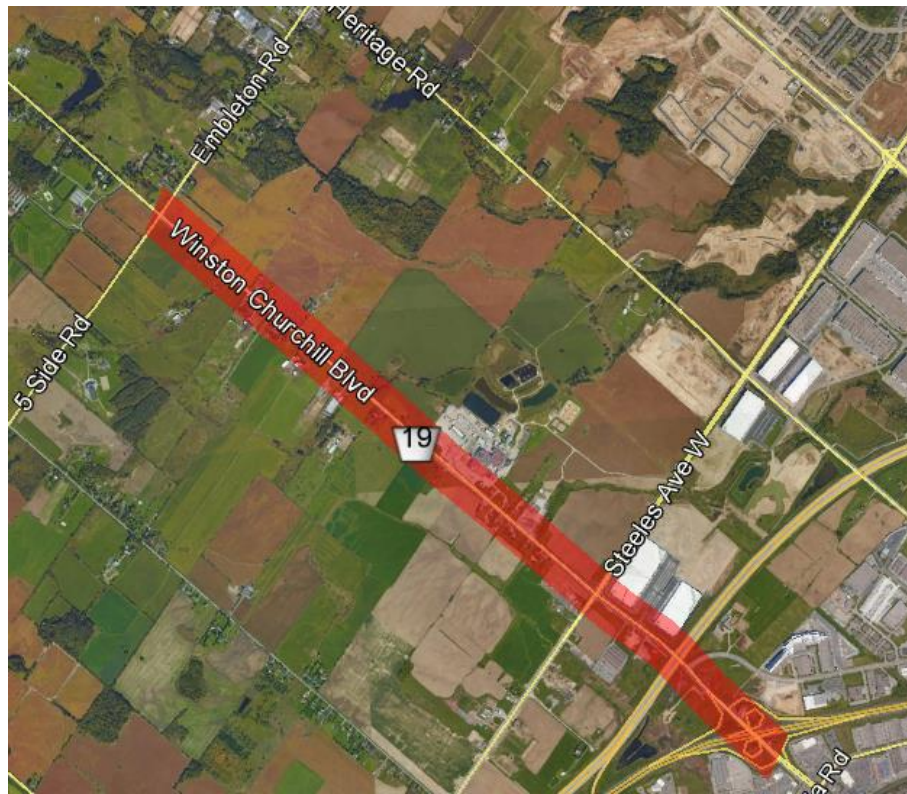


Figure 2-1: Region of Peel Noise Study Area.

3. Criteria

Noise regulations relating to road expansion work in the City of Brampton are outlined in the municipal document: *Noise Attenuation Wall Policy Amendment – Retrofit Policy and Road Widening* [2]. This document amends the City’s 2007 Noise Attenuation Wall Policy and specifies updated requirements to warrant the construction of a barrier as a result of road widening construction, including the following:

- Only daytime (16-hours, 07:00 – 23:00) of Outdoor Living Areas (OLAs) are to be assessed
- Residential lots assessed must be either reverse frontage or side flanking to the road being expanded¹

¹ Region of Peel [1] only requires reverse frontage only, however, City of Brampton policy has been selected to take precedence.

- Barriers or berms to only be considered if daytime noise levels exceed 60 dBA at an OLA.²
- Mitigation must provide a minimum of 5 dB reduction in noise level.
- Mitigation centerline (barriers) must be within 300m of street³.
- Mitigation must be generally continuous between intersections.
- Barriers must have a minimum and maximum height of 2m and 3m, respectively.

Additional details such as the location and height of the OLA, berm slopes, definitions, etc. that are not covered in the City of Brampton Noise Attenuation Wall Policy [2], shall default to the Region of Peel guidelines for the preparation of acoustical reports [1] and the referenced documents therein.

4. Noise Sources

The overall noise impact at an OLA is a combination of stationary and traffic noise sources. Stationary noise results from activity of nearby industrial and commercial facilities as well as neighbouring residential dwellings. Traffic noise sources include road, rail, and air vehicular traffic. The combination of noise emitted by these sources form the existing ambient noise level. For this study, the ambient noise level is the noise level which exists at a receptor as a results of existing traffic conditions without the addition of noise generated by the proposed improvements.

This study only assess the increase of road vehicular traffic noise and compares it to the prediction of existing ambient traffic noise. Road traffic noise is calculated based on vehicle size, speed, and volume for day and for night. Other ambient sources are not considered in this study, however, they will have an impact on the overall sound level.

Road improvements being considered include widening about the existing centerline, as well as shifts east/west or north/south of the centerline. For the purpose of this study, distances were based off the existing centerline. Roads were split into segments, one segment for each direction of travel. Measured distances to the OLAs were to the center of each road segment.

The noise contribution of Highway 401 and 407 to the south of the study area was evaluated. Since there are no outstanding Environmental Compliance Approvals posted by the MOECC⁴ for the industrial facilities along the southern stretch of Winston Churchill Boulevard, such as the Maple Lodge Factory, Emperial logistics, and A-Safe Self storage located, it is assumed

² Region of Peel [1] states a daytime limit of 55 dBA (consistent with MOECC NPC-300 [3]) , City of Brampton policy has been selected to take precedence. A 60 dBA limit is consistent with the MTO/MOE guideline [4]

³ Region of Peel Noise Attenuation Wall Policy No. W30-04, 1996.[6]

⁴ MOECC ECA Search Engine Website:

<http://www.accessenvironment.ene.gov.on.ca/AEWeb/ae/GoSearch.action>



that the noise emissions from these industrial facilities meet MOECC noise emission requirements, thus contributing to the background at noise levels below the MOECC limit of 55 dBA during the daytime.

5. Traffic Counts

Traffic counts for this noise study were based off *Summary of Traffic Data for Noise & Air Quality Analysis* [5]. This study includes traffic data for 2014, 2021, and 2031 split into a 16-hour day-time period of 7:00 am to 11:00 pm, and an 8-hour night-time period of 11:00 pm to 7:00 am. The data used for the noise model is listed in Appendix A.

6. OLA Locations

Four (4) OLAs were chosen to represent locations that would be most affected by the road improvements. All OLAs are yards of one and two story private residential house, with the exception of one semi residential/commercial property (OLA#4 – Meadowlarke Stables). Each OLA was selected as an at grade area directly behind or beside the dwelling. For consistency with criteria outline in Section 3, all OLA locations have been chosen as either reverse frontage or side flanking lots to Winston Churchill Boulevard.

A sample location of OLA #2 is shown in Figure 6-1.

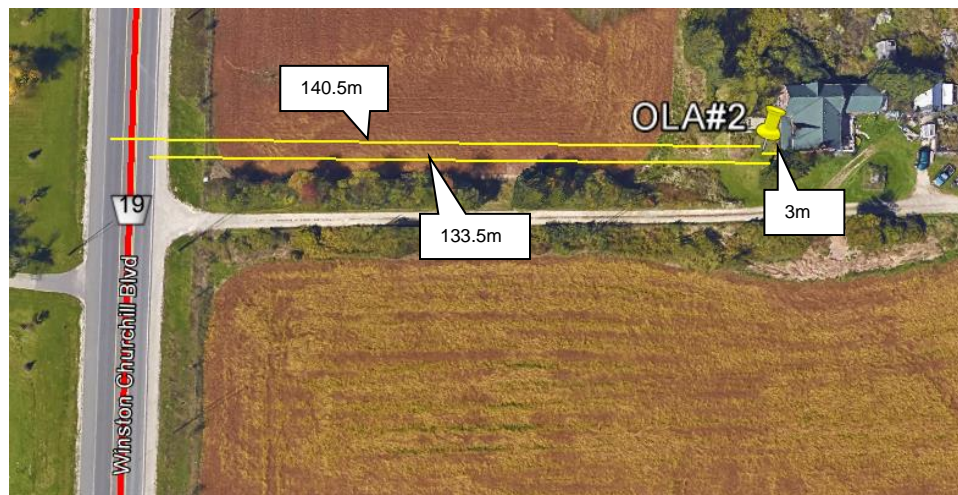


Figure 6-1: Sample Measurements from OLA #2

Locations of the OLAs are depicted in Figure 6-2. At each OLA, a noise level was evaluated at a height of 1.5m, 3m from the wall of the dwelling unit [1].



Figure 6-2: Location of OLAs.

7. Noise Modeling

The road traffic noise algorithm used for this study is *Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)* [8]. This algorithm is automated through the latest software version of STAMSON. STAMSON V.5.04 summarizes the predicted sound pressure levels at the receptors from all the different road segments (See samples in Appendix B). This ORNAMENT road traffic noise algorithm is widely used across all municipalities in Ontario and is referenced in the MOECC NPC-300 guidelines [3].

8. Predicted Noise Levels

The predicted noise levels for 2014, 2021 and 2031, at each OLA are summarized in Table 8-1. Both day and night time levels and the noise level changes from the 2014 baseline are also shown.



Table 8-1: Predicted Daytime Traffic Noise Levels at each OLA.

	OLA#1		OLA#2		OLA#3		OLA#4	
	Day	Night	Day	Night	Day	Night	Day	Night
2014 L_{eq} (dBA)	56.0	50.7	52.0	46.7	62.0	52.5	58.2	51.8
2021 L_{eq} (dBA)	56.7	51.4	53.0	47.8	62.7	53.1	58.6	52.2
2031 L_{eq} (dBA)	57.5	52.2	54.3	49.1	62.9	53.4	59.2	52.8
Difference (dB)								
2014 to 2021	0.7	0.7	1.0	1.0	0.7	0.7	0.4	0.5
2014 to 2031	1.6	1.5	2.3	2.4	0.9	1.0	1.0	1.0

9. Noise Control

The available options for noise controls that a municipality can implement are typically limited to berms, barriers, and minimum setback distances. These noise control features are sized to achieve the criteria outlined in Section 3.

Based on the criteria outlined in Section 3, sound level predictions for three of the four road segments fall below the City of Brampton’s minimum level for consideration of a noise barrier. At OLA#3, the predicted noise level is dominated by the front facing street traffic from Steeles Ave./ Regional Road 8. Since the noise level contribution from the expansion of the side facing Winston Churchill Boulevard is well below 60 dBA, therefore, noise mitigation is need not be considered according to the criteria.

It should be further noted that noise level predictions for existing traffic conditions currently exceed 60 dBA and is estimated to rise by 1 dB as a result of the Winston Churchill Boulevard expansion.

10. Conclusion

The proposed expansion of Winston Churchill Boulevard is predicted to produce a marginal increase, of less than 3 dB⁵, to current noise levels. From this study no noise mitigation is being recommended as the side and rear facing noise components are each OLA are below the City of Brampton daytime limit of 60 dBA.

⁵ Human perception threshold referenced in the City of Brampton Noise Attenuation Wall Policy [2]



11. References

- [1] *General Guidelines for the Preparation of Acoustical Reports in the Region of Peel*, The Region of Peel, November 2012.
- [2] *Noise Attenuation Wall Policy Amendment – Retrofit Policy and Road Widening*, The Corporation of the City of Brampton, April 2014.
- [3] *Environmental Noise Guideline – Publication NPC-300*, Ontario Ministry of the Environment and Climate Change, August 2013.
- [4] *Environmental Guide for Noise*, Ontario Ministry of Transportation, October 2006 version 1.1
- [5] *Winston Churchill Boulevard Class EA – Summary of Traffic Data for Noise & Air Quality Analysis* – Hatch, 26 July 2016.
- [6] *Corporate Policy Manual – Noise Attenuation Barriers*, Region of Peel, June 1996.
- [7] *Noise Walls Constructed Under Local Improvement Regulation*, City of Brampton.
<http://www.brampton.ca/en/residents/Roads/engineering-construction/Pages/noise-wall-regulations.aspx>
- [8] *ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document*, Ontario Ministry of the Environment, November 1988.



Appendix A: Traffic Data



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Table A1: Traffic Data Input into the Model – 2014

Seg. No	Street	Start Segment	End Segment	Speed (km/hr)	(Hatch Infrastructure Est.) - 2014					
					Day (07:00-23:00)			Night (2300-07:00)		
					Car	Medium Truck	Heavy Truck	Car	Medium Truck	Heavy Truck
	Winston Churchill Blvd	5 Side Rd/Embleton	10 Side Rd							
1N				60	4380	70	23	330	5	2
1S				60	4286	59	20	584	8	3
	Winston Churchill Blvd	Maple Lodge Farms	5 Side Rd/Embleton							
2N				80	5132	334	111	508	33	11
2S				80	4142	268	89	848	55	18
	Winston Churchill Blvd	Steeles Ave.	Maple Lodge Farms							
3N				60	5041	519	173	499	51	17
3S				60	4059	417	139	831	85	28
	Winston Churchill Blvd	Orlando Access	Steeles Ave.							
4N				60	8439	865	288	1151	118	39
4S				60	7948	816	272	1403	144	48
	Winston Churchill Blvd	Meadowpine Blvd.	Orlando Access							
5N				60	8694	891	297	1186	122	41
5S				60	8194	842	281	1446	149	50
	Winston Churchill Blvd	Hwy. 401 WB Off Ramp	Meadowpine Blvd.							
6N				60	9504	970	323	1296	132	44
6S				60	8959	912	304	1581	161	54
	Embleton Rd	Winston Churchill Blvd	Heritage Rd.							
1E				60	2736	128	43	304	14	5
1W				60	2581	125	42	529	26	9
	5 Side Rd.	10 Line	Winston Churchill Blvd							
2E				60	3591	176	59	399	20	7
2W				60	3403	162	54	697	33	11

Seg. No	Street	Start Segment	End Segment	Speed (km/hr)	(Hatch Infrastructure Est.) - 2014					
					Day (07:00-23:00)			Night (2300-07:00)		
					Car	Medium Truck	Heavy Truck	Car	Medium Truck	Heavy Truck
	Steeles Ave.	Winston Churchill Blvd	Heritage Rd.							
3E				80	9813	819	273	1597	133	44
3W				80	10057	841	280	1243	104	35
	Steeles Ave.	10 Line	Winston Churchill Blvd							
4E				80	7559	632	211	1231	103	34
4W				80	7707	641	214	953	79	26
	Meadowpine Blvd.	Winston Churchill Blvd	Meadowvale Blvd.							
5E				60	3114	257	86	346	29	10
5W				60	3186	263	88	354	29	10
	Hwy. 407	Hwy. 401	Mississauga Rd.							
6E				100	28056	2169	723	3117	241	80
6W				100	28056	2169	723	3117	241	80
	HWy. 401 Ramp	WB Off Ramp								
7E				50	2313	196	65	293	20	7
7W				50	2376	196	65	293	20	7

Table A2: Traffic Data Input into the Model – 2021

Seg. No	Street	Start Segment	End Segment	Speed (km/hr)	(Hatch Infrastructure Est.) - 2021					
					Day (07:00-23:00)			Night (2300-07:00)		
					Car	Medium Truck	Heavy Truck	Car	Medium Truck	Heavy Truck
	Winston Churchill Blvd	5 Side Rd/Embleton	10 Side Rd							
1N				60	5701	91	30	429	7	2
1S				60	5271	79	26	719	11	4
	Winston Churchill Blvd	Maple Lodge Farms	5 Side Rd/Embleton							
2N				80	6752	444	148	668	44	15
2S				80	5428	355	118	1112	73	24
	Winston Churchill Blvd	Steeles Ave.	Maple Lodge Farms							
3N				60	6507	669	223	644	66	22
3S				60	5237	535	178	1073	110	37
	Winston Churchill Blvd	Orlando Access	Steeles Ave.							
4N				60	10032	1049	350	1368	143	48
4S				60	9027	899	300	1593	159	53
	Winston Churchill Blvd	Meadowpine Blvd.	Orlando Access							
5N				60	10586	1082	361	1444	148	49
5S				60	10047	1026	342	1773	181	60
	Winston Churchill Blvd	401 WB Off Ramp	Meadowpine Blvd.							
6N				60	11238	1148	383	1532	157	52
6S				60	10795	1097	366	1905	194	65
	Embleton Rd	Winston Churchill Blvd.	Heritage Rd.							
1E				60	3141	149	50	349	17	6

Seg. No	Street	Start Segment	End Segment	Speed (km/hr)	(Hatch Infrastructure Est.) - 2021					
					Day (07:00-23:00)			Night (2300-07:00)		
					Car	Medium Truck	Heavy Truck	Car	Medium Truck	Heavy Truck
1W				60	2963	143	48	607	29	10
	5 Side Rd.	10 Line	Winston Churchill Blvd							
2E				60	4041	196	65	449	22	7
2W				60	3984	193	64	816	40	13
	Steeles Ave.	Winston Churchill Blvd	Heritage Rd.							
3E				80	11412	909	303	1858	148	49
3W				80	11428	995	332	1412	123	41
	Steeles Ave.	10 Line	Winston Churchill Blvd.							
4E				80	8935	748	249	1455	122	41
4W				80	9016	754	251	1114	93	31
	Meadowpine Blvd.	Winston Churchill Blvd	Meadowvale Blvd.							
5E				60	3519	290	97	391	32	11
5W				60	3600	304	101	400	34	11
	Hwy. 407	Hwy. 401	Mississauga Rd.							
6E				100	30702	2374	791	3411	264	88
6W				100	30702	2374	791	3411	264	88
	401 WB Off Ramp									
7E				50	2628	216	72	331	23	8
7W				50	2691	223	74	331	23	8

Table A3: Traffic Data Input into the Model – 2031

Seg. No	Street	Start Segment	End Segment	Speed (km/hr)	(Hatch Infrastructure Est.) - 2031					
					Day (07:00-23:00)			Night (2300-07:00)		
					Car	Medium Truck	Heavy Truck	Car	Medium Truck	Heavy Truck
	Winston Churchill	5 Side Rd/Embleton	10 Side Rd							
1N				60	7896	119	40	594	9	3
1S				60	6952	106	35	948	14	5
	Winston Churchill	Maple Lodge Farms	5 Side Rd/Embleton							
2N				80	9191	601	200	909	59	20
2S				80	7420	486	162	1520	99	33
	Winston Churchill	Steeles Ave.	Maple Lodge Farms							
3N				60	9237	635	212	914	63	21
3S				60	7138	728	243	1462	149	50
	Winston Churchill	Orlando Access	Steeles Ave.							
4N				60	11088	1168	389	1512	159	53
4S				60	10005	995	332	1766	176	59
	Winston Churchill	Meadowpine Blvd.	Orlando Access							
5N				60	12487	1280	427	1703	175	58
5S				60	11841	1211	404	2090	214	71
	Winston Churchill	401 WB Off Ramp	Meadowpine Blvd.							
6N				60	13244	1353	451	1806	185	62
6S				60	12759	1294	431	2252	228	76
	Embleton Rd	Winston Churchill Blvd.	Heritage Rd.							
1E				60	3735	182	61	415	20	7

Seg. No	Street	Start Segment	End Segment	Speed (km/hr)	(Hatch Infrastructure Est.) - 2031					
					Day (07:00-23:00)			Night (2300-07:00)		
					Car	Medium Truck	Heavy Truck	Car	Medium Truck	Heavy Truck
1W				60	3536	168	56	724	34	11
	5 Side Rd.	10 Line	Winston Churchill							
2E				60	4914	236	79	546	26	9
2W				60	4648	224	75	952	46	15
	Steeles Ave.	Winston Churchill Blvd	Heritage Rd.							
3E				80	11799	935	312	1921	152	51
3W				80	11712	1028	343	1448	127	42
	Steeles Ave.	10 Line	Winston Churchill Blvd.							
4E				80	9314	780	260	1516	127	42
4W				80	9407	781	260	1163	97	32
	Meadowpine Blvd.	Winston Churchill Blvd	Meadowvale Blvd.							
5E				60	4185	351	117	465	39	13
5W				60	4284	358	119	476	40	13
	Hwy. 407	Hwy. 401	Mississauga Rd.							
6E				100	34923	2700	900	3880	300	100
6W				100	34923	2700	900	3880	300	100
	401 WB Off Ramp									
7E				50	3114	263	88	393	27	9
7W				50	3195	270	90	393	27	9

Appendix B: STAMSON Output

OLA #2 – 2014

STAMSON 5.0 NORMAL REPORT Date: 13-09-2016 11:20:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: wc2_2014.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: 2N (day/night)

Car traffic volume : 5132/508 veh/TimePeriod
Medium truck volume : 334/33 veh/TimePeriod
Heavy truck volume : 111/11 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 2N (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 140.50 / 140.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 4142/848 veh/TimePeriod
Medium truck volume : 268/55 veh/TimePeriod
Heavy truck volume : 89/18 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 133.50 / 133.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2N (day)

Source height = 1.19 m

ROAD (0.00 + 49.30 + 0.00) = 49.30 dBA

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

-90	90	0.66	66.88	0.00	-16.13	-1.46	0.00	0.00	0.00	49.30
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Segment Leq : 49.30 dBA

Results segment # 2: 2S (day)

Source height = 1.19 m

ROAD (0.00 + 48.72 + 0.00) = 48.72 dBA

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

-90	90	0.66	65.93	0.00	-15.76	-1.46	0.00	0.00	0.00	48.72
-----	----	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 48.72 dBA

Total Leq All Segments: 52.03 dBA

Results segment # 1: 2N (night)

Source height = 1.19 m

ROAD (0.00 + 42.26 + 0.00) = 42.26 dBA

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

-90	90	0.66	59.85	0.00	-16.13	-1.46	0.00	0.00	0.00	42.26
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Segment Leq : 42.26 dBA

Results segment # 2: 2S (night)

Source height = 1.18 m

ROAD (0.00 + 44.83 + 0.00) = 44.83 dBA

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

SubLeq										
-90	90	0.66	62.04	0.00	-15.76	-1.46	0.00	0.00	0.00	44.83

Segment Leq : 44.83 dBA

Total Leq All Segments: 46.74 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 52.03
(NIGHT): 46.74

OLA #2 – 2021

STAMSON 5.0 NORMAL REPORT Date: 13-09-2016 11:22:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: wc2_2021.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: 2N (day/night)

Car traffic volume : 6752/668 veh/TimePeriod
Medium truck volume : 444/44 veh/TimePeriod
Heavy truck volume : 148/15 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 2N (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 147.80 / 147.80 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5428/1112 veh/TimePeriod
Medium truck volume : 355/73 veh/TimePeriod
Heavy truck volume : 118/24 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 135.30 / 135.30 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2N (day)

Source height = 1.19 m

ROAD (0.00 + 50.15 + 0.00) = 50.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	68.10	0.00	-16.49	-1.46	0.00	0.00	0.00

SubLeq
50.15

Segment Leq : 50.15 dBA

Results segment # 2: 2S (day)

Source height = 1.19 m

ROAD (0.00 + 49.82 + 0.00) = 49.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	67.14	0.00	-15.86	-1.46	0.00	0.00	0.00

SubLeq
49.82

Segment Leq : 49.82 dBA

Total Leq All Segments: 53.00 dBA

Results segment # 1: 2N (night)

Source height = 1.20 m

ROAD (0.00 + 43.15 + 0.00) = 43.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	61.10	0.00	-16.49	-1.46	0.00	0.00	0.00

SubLeq
43.15

Segment Leq : 43.15 dBA

Results segment # 2: 2S (night)

Source height = 1.19 m

ROAD (0.00 + 45.95 + 0.00) = 45.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	
SubLeq										
-90	90	0.66	63.26	0.00	-15.86	-1.46	0.00	0.00	0.00	45.95

Segment Leq : 45.95 dBA

Total Leq All Segments: 47.78 dBA

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TOTAL Leq FROM ALL SOURCES (DAY) : 53.00
(NIGHT) : 47.78

OLA#2 – 2031

STAMSON 5.0 NORMAL REPORT Date: 13-09-2016 11:24:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: wc2_2031.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: 2N (day/night)

Car traffic volume : 9191/909 veh/TimePeriod
Medium truck volume : 601/59 veh/TimePeriod
Heavy truck volume : 200/20 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 2N (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 147.80 / 147.80 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 7420/1520 veh/TimePeriod
Medium truck volume : 486/99 veh/TimePeriod
Heavy truck volume : 162/33 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 135.30 / 135.30 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2N (day)

Source height = 1.19 m

ROAD (0.00 + 51.48 + 0.00) = 51.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	69.43	0.00	-16.49	-1.46	0.00	0.00	0.00

SubLeq
51.48

Segment Leq : 51.48 dBA

Results segment # 2: 2S (day)

Source height = 1.19 m

ROAD (0.00 + 51.19 + 0.00) = 51.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	68.50	0.00	-15.86	-1.46	0.00	0.00	0.00

SubLeq
51.19

Segment Leq : 51.19 dBA

Total Leq All Segments: 54.35 dBA

Results segment # 1: 2N (night)

Source height = 1.19 m

ROAD (0.00 + 44.44 + 0.00) = 44.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	62.39	0.00	-16.49	-1.46	0.00	0.00	0.00

SubLeq
44.44

Segment Leq : 44.44 dBA

Results segment # 2: 2S (night)

Source height = 1.19 m

ROAD (0.00 + 47.30 + 0.00) = 47.30 dBA

Angle1 SubLeq	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	
-90	90	0.66	64.61	0.00	-15.86	-1.46	0.00	0.00	0.00	47.30

Segment Leq : 47.30 dBA

Total Leq All Segments: 49.11 dBA

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TOTAL Leq FROM ALL SOURCES (DAY) : 54.35
(NIGHT) : 49.11

OLA #4 – 2014

STAMSON 5.0 NORMAL REPORT Date: 08-09-2016 09:10:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: wc5_2014.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: 5N (day/night)

Car traffic volume : 8694/1186 veh/TimePeriod
Medium truck volume : 891/122 veh/TimePeriod
Heavy truck volume : 297/41 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 5N (day/night)

Angle1 Angle2 : 0.00 deg 41.60 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 275.00 / 275.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 5S (day/night)

Car traffic volume : 8194/1446 veh/TimePeriod
Medium truck volume : 842/149 veh/TimePeriod
Heavy truck volume : 297/50 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: 5S (day/night)

Angle1 Angle2 : 0.00 deg 41.60 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 288.50 / 288.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: 6N (day/night)

Car traffic volume : 9504/1296 veh/TimePeriod
Medium truck volume : 970/132 veh/TimePeriod
Heavy truck volume : 323/44 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: 6N (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 273.50 / 273.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: 6S (day/night)

Car traffic volume : 8959/1581 veh/TimePeriod
Medium truck volume : 912/161 veh/TimePeriod
Heavy truck volume : 304/54 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: 6S (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 286.00 / 286.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 3114/346 veh/TimePeriod
Medium truck volume : 257/29 veh/TimePeriod
Heavy truck volume : 86/10 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 5: 5E (day/night)

Angle1 Angle2 : -48.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 143.90 / 143.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 6: 5W (day/night)

Car traffic volume : 3186/354 veh/TimePeriod
Medium truck volume : 263/29 veh/TimePeriod
Heavy truck volume : 88/10 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 6: 5W (day/night)

Angle1 Angle2 : -48.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 134.90 / 134.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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Road data, segment # 7: 6E (day/night)

Car traffic volume : 28056/3117 veh/TimePeriod
Medium truck volume : 2169/241 veh/TimePeriod
Heavy truck volume : 723/80 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 7: 6E (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 81.80 / 81.80 m

Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 0.10 m
Elevation : 1.00 m
Barrier receiver distance : 45.70 / 45.70 m
Source elevation : 0.00 m
Receiver elevation : 1.00 m
Barrier elevation : 2.00 m
Reference angle : 0.00

Road data, segment # 8: 6W (day/night)

Car traffic volume : 28056/3117 veh/TimePeriod
Medium truck volume : 2169/241 veh/TimePeriod
Heavy truck volume : 723/80 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 8: 6W (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 113.40 / 113.40 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 0.10 m
Elevation : 1.00 m
Barrier receiver distance : 45.70 / 45.70 m
Source elevation : 0.00 m
Receiver elevation : 1.00 m
Barrier elevation : 2.00 m
Reference angle : 0.00

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Road data, segment # 9: 7E (day/night)

Car traffic volume : 2313/293 veh/TimePeriod
Medium truck volume : 196/20 veh/TimePeriod
Heavy truck volume : 65/7 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 9: 7E (day/night)

```

-----
Angle1   Angle2           : -13.00 deg   9.00 deg
Wood depth           :           0   (No woods.)
No of house rows     :           0 / 0
Surface              :           1   (Absorptive ground surface)
Receiver source distance : 172.60 / 172.60 m
Receiver height      :           1.50 / 1.50 m
Topography           :           1   (Flat/gentle slope; no barrier)
Reference angle      :           0.00
  
```

Road data, segment # 10: 7W (day/night)

```

-----
Car traffic volume   : 2376/293   veh/TimePeriod
Medium truck volume  : 196/20    veh/TimePeriod
Heavy truck volume   : 65/7     veh/TimePeriod
Posted speed limit   : 50 km/h
Road gradient        : 0 %
Road pavement        : 1 (Typical asphalt or concrete)
  
```

Data for Segment # 10: 7W (day/night)

```

-----
Angle1   Angle2           : -13.00 deg   9.00 deg
Wood depth           :           0   (No woods.)
No of house rows     :           0 / 0
Surface              :           1   (Absorptive ground surface)
Receiver source distance : 165.40 / 165.40 m
Receiver height      :           1.50 / 1.50 m
Topography           :           1   (Flat/gentle slope; no barrier)
Reference angle      :           0.00
  
```

Results segment # 1: 5N (day)

Source height = 1.32 m

ROAD (0.00 + 40.18 + 0.00) = 40.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.66	67.77	0.00	-20.97	-6.62	0.00	0.00	0.00	40.18

Segment Leq : 40.18 dBA

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Results segment # 2: 5S (day)

Source height = 1.34 m

ROAD (0.00 + 39.68 + 0.00) = 39.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.66	67.62	0.00	-21.32	-6.62	0.00	0.00	0.00	39.68

Segment Leq : 39.68 dBA

Results segment # 3: 6N (day)

Source height = 1.32 m

ROAD (0.00 + 42.74 + 0.00) = 42.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	68.14	0.00	-20.93	-4.47	0.00	0.00	0.00	42.74

Segment Leq : 42.74 dBA

Results segment # 4: 6S (day)

Source height = 1.31 m

ROAD (0.00 + 42.16 + 0.00) = 42.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	67.88	0.00	-21.25	-4.47	0.00	0.00	0.00	42.16

Segment Leq : 42.16 dBA

Results segment # 5: 5E (day)

Source height = 1.26 m

ROAD (0.00 + 42.96 + 0.00) = 42.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	62.63	0.00	-16.30	-3.36	0.00	0.00	0.00	42.96

Segment Leq : 42.96 dBA

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Results segment # 6: 5W (day)

Source height = 1.26 m

ROAD (0.00 + 43.53 + 0.00) = 43.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	62.73	0.00	-15.84	-3.36	0.00	0.00	0.00	43.53

Segment Leq : 43.53 dBA

Results segment # 7: 6E (day)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.24	!	1.50	!
		-0.21	!
			1.79

ROAD (0.00 + 55.43 + 0.00) = 55.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	76.94	0.00	-12.02	-4.42	0.00	0.00	-5.08	55.43

Segment Leq : 55.43 dBA

Results segment # 8: 6W (day)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.24	!	1.50	!
		-0.01	!
			1.99

ROAD (0.00 + 53.18 + 0.00) = 53.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	76.94	0.00	-14.34	-4.42	0.00	0.00	-5.01	53.18

Segment Leq : 53.18 dBA

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Results segment # 9: 7E (day)

Source height = 1.26 m

ROAD (0.00 + 32.97 + 0.00) = 32.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	59.72	0.00	-17.61	-9.15	0.00	0.00	0.00	32.97

Segment Leq : 32.97 dBA

Results segment # 10: 7W (day)

Source height = 1.25 m

ROAD (0.00 + 33.30 + 0.00) = 33.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	59.75	0.00	-17.30	-9.15	0.00	0.00	0.00	33.30

Segment Leq : 33.30 dBA

Total Leq All Segments: 58.19 dBA

Results segment # 1: 5N (night)

Source height = 1.32 m

ROAD (0.00 + 34.56 + 0.00) = 34.56 dBA

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

0	42	0.66	62.15	0.00	-20.97	-6.62	0.00	0.00	0.00	34.56
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Segment Leq : 34.56 dBA

Results segment # 2: 5S (night)

Source height = 1.32 m

ROAD (0.00 + 35.08 + 0.00) = 35.08 dBA

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

0	42	0.66	63.02	0.00	-21.32	-6.62	0.00	0.00	0.00	35.08
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Segment Leq : 35.08 dBA

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Results segment # 3: 6N (night)

Source height = 1.31 m

ROAD (0.00 + 37.09 + 0.00) = 37.09 dBA

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

-90	0	0.66	62.49	0.00	-20.93	-4.47	0.00	0.00	0.00	37.09
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Segment Leq : 37.09 dBA

Results segment # 4: 6S (night)

Source height = 1.32 m

ROAD (0.00 + 37.65 + 0.00) = 37.65 dBA

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

-90	0	0.66	63.36	0.00	-21.25	-4.47	0.00	0.00	0.00	37.65
-----	---	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 37.65 dBA

Results segment # 5: 5E (night)

Source height = 1.27 m

ROAD (0.00 + 36.53 + 0.00) = 36.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-48	41	0.66	56.19	0.00	-16.30	-3.36	0.00	0.00	0.00

SubLeq
36.53

Segment Leq : 36.53 dBA

Results segment # 6: 5W (night)

Source height = 1.26 m

ROAD (0.00 + 37.02 + 0.00) = 37.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-48	41	0.66	56.22	0.00	-15.84	-3.36	0.00	0.00	0.00

SubLeq
37.02

Segment Leq : 37.02 dBA

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Results segment # 7: 6E (night)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.24	1.50	-0.21	1.79

ROAD (0.00 + 48.89 + 0.00) = 48.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	0	0.63	70.41	0.00	-12.02	-4.42	0.00	0.00	-5.08

SubLeq
48.89

Segment Leq : 48.89 dBA

Results segment # 8: 6W (night)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.24	1.50	-0.01	1.99

ROAD (0.00 + 46.64 + 0.00) = 46.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	70.41	0.00	-14.34	-4.42	0.00	0.00	-5.01	46.64

Segment Leq : 46.64 dBA

Results segment # 9: 7E (night)

Source height = 1.22 m

ROAD (0.00 + 26.42 + 0.00) = 26.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	53.18	0.00	-17.61	-9.15	0.00	0.00	0.00	26.42

Segment Leq : 26.42 dBA

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Results segment # 10: 7W (night)

Source height = 1.22 m

ROAD (0.00 + 26.72 + 0.00) = 26.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	53.18	0.00	-17.30	-9.15	0.00	0.00	0.00	26.72

Segment Leq : 26.72 dBA

Total Leq All Segments: 51.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.19
(NIGHT): 51.79

OLA #4 – 2021

STAMSON 5.0 NORMAL REPORT Date: 08-09-2016 09:19:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: wc5_2021.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: 5N (day/night)

Car traffic volume : 10586/1444 veh/TimePeriod
Medium truck volume : 1082/148 veh/TimePeriod
Heavy truck volume : 361/49 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 5N (day/night)

Angle1 Angle2 : 0.00 deg 41.60 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 286.50 / 286.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 5S (day/night)

Car traffic volume : 10047/1773 veh/TimePeriod
Medium truck volume : 1026/181 veh/TimePeriod
Heavy truck volume : 342/60 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: 5S (day/night)

Angle1 Angle2 : 0.00 deg 41.60 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 270.00 / 270.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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Road data, segment # 3: 6N (day/night)

Car traffic volume : 11238/1532 veh/TimePeriod
Medium truck volume : 1148/157 veh/TimePeriod
Heavy truck volume : 383/52 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: 6N (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 274.10 / 274.10 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: 6S (day/night)

Car traffic volume : 10795/1905 veh/TimePeriod
Medium truck volume : 1097/194 veh/TimePeriod
Heavy truck volume : 366/65 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: 6S (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 285.90 / 285.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 3519/391 veh/TimePeriod
Medium truck volume : 290/32 veh/TimePeriod
Heavy truck volume : 97/11 veh/TimePeriod
Posted speed limit : 60 km/h

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

Data for Segment # 5: 5E (day/night)

Angle1 Angle2 : -48.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 143.90 / 143.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 6: 5W (day/night)

Car traffic volume : 3600/400 veh/TimePeriod
Medium truck volume : 304/34 veh/TimePeriod
Heavy truck volume : 101/11 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 6: 5W (day/night)

Angle1 Angle2 : -48.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 134.90 / 134.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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Road data, segment # 7: 6E (day/night)

Car traffic volume : 30702/3411 veh/TimePeriod
Medium truck volume : 2374/264 veh/TimePeriod
Heavy truck volume : 791/88 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 7: 6E (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0

```

Surface                :      1      (Absorptive ground surface)
Receiver source distance :  81.80 / 81.80  m
Receiver height        :   1.50 / 1.50  m
Topography             :      4      (Elevated; with barrier)
Barrier angle1         : -90.00 deg   Angle2 : 0.00 deg
Barrier height         :   0.10 m
Elevation              :   1.00 m
Barrier receiver distance : 45.70 / 45.70  m
Source elevation       :   0.00 m
Receiver elevation     :   1.00 m
Barrier elevation      :   2.00 m
Reference angle        :   0.00
  
```

Road data, segment # 8: 6W (day/night)

```

-----
Car traffic volume   : 30702/3411  veh/TimePeriod
Medium truck volume :  2374/264   veh/TimePeriod
Heavy truck volume  :   791/88    veh/TimePeriod
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
  
```

Data for Segment # 8: 6W (day/night)

```

-----
Angle1  Angle2       : -90.00 deg   0.00 deg
Wood depth :      0      (No woods.)
No of house rows :     0 / 0
Surface      :      1      (Absorptive ground surface)
Receiver source distance : 113.40 / 113.40 m
Receiver height :   1.50 / 1.50  m
Topography   :      4      (Elevated; with barrier)
Barrier angle1 : -90.00 deg   Angle2 : 0.00 deg
Barrier height :   0.10 m
Elevation     :   1.00 m
Barrier receiver distance : 45.70 / 45.70  m
Source elevation :   0.00 m
Receiver elevation :   1.00 m
Barrier elevation :   2.00 m
Reference angle :   0.00
  
```

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Road data, segment # 9: 7E (day/night)

```

-----
Car traffic volume   :  2628/331  veh/TimePeriod
Medium truck volume :   216/23   veh/TimePeriod
Heavy truck volume  :    72/8    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
  
```

Data for Segment # 9: 7E (day/night)

```

-----
Angle1   Angle2           : -13.00 deg   9.00 deg
Wood depth           :           0   (No woods.)
No of house rows     :           0 / 0
Surface              :           1   (Absorptive ground surface)
Receiver source distance : 172.60 / 172.60 m
Receiver height      :           1.50 / 1.50 m
Topography           :           1   (Flat/gentle slope; no barrier)
Reference angle      :           0.00
  
```

Road data, segment # 10: 7W (day/night)

```

-----
Car traffic volume   : 2691/331   veh/TimePeriod
Medium truck volume  : 223/23    veh/TimePeriod
Heavy truck volume   : 74/8     veh/TimePeriod
Posted speed limit   : 50 km/h
Road gradient        : 0 %
Road pavement        : 1 (Typical asphalt or concrete)
  
```

Data for Segment # 10: 7W (day/night)

```

-----
Angle1   Angle2           : -13.00 deg   9.00 deg
Wood depth           :           0   (No woods.)
No of house rows     :           0 / 0
Surface              :           1   (Absorptive ground surface)
Receiver source distance : 165.40 / 165.40 m
Receiver height      :           1.50 / 1.50 m
Topography           :           1   (Flat/gentle slope; no barrier)
Reference angle      :           0.00
  
```

Results segment # 1: 5N (day)

Source height = 1.32 m

ROAD (0.00 + 40.73 + 0.00) = 40.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.66	68.62	0.00	-21.27	-6.62	0.00	0.00	0.00	40.73

Segment Leq : 40.73 dBA

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Results segment # 2: 5S (day)

Source height = 1.32 m

ROAD (0.00 + 40.92 + 0.00) = 40.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.66	68.38	0.00	-20.84	-6.62	0.00	0.00	0.00	40.92

Segment Leq : 40.92 dBA

Results segment # 3: 6N (day)

Source height = 1.32 m

ROAD (0.00 + 43.46 + 0.00) = 43.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	68.87	0.00	-20.95	-4.47	0.00	0.00	0.00	43.46

Segment Leq : 43.46 dBA

Results segment # 4: 6S (day)

Source height = 1.31 m

ROAD (0.00 + 42.96 + 0.00) = 42.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	68.68	0.00	-21.25	-4.47	0.00	0.00	0.00	42.96

Segment Leq : 42.96 dBA

Results segment # 5: 5E (day)

Source height = 1.26 m

ROAD (0.00 + 43.49 + 0.00) = 43.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	63.15	0.00	-16.30	-3.36	0.00	0.00	0.00	43.49

Segment Leq : 43.49 dBA

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Results segment # 6: 5W (day)

Source height = 1.26 m

ROAD (0.00 + 44.12 + 0.00) = 44.12 dBA

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

-48	41	0.66	63.31	0.00	-15.84	-3.36	0.00	0.00	0.00	44.12
-----	----	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 44.12 dBA

Results segment # 7: 6E (day)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.24	!	1.50	!
		-0.21	!
			1.79

ROAD (0.00 + 55.82 + 0.00) = 55.82 dBA

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

-90	0	0.63	77.34	0.00	-12.02	-4.42	0.00	0.00	-5.08	55.82
-----	---	------	-------	------	--------	-------	------	------	-------	-------

Segment Leq : 55.82 dBA

Results segment # 8: 6W (day)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)

-----+-----+-----+-----
 1.24 ! 1.50 ! -0.01 ! 1.99

ROAD (0.00 + 53.57 + 0.00) = 53.57 dBA

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

-90	0	0.63	77.34	0.00	-14.34	-4.42	0.00	0.00	-5.01	53.57
-----	---	------	-------	------	--------	-------	------	------	-------	-------

Segment Leq : 53.57 dBA

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Results segment # 9: 7E (day)

Source height = 1.25 m

ROAD (0.00 + 33.43 + 0.00) = 33.43 dBA

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

-13	9	0.66	60.19	0.00	-17.61	-9.15	0.00	0.00	0.00	33.43
-----	---	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 33.43 dBA

Results segment # 10: 7W (day)

Source height = 1.25 m

ROAD (0.00 + 33.86 + 0.00) = 33.86 dBA

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

-13	9	0.66	60.31	0.00	-17.30	-9.15	0.00	0.00	0.00	33.86
-----	---	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 33.86 dBA

Total Leq All Segments: 58.62 dBA

Results segment # 1: 5N (night)

Source height = 1.31 m

ROAD (0.00 + 35.08 + 0.00) = 35.08 dBA

Angle1 SubLeq	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	
0	42	0.66	62.97	0.00	-21.27	-6.62	0.00	0.00	0.00	35.08

Segment Leq : 35.08 dBA

Results segment # 2: 5S (night)

Source height = 1.31 m

ROAD (0.00 + 36.39 + 0.00) = 36.39 dBA

Angle1 SubLeq	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	
0	42	0.66	63.85	0.00	-20.84	-6.62	0.00	0.00	0.00	36.39

Segment Leq : 36.39 dBA

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Results segment # 3: 6N (night)

Source height = 1.31 m

ROAD (0.00 + 37.81 + 0.00) = 37.81 dBA

Angle1 SubLeq	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	
-90	0	0.66	63.23	0.00	-20.95	-4.47	0.00	0.00	0.00	37.81

Segment Leq : 37.81 dBA

Results segment # 4: 6S (night)

Source height = 1.32 m

ROAD (0.00 + 38.46 + 0.00) = 38.46 dBA

Angle1 SubLeq	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	
-90	0	0.66	64.17	0.00	-21.25	-4.47	0.00	0.00	0.00	38.46

Segment Leq : 38.46 dBA

Results segment # 5: 5E (night)

Source height = 1.26 m

ROAD (0.00 + 36.98 + 0.00) = 36.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	56.64	0.00	-16.30	-3.36	0.00	0.00	0.00	36.98

Segment Leq : 36.98 dBA

Results segment # 6: 5W (night)

Source height = 1.25 m

ROAD (0.00 + 37.56 + 0.00) = 37.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	56.76	0.00	-15.84	-3.36	0.00	0.00	0.00	37.56

Segment Leq : 37.56 dBA

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Results segment # 7: 6E (night)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.24	1.50	-0.21	1.79

ROAD (0.00 + 49.29 + 0.00) = 49.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	70.81	0.00	-12.02	-4.42	0.00	0.00	-5.08	49.29

Segment Leq : 49.29 dBA

Results segment # 8: 6W (night)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.24	1.50	-0.01	1.99

ROAD (0.00 + 47.04 + 0.00) = 47.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	70.81	0.00	-14.34	-4.42	0.00	0.00	-5.01	47.04

Segment Leq : 47.04 dBA

Results segment # 9: 7E (night)

Source height = 1.22 m

ROAD (0.00 + 26.99 + 0.00) = 26.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	53.75	0.00	-17.61	-9.15	0.00	0.00	0.00	26.99

Segment Leq : 26.99 dBA

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Results segment # 10: 7W (night)

Source height = 1.22 m

ROAD (0.00 + 27.30 + 0.00) = 27.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	53.75	0.00	-17.30	-9.15	0.00	0.00	0.00	27.30

Segment Leq : 27.30 dBA

Total Leq All Segments: 52.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 58.62
(NIGHT) : 52.25

OLA #4 – 2031

STAMSON 5.0 NORMAL REPORT Date: 08-09-2016 09:27:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: wc5_2031.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: 5N (day/night)

Car traffic volume : 12487/1703 veh/TimePeriod
Medium truck volume : 1280/175 veh/TimePeriod
Heavy truck volume : 427/58 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 5N (day/night)

Angle1 Angle2 : 0.00 deg 41.60 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 286.50 / 286.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 5S (day/night)

Car traffic volume : 11841/2090 veh/TimePeriod
Medium truck volume : 1211/214 veh/TimePeriod
Heavy truck volume : 404/71 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: 5S (day/night)

Angle1 Angle2 : 0.00 deg 41.60 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 270.00 / 270.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: 6N (day/night)

Car traffic volume : 13244/1806 veh/TimePeriod
Medium truck volume : 1353/185 veh/TimePeriod
Heavy truck volume : 451/62 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: 6N (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 274.10 / 274.10 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: 6S (day/night)

Car traffic volume : 12759/2252 veh/TimePeriod
Medium truck volume : 1294/228 veh/TimePeriod
Heavy truck volume : 431/76 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: 6S (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 285.90 / 285.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 4185/465 veh/TimePeriod
Medium truck volume : 351/39 veh/TimePeriod
Heavy truck volume : 117/13 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 5: 5E (day/night)

Angle1 Angle2 : -48.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 143.90 / 143.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 6: 5W (day/night)

Car traffic volume : 4284/476 veh/TimePeriod
Medium truck volume : 358/40 veh/TimePeriod
Heavy truck volume : 119/13 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 6: 5W (day/night)

Angle1 Angle2 : -48.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 134.90 / 134.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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Road data, segment # 7: 6E (day/night)

Car traffic volume : 34923/3880 veh/TimePeriod
Medium truck volume : 2700/300 veh/TimePeriod
Heavy truck volume : 900/100 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 7: 6E (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 81.80 / 81.80 m

Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 0.10 m
Elevation : 1.00 m
Barrier receiver distance : 45.70 / 45.70 m
Source elevation : 0.00 m
Receiver elevation : 1.00 m
Barrier elevation : 2.00 m
Reference angle : 0.00

Road data, segment # 8: 6W (day/night)

Car traffic volume : 34923/3880 veh/TimePeriod
Medium truck volume : 2700/300 veh/TimePeriod
Heavy truck volume : 900/100 veh/TimePeriod
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 8: 6W (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 113.40 / 113.40 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 0.00 deg
Barrier height : 0.10 m
Elevation : 1.00 m
Barrier receiver distance : 45.70 / 45.70 m
Source elevation : 0.00 m
Receiver elevation : 1.00 m
Barrier elevation : 2.00 m
Reference angle : 0.00

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Road data, segment # 9: 7E (day/night)

Car traffic volume : 3114/393 veh/TimePeriod
Medium truck volume : 263/27 veh/TimePeriod
Heavy truck volume : 88/9 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 9: 7E (day/night)

```

-----
Angle1   Angle2           : -13.00 deg   9.00 deg
Wood depth           :           0   (No woods.)
No of house rows     :           0 / 0
Surface              :           1   (Absorptive ground surface)
Receiver source distance : 172.60 / 172.60 m
Receiver height       :           1.50 / 1.50 m
Topography           :           1   (Flat/gentle slope; no barrier)
Reference angle       :           0.00
    
```

Road data, segment # 10: 7W (day/night)

```

-----
Car traffic volume   :   3195/393   veh/TimePeriod
Medium truck volume  :    270/27    veh/TimePeriod
Heavy truck volume   :    90/9     veh/TimePeriod
Posted speed limit   :    50 km/h
Road gradient        :           0 %
Road pavement        :           1 (Typical asphalt or concrete)
    
```

Data for Segment # 10: 7W (day/night)

```

-----
Angle1   Angle2           : -13.00 deg   9.00 deg
Wood depth           :           0   (No woods.)
No of house rows     :           0 / 0
Surface              :           1   (Absorptive ground surface)
Receiver source distance : 165.40 / 165.40 m
Receiver height       :           1.50 / 1.50 m
Topography           :           1   (Flat/gentle slope; no barrier)
Reference angle       :           0.00
    
```

Results segment # 1: 5N (day)

Source height = 1.32 m

ROAD (0.00 + 41.46 + 0.00) = 41.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.66	69.34	0.00	-21.27	-6.62	0.00	0.00	0.00	41.46

Segment Leq : 41.46 dBA

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Results segment # 2: 5S (day)

Source height = 1.32 m

ROAD (0.00 + 41.64 + 0.00) = 41.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.66	69.10	0.00	-20.84	-6.62	0.00	0.00	0.00	41.64

Segment Leq : 41.64 dBA

Results segment # 3: 6N (day)

Source height = 1.32 m

ROAD (0.00 + 44.17 + 0.00) = 44.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	69.58	0.00	-20.95	-4.47	0.00	0.00	0.00	44.17

Segment Leq : 44.17 dBA

Results segment # 4: 6S (day)

Source height = 1.31 m

ROAD (0.00 + 43.68 + 0.00) = 43.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	69.40	0.00	-21.25	-4.47	0.00	0.00	0.00	43.68

Segment Leq : 43.68 dBA

Results segment # 5: 5E (day)

Source height = 1.26 m

ROAD (0.00 + 44.29 + 0.00) = 44.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	63.95	0.00	-16.30	-3.36	0.00	0.00	0.00	44.29

Segment Leq : 44.29 dBA

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Results segment # 6: 5W (day)

Source height = 1.26 m

ROAD (0.00 + 44.84 + 0.00) = 44.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	64.04	0.00	-15.84	-3.36	0.00	0.00	0.00	44.84

Segment Leq : 44.84 dBA

Results segment # 7: 6E (day)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.24	1.50	-0.21	1.79

ROAD (0.00 + 56.38 + 0.00) = 56.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	77.90	0.00	-12.02	-4.42	0.00	0.00	-5.08	56.38

Segment Leq : 56.38 dBA

Results segment # 8: 6W (day)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.24	1.50	-0.01	1.99

ROAD (0.00 + 54.13 + 0.00) = 54.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	77.90	0.00	-14.34	-4.42	0.00	0.00	-5.01	54.13

Segment Leq : 54.13 dBA

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Results segment # 9: 7E (day)

Source height = 1.26 m

ROAD (0.00 + 34.26 + 0.00) = 34.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	61.02	0.00	-17.61	-9.15	0.00	0.00	0.00	34.26

Segment Leq : 34.26 dBA

Results segment # 10: 7W (day)

Source height = 1.26 m

ROAD (0.00 + 34.68 + 0.00) = 34.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	61.13	0.00	-17.30	-9.15	0.00	0.00	0.00	34.68

Segment Leq : 34.68 dBA

Total Leq All Segments: 59.21 dBA

Results segment # 1: 5N (night)

Source height = 1.32 m

ROAD (0.00 + 35.81 + 0.00) = 35.81 dBA

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

0	42	0.66	63.70	0.00	-21.27	-6.62	0.00	0.00	0.00	35.81
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Segment Leq : 35.81 dBA

Results segment # 2: 5S (night)

Source height = 1.31 m

ROAD (0.00 + 37.12 + 0.00) = 37.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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0	42	0.66	64.58	0.00	-20.84	-6.62	0.00	0.00	0.00	37.12
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Segment Leq : 37.12 dBA

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Results segment # 3: 6N (night)

Source height = 1.32 m

ROAD (0.00 + 38.55 + 0.00) = 38.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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-90	0	0.66	63.96	0.00	-20.95	-4.47	0.00	0.00	0.00	38.55
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Segment Leq : 38.55 dBA

Results segment # 4: 6S (night)

Source height = 1.31 m

ROAD (0.00 + 39.15 + 0.00) = 39.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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-90	0	0.66	64.87	0.00	-21.25	-4.47	0.00	0.00	0.00	39.15
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Segment Leq : 39.15 dBA

Results segment # 5: 5E (night)

Source height = 1.26 m

ROAD (0.00 + 37.76 + 0.00) = 37.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	57.42	0.00	-16.30	-3.36	0.00	0.00	0.00	37.76

Segment Leq : 37.76 dBA

Results segment # 6: 5W (night)

Source height = 1.25 m

ROAD (0.00 + 38.29 + 0.00) = 38.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-48	41	0.66	57.49	0.00	-15.84	-3.36	0.00	0.00	0.00	38.29

Segment Leq : 38.29 dBA

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Results segment # 7: 6E (night)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.24	!	1.50	!
		-0.21	!
			1.79

ROAD (0.00 + 49.84 + 0.00) = 49.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	71.36	0.00	-12.02	-4.42	0.00	0.00	-5.08	49.84

Segment Leq : 49.84 dBA

Results segment # 8: 6W (night)

Source height = 1.24 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.24	!	1.50	!
		-0.01	!
			1.99

ROAD (0.00 + 47.60 + 0.00) = 47.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.63	71.36	0.00	-14.34	-4.42	0.00	0.00	-5.01	47.60

Segment Leq : 47.60 dBA

Results segment # 9: 7E (night)

Source height = 1.20 m

ROAD (0.00 + 27.62 + 0.00) = 27.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	54.38	0.00	-17.61	-9.15	0.00	0.00	0.00	27.62

Segment Leq : 27.62 dBA

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Results segment # 10: 7W (night)

Source height = 1.20 m

ROAD (0.00 + 27.93 + 0.00) = 27.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-13	9	0.66	54.38	0.00	-17.30	-9.15	0.00	0.00	0.00	27.93

Segment Leq : 27.93 dBA

Total Leq All Segments: 52.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.21
(NIGHT): 52.84