REPORT

LANGSTAFF ROAD – WESTON ROAD TO HIGHWAY 7

VAUGHAN, ONTARIO

ROAD TRAFFIC NOISE AND VIBRATION ASSESSMENT
RWDI # 1603246
December 9, 2021

SUBMITTED TO

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EXECUTIVE SUMMARY

WSP retained RWDI AIR Inc. to conduct a noise and vibration impact assessment in support of the Class EA Study for improvements to Langstaff Road from Weston Road to Highway 7 in Vaughan, Ontario within the Regional Municipality of York.

The Langstaff Road study area is approximately 6.5 km in length and extends from Weston Road easterly to Highway 7. Planned improvements include the construction of an overpass connecting Langstaff Road sections over the existing CN MacMillan rail yard. The project also includes widening of Langstaff Road to six lanes between Weston Road and Dufferin Street only, minor realignments of the grading easements and construction of retaining walls in support of the overpass. These changes are not significant contributors to the future sound levels on their own; however, a significant increase in traffic is expected along Langstaff Road, which will have an effect. The study area is predominantly comprised of industrial and commercial areas. The only noise sensitive areas identified in the noise and vibration assessment are to the west of Weston Road and to the east of Dufferin Street. . This assessment focused only on evaluating the noise and vibration impacts at the residential backyards abutting the right-of-way along Langstaff Road, located between Dufferin Street and Highway 7, as well as those west of Weston Road.

The potential for environmental noise and vibration impacts of the proposed Langstaff Road improvements have been assessed. Only operational sound levels have been considered as no significant alignment changes are expected along Langstaff Road between Dufferin Street and Highway 7, or west of Weston Road. Changes in future sound levels resulting from the Project are expected to be small. However, the overall future sound levels are predicted to exceed 60 dBA at all receptors. Noise mitigation measures were not assessed as the noise sensitive areas have existing noise barrier walls in accordance with the York Region Standard Operating Procedures and Traffic Noise Mitigation Policy.

Ground-borne and air-borne vibration impacts were evaluated qualitatively, based on the traffic data and the receptor proximity. It was concluded that the operational vibration impacts will be insignificant.

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1 INTRODUCTION

WSP retained RWDI AIR Inc. to conduct a road traffic noise and vibration impact assessment of Langstaff Road between Weston Road and Highway 7 in Vaughan, Ontario. The City of Vaughan is within the Regional Municipality of York. This assessment has been completed in support of a Class Environmental Assessment. The objectives of the study are:

- to assess the "Future Build" and "Future No-Build" sound levels (i.e., sound levels at mature state of development and at start of construction);
- to determine the potential for sound level effects as a result of the project;
- to specify mitigation measures where required; and
- to qualitatively assess the potential vibration impacts.

A plain language description of terminology and relationships between everyday sounds to aid the non-technical reader is provided in Appendix A.

2 PROJECT DESCRIPTION

The existing Langstaff Road is a two-lane road that runs east-west through the City of Vaughan from Highway 7 near Dufferin Street to Islington Avenue. The Langstaff Road study corridor is approximately 6.5 km in length and extends from Weston Road easterly to Highway 7 (Figure 1, WSP).

Proposed improvements will include the construction of an overpass across the CN MacMillan rail yard to connect the two sections of Langstaff Road that currently terminate on either side of the yard. To take full advantage of the overpass, Langstaff Road will also be widened to six lanes for most parts, as well as at the overpass over the Metrolinx Barrie Line. Other improvements include minor realignments, grading easement and the construction of retaining walls to support the overpass. The ultimate lane configuration will be determined for certain sections during the Detailed Design phase; however, changes are not expected to have a significant effect on the future sound levels estimated as part of this assessment.

The study area is comprised of industrial and commercial areas. The only noise sensitive land uses are west of Weston Road and east of Dufferin Street. The scope of the project is limited to Weston Road to the west, as such, only residences in close proximity to the westerly end of the study area were included in this assessment. The focus of this assessment was limited to residences abutting Langstaff Road between Dufferin Street and Highway 7, and immediately west of Weston Road.

Based on information provided by WSP, traffic volumes for the Future Build scenario are projected to be significantly higher along Langstaff Road with the construction of the overpass compared to the Future No-Build scenario. This is anticipated to result in some changes in future sound levels. Construction noise resulting from the widening and realignment is not expected to have an impact on the residences located between Dufferin Street and Highway 7 as the work is expected to take place west of Dufferin Street. The same would apply to residences located immediately west of Weston Road. An evaluation of effects from operational (road traffic) sound level and vibration resulting from the undertaking are provided herein.

3 ROAD TRAFFIC SOUND LEVEL ASSESSMENT

3.1 Applicable Guidelines

The following documents are applicable to the project and were reviewed:

- York Region, Standard Operating Procedures (SOPs) for Traffic Noise Mitigation on Regional Roads, Transportation Services, Capital Delivery - Roads, July 2010; and
- York Region, York Region Traffic Noise Mitigation Policy for Regional Roads, March 23, 2006.

The documents indicate the following for Capital Road Projects:

- The objective level for road traffic noise in outdoor living areas is 55 dBA (16-hour daytime average);
- Noise barriers are considered for road traffic noise when noise level exceeds 60 dBA (average over a 16-hour daytime period) at 1.5 m above ground, up to 4 m away from rear wall of a dwelling that has reverse frontage.

The project in the present case consists of improvements to a regional road. Therefore, as per the documents noted above, the study focuses on identifying residential areas with reverse frontage (or side frontage) and noise levels in excess of 60 dBA (16-hour daytime, $L_{EQ\text{-}16h}$).

The proposed road improvements are primarily within areas zoned for commercial and industrial land use. The only noise sensitive areas are located at the ends of the project area southeast of Dufferin Street and Langstaff Road and west of Weston Road and Langstaff Road. Both locations are established residential areas that feature developed-built noise barrier walls, which have been taken into consideration in determining the Future No Build and Future Build impacts. Noise barrier walls were considered for locations experiencing sound levels of over 60 dBA with the aim to achieve a minimum noise wall reduction of 6 dBA. A maximum noise barrier height of 3 m was considered to comply with the Regional maximum requirements for height. When a reduction of 6 dBA cannot be achieved with a barrier height of 3 m or less, then it is deemed infeasible to implement a barrier at the representative noise sensitive area.

The applicable noise criteria are summarized in Table 1.

Table 1: Summary of Applicable Noise Criteria

Daytime Outdoor $L_{EQ\text{-}16h}$ Criterion for Barriers	Applicable Noise Criteria
60 dBA or higher	Outdoor living area at 1.5 m above ground, 3 m from the rear face of a dwelling. Criterion for a barrier to be considered technically feasible, the barrier achieves at least a 6 dB reduction in sound level at the representative noise sensitive areas.

3.2 Traffic Data

While the potential noise impact is to be determined by comparing the change in noise level between the "start of construction" and "mature state of development" based on the York Region SOPs, the proposed improvements on Langstaff Road have not been identified in the current York Region 10-year capital program; as such, there is no defined "start of construction" date. In addition, the study area along the corridor is fully built out for employment and industrial land use under existing conditions. Per above, the Project Team has confirmed that that the "start of construction" and "mature state of development" is to be based on the future planning horizon of 2041. The potential change in noise level will be calculated based on the scenario "2041 No Build" (i.e. no improvements on Langstaff Road) and "2041 Build" (i.e. with improvements on Langstaff Road).

Projected traffic volumes posted speeds and vehicle distribution percentages were provided by WSP. Traffic volumes were provided for the 2041 horizon year. . Table 2 provides a summary of the modelled traffic volume and speed data. More detailed data are summarized in Appendix B.

Detailed hourly traffic data, including vehicle classification, was provided for Dufferin Street and Weston Road. The provided current vehicle classification percentages, along with future truck traffic growth provided by WSP, were used to estimate the vehicle classification for the 2041 horizon year. It was assumed that Langstaff Road would have similar vehicle distribution as Dufferin Street and Weston Road.

Table 2: 2041 Future Traffic Volumes and Speeds for the Study Area

Road	Portion of Road	Direction	2041 No Build AADT [1]	2041 Build AADT	Speed Limit [2] (km/h)
Langstaff	East of Dufferin Street	Eastbound	11,046	16,951	66 [3]
		Westbound	11,136	17,089	64 [3]
	West of Weston Road	Eastbound	17,432	18,418	60
		Westbound	16,899	17,855	
Dufferin	North of Langstaff	Northbound	20,314	19,650	60
		Southbound	20,651	19,976	
Weston	South of Langstaff	Northbound	18,381	18,124	60
		Southbound	18,628	18,368	
	North of Langstaff	Northbound	21,340	21,170	60
		Southbound	19,698	19,542	

Notes: [1] AADT stands for the Annual Average Daily Traffic.
[2] As per Traffic Analysis for this project
[3] 85th Percentile Vehicle Speed from actual traffic counts

Where heavy truck percentages exceed 5% of the total traffic volume and where sound barriers are warranted, York Region's SOPs require supplemental analysis to be completed for each vehicle class. Overall truck percentages exceed 5% for some of the road segments noted above. However, the heavy truck-only percentage varies between 2% and 3%, thus no supplemental analysis is necessary.

3.3 Noise-Sensitive Land Uses

As noted in Section 3.2, the study area along the corridor is fully built out for employment and industrial land use under existing conditions. Therefore, there are no noise-sensitive land uses between Dufferin Street and Weston Road. However, several existing residential land uses have been identified east of Dufferin Street and west of Weston Road. Only representative receptor locations with reverse frontages along Langstaff Road have been identified and modelled to demonstrate the worst-case sound level. The representative outdoor living area may be situated on any side of the receptor but is generally taken to be the back yard. The location is to be up to 4 m from the façade of the receptor and 1.5 m above the ground. The locations of the representative receptors are shown in Figures 2 and 3. Table 3 summarized the modelled representative receptors and the number of homes each receptor represents.

Table 3: Modelled Representative Receptors

Representative Receptor ID	Number of Dwellings	Receptor Description
NR1	2	Rear Facing Residential home on Yellowood Circle
NR2	2	Rear Facing Residential home on Yellowood Circle
NR3	2	Rear Facing Residential home on Yellowood Circle
NR4	2	Rear Facing Residential home on Yellowood Circle
NR5	3	Rear Facing Residential home on Yellowood Circle
NR6	5	Rear Facing Residential home on Yellowood Circle
NR7	5	Rear Facing Residential home on Yellowood Circle
NR8	5	Rear Facing Residential home on Yellowood Circle
NR9	3	Rear Facing Residential home on Dante Court
NR10	2	Rear Facing Residential home on Dante Court
NR11	3	Rear Facing Residential home on Dante Court
NR12	3	Rear Facing Residential home on Bourbon Street
NR13	2	Rear Facing Residential home on Bourbon Street
NR14	3	Rear Facing Residential home on Bourbon Street

3.4 Road Traffic Model

Road traffic sound levels were modelled using the ORNAMENT algorithms implemented in the STAMSON v5.04 computer program produced by the MOE (MOE 1996).

The following factors were taken into account in the analysis:

- Horizontal and vertical road-receiver geometry;
- Road gradients;
- Intervening terrain types (ground absorption);
- Traffic volumes and percentage of trucks;
- Vehicle speeds;
- Screening provided by terrain, houses and existing sound barriers.

Distances and receptor locations were obtained from the base mapping information provided as part of the preliminary plan package for the proposed improvements on Langstaff Road. Existing barriers along Langstaff Road and Weston Road were also considered. RWDI staff inspected the walls, which appear to be made of wood (Dufferin Street/Langstaff Road area) and of brick (Weston Road/Langstaff Road area). Though the walls were showing signs of aging, neither had any significant gaps or damages that could severely compromise the overall noise reduction potential. Wooden walls along Langstaff Road seemed to be in worse condition than those along Weston Road due to the choice of construction material. Most sections showed clear signs of peeling paint and few small sections are beginning to rot, though no large gaps were noted. Settling, and weather impacts, have resulted in minor separation of planks in some areas, but no significant gaps were observed anywhere. One small section of the wall is missing its topping, which reduces the overall height by approximately 20 cm, but that does not affect the overall performance by a significant amount. Barrier locations were obtained from Google Street View and heights were measured in the field.

3.5 Determination of Potential Impacts

The Future Build scenario involves the construction of an overpass crossing the CN MacMillan rail yard, as well as minor improvements at intersections along Langstaff Road, as well as the widening of Langstaff Road to six lanes. The improvements are not expected to bring traffic closer to the existing receptors. However, the overpass is expected to result in a local traffic increase.

As noted above, existing wooden and brick walls have been included in the modelling. The brick walls vary in height and are tallest near the Langstaff Road and Weston Road intersection. These walls were modelled to an average height of 2 m. Wooden walls near Dufferin Street and Langstaff Road are slightly taller and vary between 2.3 m and 2.5 m depending on the section. These walls were modelled to an average height of 2.3 m. Location of existing walls are shown in Figures 2 and 3.

Table 4 summarized the predicted Future Build sound levels. The STAMSON outputs can be found in Appendix C.

Table 4: Predicted Future Sound Levels – Unmitigated

Representative Receptor ID	Start of Construction Sound Level L_{EQ-16h} (dBA) [1]	Mature State of Development Sound Level L_{EQ-16h} (dBA) [1]	Change in Sound Levels (dB)[1]	>60 dBA?
NR1	61	62	1	Yes
NR2	60	62	1	Yes
NR3	60	62	1	Yes
NR4	60	62	2	Yes
NR5	60	62	2	Yes
NR6	60	62	2	Yes
NR7	60	61	2	Yes
NR8	60	62	2	Yes
NR9	64	64	0	Yes
NR10	63	63	0	Yes
NR11	63	63	0	Yes
NR12	64	64	0	Yes
NR13	64	64	0	Yes
NR14	62	62	0	Yes

Notes: [1] Predictions include only existing walls. Sound levels rounded to the nearest number

The results show that all existing representative receptors are predicted to exceed 60 dBA future sound level, thus investigation of noise mitigation is warranted. However, as per Scenario A of the SOPs, where there are existing noise barriers, new noise mitigation will not be provided.

4 VIBRATION ASSESSMENT

4.1 Ground-Borne Vibration

The proposed improvements include the construction of a significant overpass structure crossing the CN MacMillan rail yard, one of the largest rail yards in North America. The rail yard operates continuously, and rail infrastructure is a known source of ground-borne vibration. However, the rail yard and proposed overpass is over 2 km away from the existing residences located at the intersection of Dufferin Street and Langstaff Road, and approximately 3 km away from the residences at Weston Road and Langstaff Road. No vibration impacts due to rail are expected at the existing receptor locations. Furthermore, the proposed improvements are not altering the rail yard, thus impacting the future rail activities.

Ground-borne vibration is less common from rubber-tired vehicles, especially due to light weight passenger vehicles operating on smooth pavement at city speeds. Heavier vehicles, such as Class 8 trucks, have a higher potential do have the potential to generate ground-borne vibrations, however, the highest percentage of heavy trucks in the area is 2.7%. The United States Department of Transportation Federal Highway Administration (FHWA) has assessed the impact of operational traffic induced vibrations at highway speeds and has concluded that both measured and predicted vibrations are less than any known criteria (FHWA, 2017). FHWA states that normal living activities, such as closing doors and walking across floors, within buildings could create greater levels of vibration than highway traffic. Therefore, at speeds well below 100 km/h, ground-borne vibration is expected to be insignificant.

4.2 Air-Borne Vibration

Noise from heavy vehicles has the potential to induce vibration in some building components, especially in very close proximity. Existing residences are located close to Langstaff Road at the ends of the study area. To evaluate the potential for air-borne vibration, a high-level assessment was completed of the closest and most impacted receptor location, NR12. Based on the STAMSON outputs, provided in Appendix C, Langstaff Road Westbound is the highest road segment contributor mainly due to its close proximity, of approximately 20 m. The assessment focused on that road segment and its highest 1-hour traffic volume, which would represent the worst-case scenario.

FHWA's TNM 2.5 model is based on 1/3-octave band reference data for various vehicles. The software has the ability to output 1/3-octave band data, which is particularly useful in assessing the potential for low frequency noise, and in turn, air-borne vibration. The maximum sound level impact at NR12 was assessed using the TNM 2.5 model using vehicle data outlined in Table 6 below.

Table 6: Langstaff Westbound West of Weston Road Highest Hourly Vehicle Volume

Total Vehicle Count	Automobiles	Medium Trucks	Heavy Trucks	Speed Limit (km/h)
2,011	1,873	92	45	60

Table 7 summarizes the low frequency sound levels at NR12.

Table 7: Low Frequency 1/3 Octave Band Sound Levels at NR12

Representative Receptor ID	1/3 Octave Band Sound Level (dBA)			
NR12	50 Hz	63 Hz	80 Hz	100 Hz
	32	39	43	46

These sound levels were compared to sound pressure thresholds for building components developed by the National Aeronautics and Space Administration (NASA, 1982). Figure 4 shows an example of perceived vibrations at receptor NR12 and at what sound pressure levels vibration would be perceptible based on the NASA thresholds. The sound levels shown in Table 7 are below the lowest perceptible levels. As such, no air-borne vibration is expected due to the proposed improvement.

5 CONCLUSIONS

The potential for environmental noise impacts of the proposed Langstaff Road improvements have been assessed. Only operational sound levels and vibration impacts have been considered as construction will occur far away from existing noise sensitive areas.

Changes in future sound levels resulting from the improvements are expected to be small as illustrated in Table 4. However, future sound levels are predicted to exceed 60 dBA at all receptors at the ends of the study area. Noise mitigation measures were not investigated as there are existing noise barrier walls.

Ground-borne and air-borne operational vibration impacts are expected to be insignificant given the vehicle mix.

6 REFERENCES

Ontario Ministry of the Environment (MOE), 1989, *Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)*

Ontario Ministry of the Environment (MOE), 1996, STAMSON v5.04: Road, Rail and Rapid Transit Noise Prediction Model

York Region, July 2010, *Standard Operating Procedures (SOP's) for Traffic Noise Mitigation on Regional Roads*

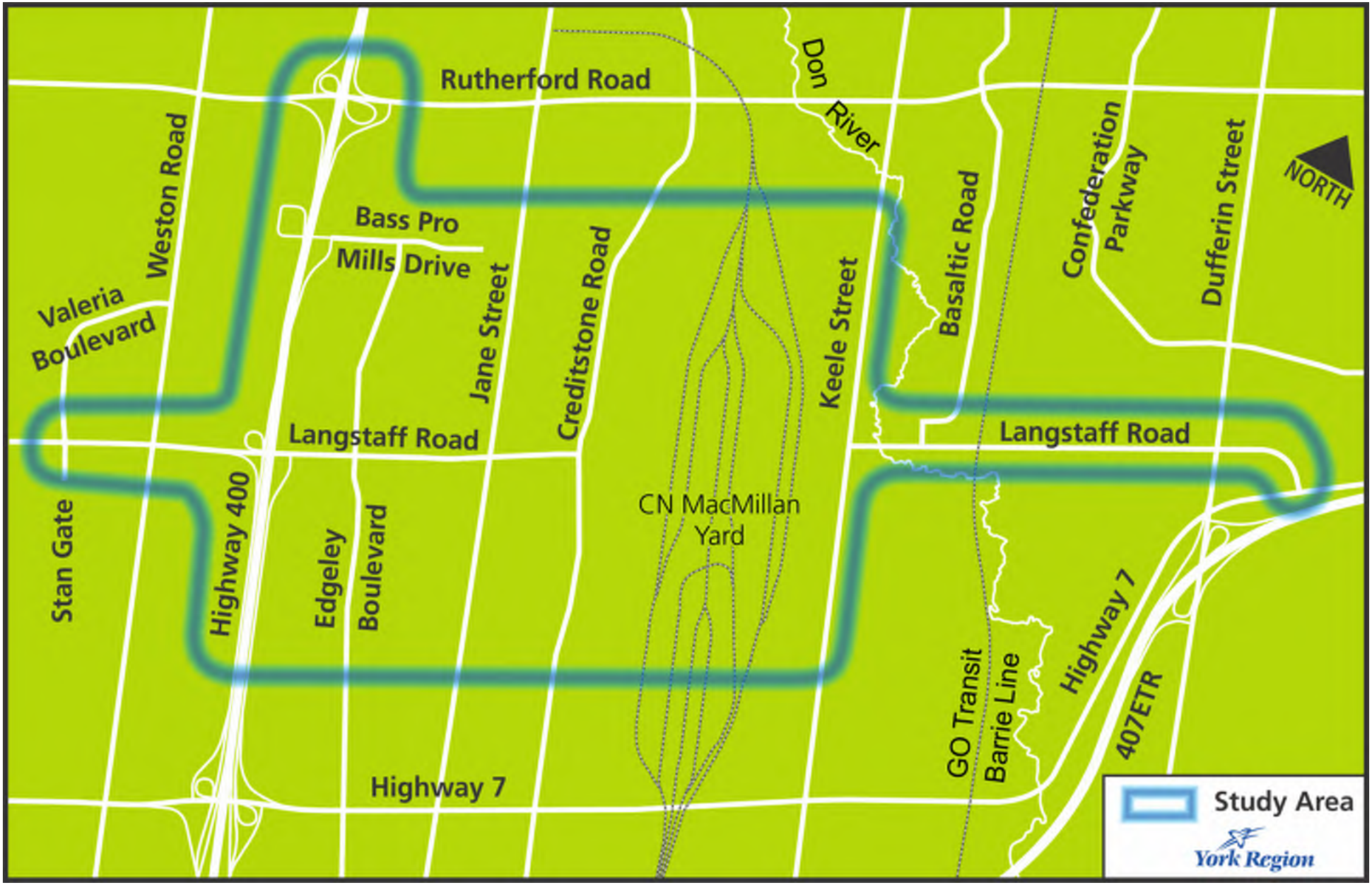
York Region, March 2006, *York Region Traffic Noise Mitigation Policy for Regional Roads*

Federal Highway Administration (FHWA), June 2017, *Analysis and Abatement Guidance, Appendix G: Highway Traffic-Induced Vibration*

Federal Highway Administration (FHWA), February 1998, *Traffic Noise Model Technical Manual*

National Aeronautics and Space Administration (NASA), March 1982, *Guide to the Evaluation of Human Exposure to Noise from Large Wind Turbines*

FIGURES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Don River
Weston Road
Bass Pro
Mills Drive
Jane Street
Creditstone Road
Keele Street
Basaltic Road
Confederation Parkway
Dufferin Street
NORTH
Valeria Boulevard
Langstaff Road
Langstaff Road
Stan Gate
Highway 400
Edgeley Boulevard
CN MacMillan Yard
GO Transit Barrie Line
Highway 7
407ETR
Highway 7
Study Area
York Region

Plate 1

Scale
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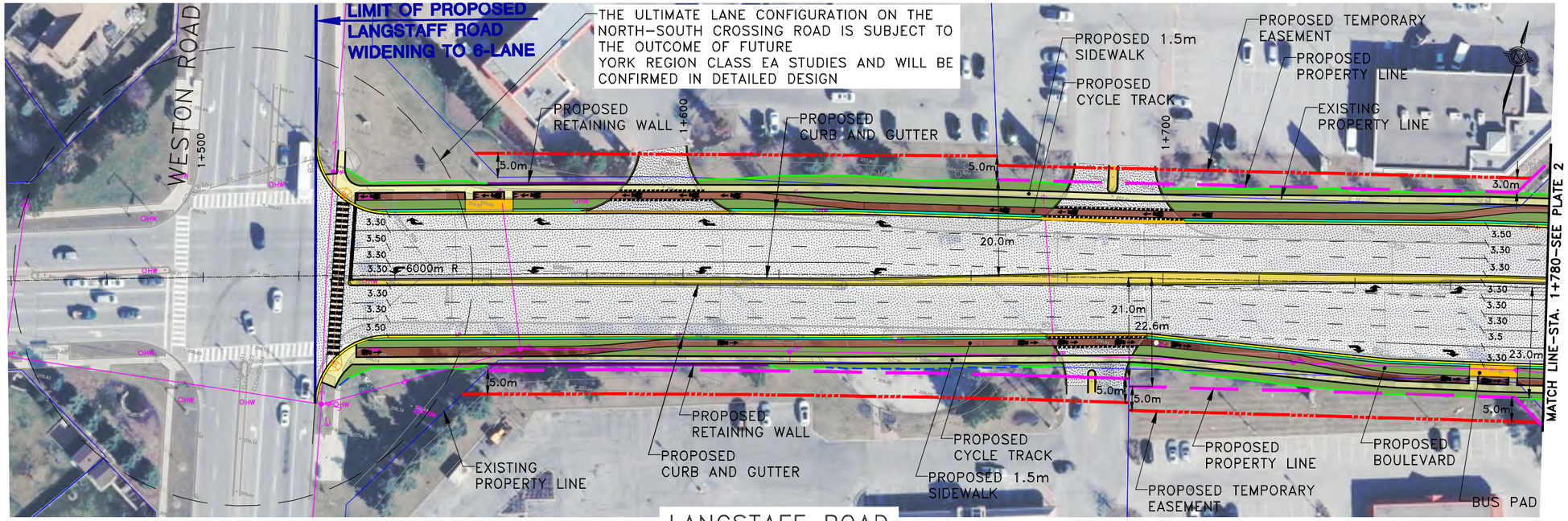
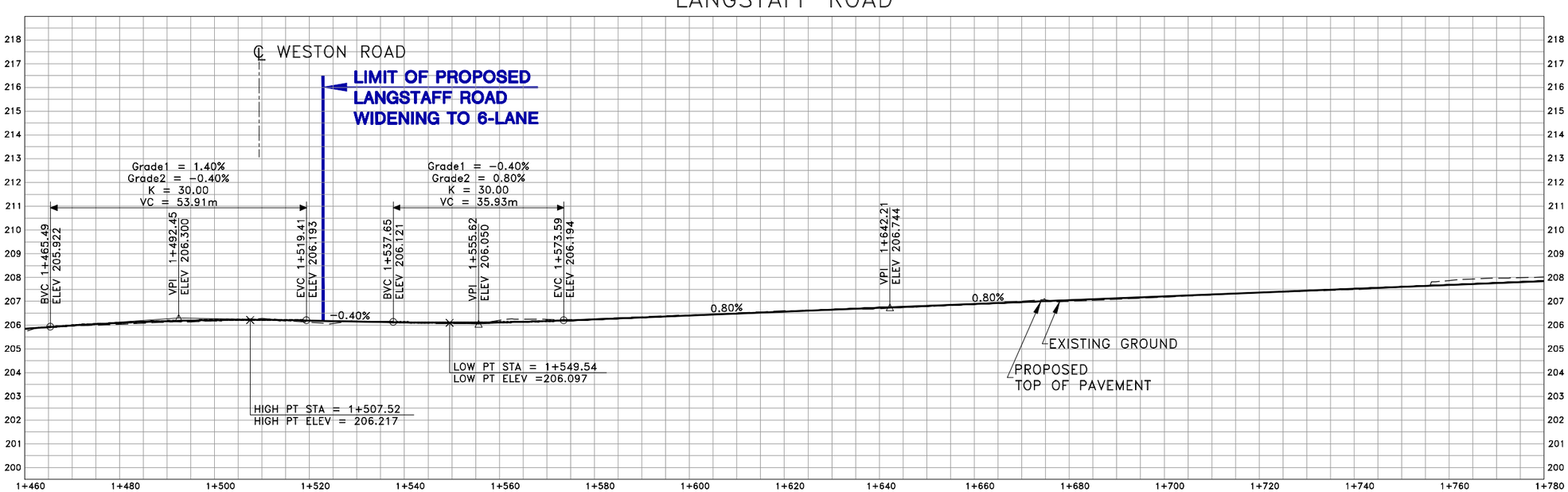
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIDEWALK / MULTI-USE PATHWAY
- PROPOSED CURB AND GUTTER
- PROPOSED MEDIAN
- PROPOSED CYCLE TRACK
- PROPOSED DROP CURB
- PROPOSED RETAINING WALL / PARAPET WALL
- PROPOSED CONCRETE BARRIER
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 2

Scale
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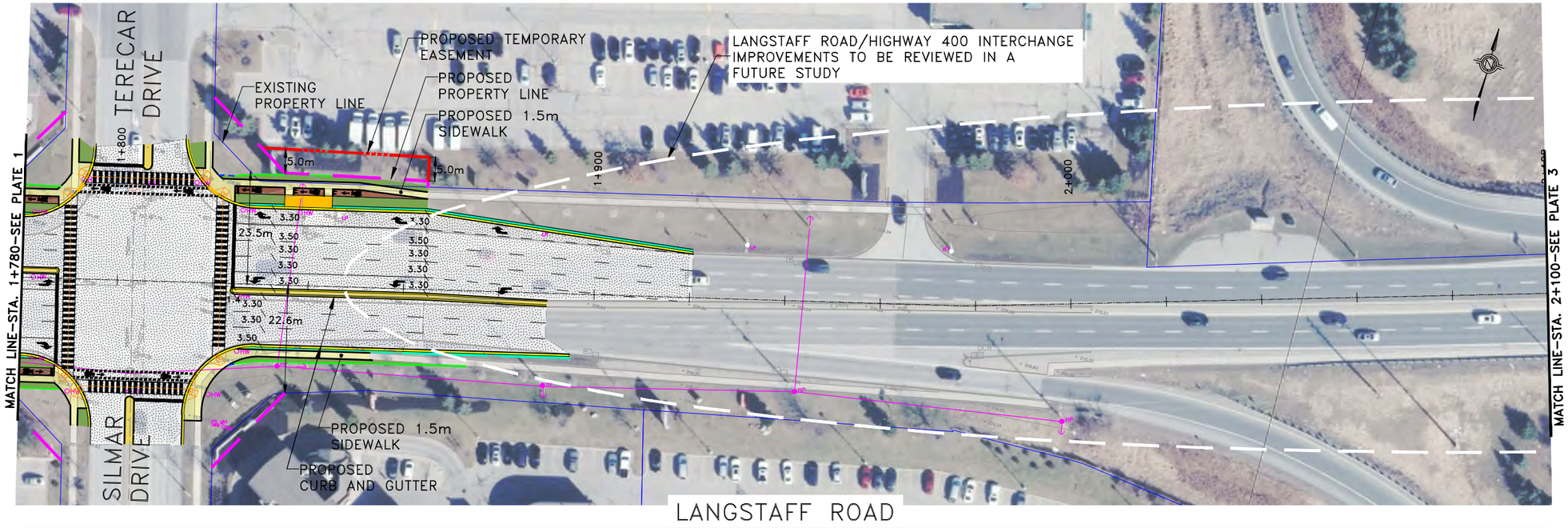

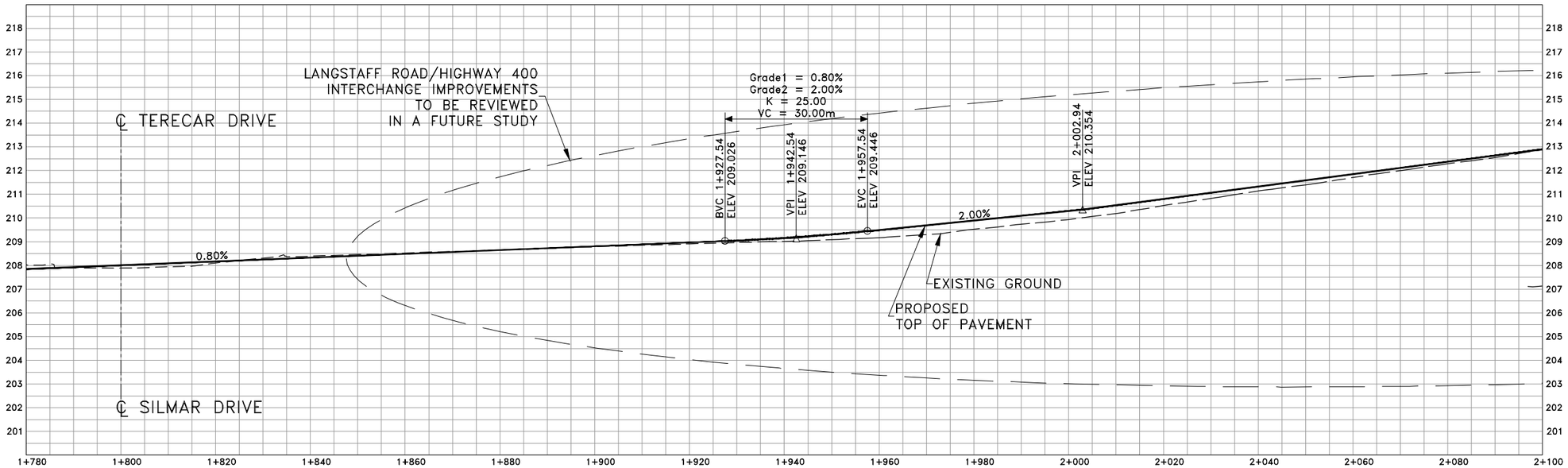

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GREAT STREETS
Building Roads that Build Community

LANGSTAFF ROAD MUNICIPAL CLASS EA STUDY
WESTON ROAD TO HIGHWAY 7
PREFERRED DESIGN PRELIMINARY PLAN AND PROFILE

York Region

Plate 3

Scale

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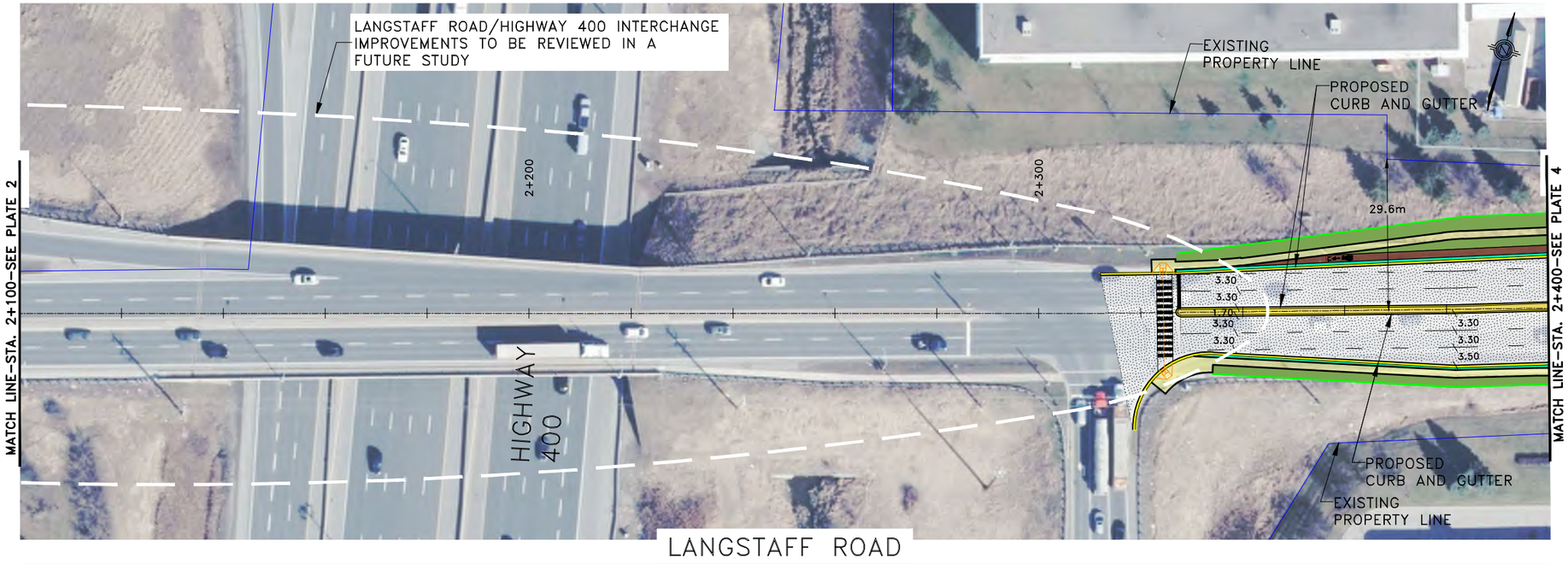

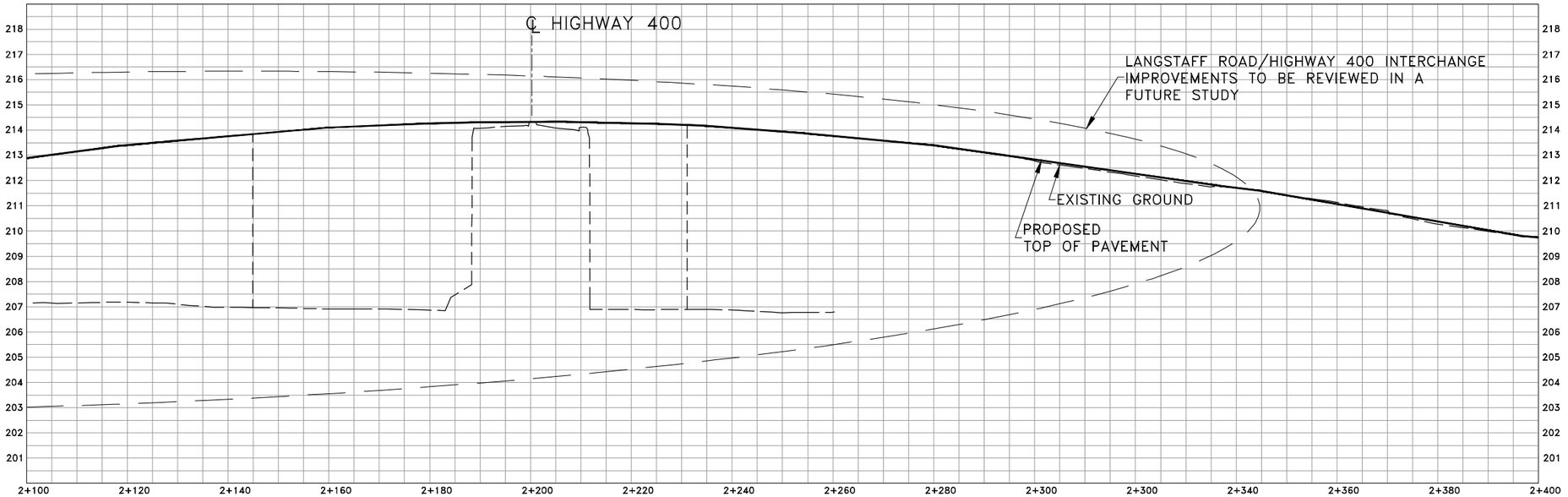

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LANGSTAFF ROAD MUNICIPAL CLASS EA STUDY
WESTON ROAD TO HIGHWAY 7
PREFERRED DESIGN PRELIMINARY PLAN AND PROFILE

York Region

Plate 4

Scale
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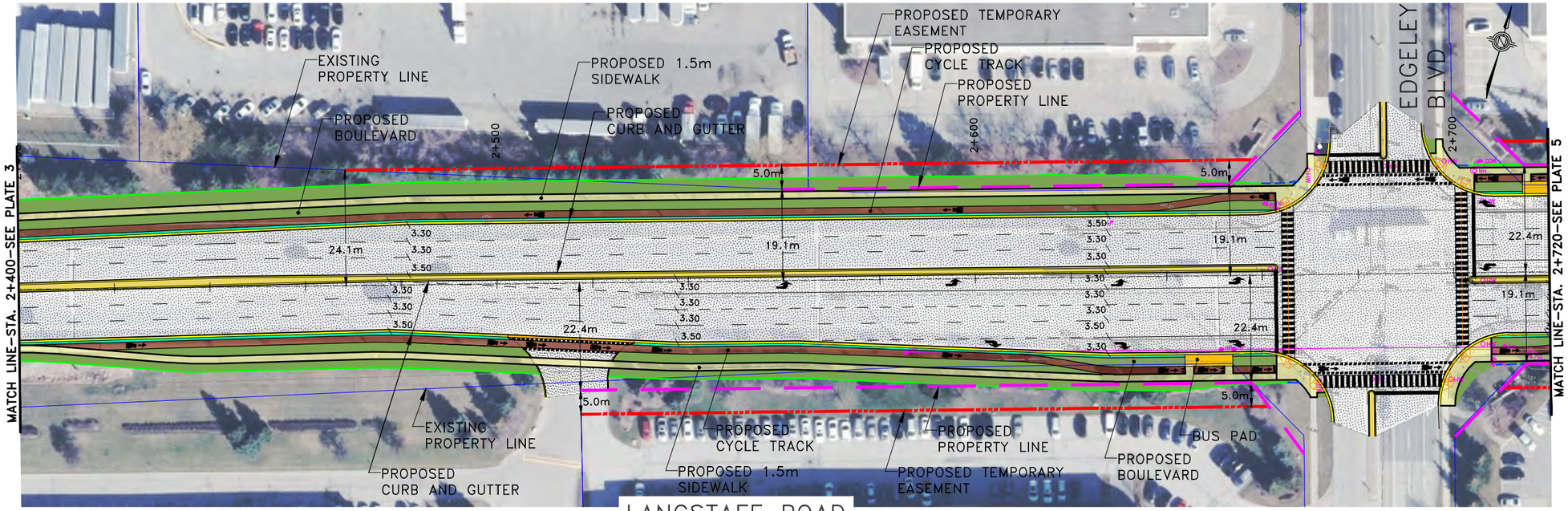

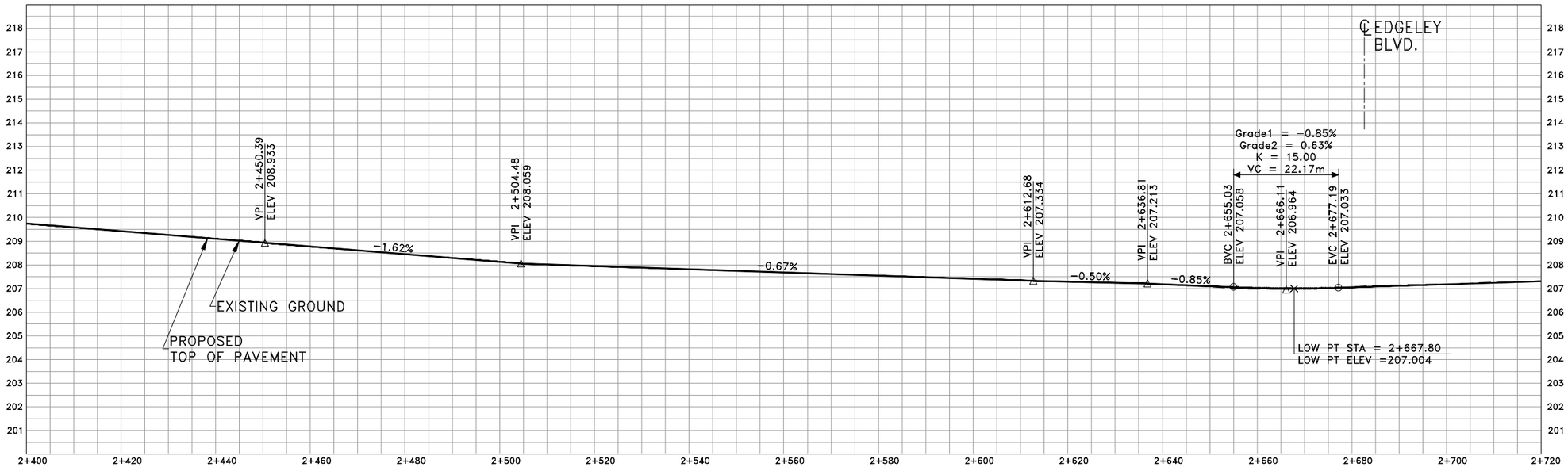

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Plate 5

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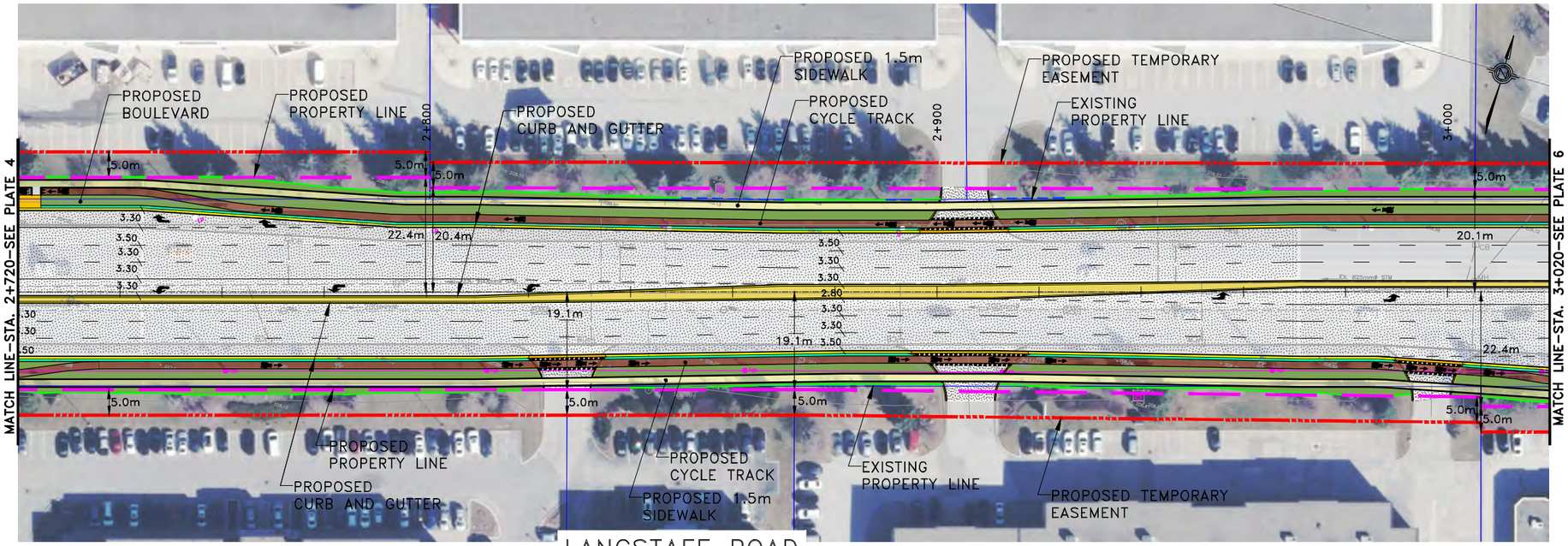

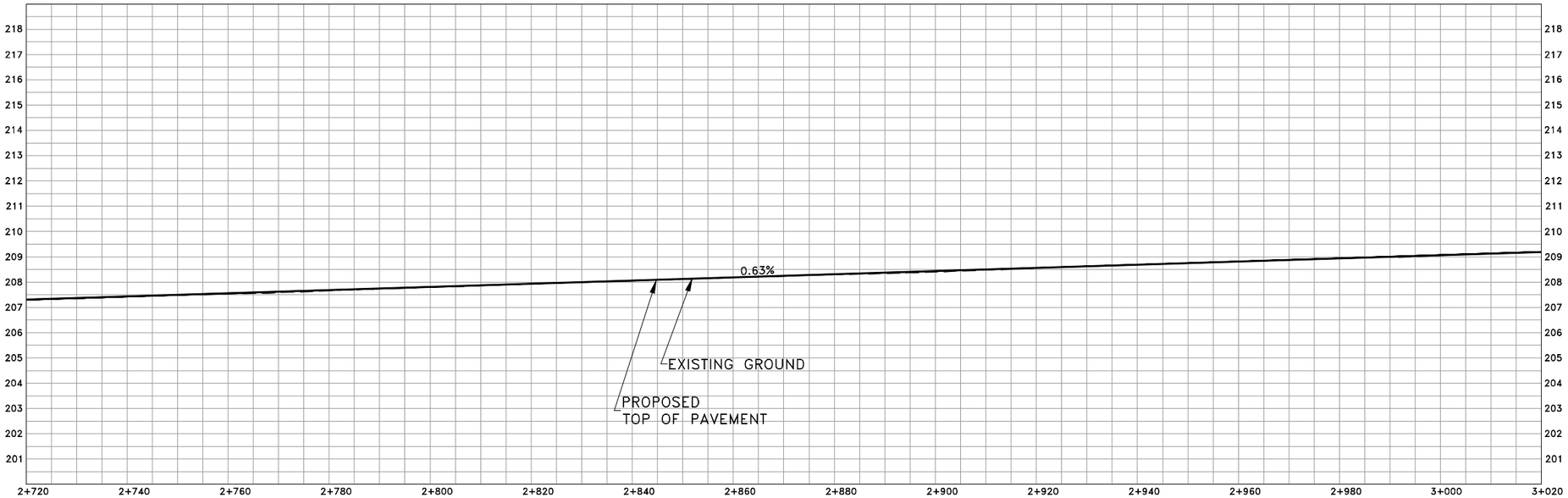

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GREAT STREETS
Building Roads that Build Community

LANGSTAFF ROAD MUNICIPAL CLASS EA STUDY
WESTON ROAD TO HIGHWAY 7
PREFERRED DESIGN PRELIMINARY PLAN AND PROFILE

York Region

Plate 6

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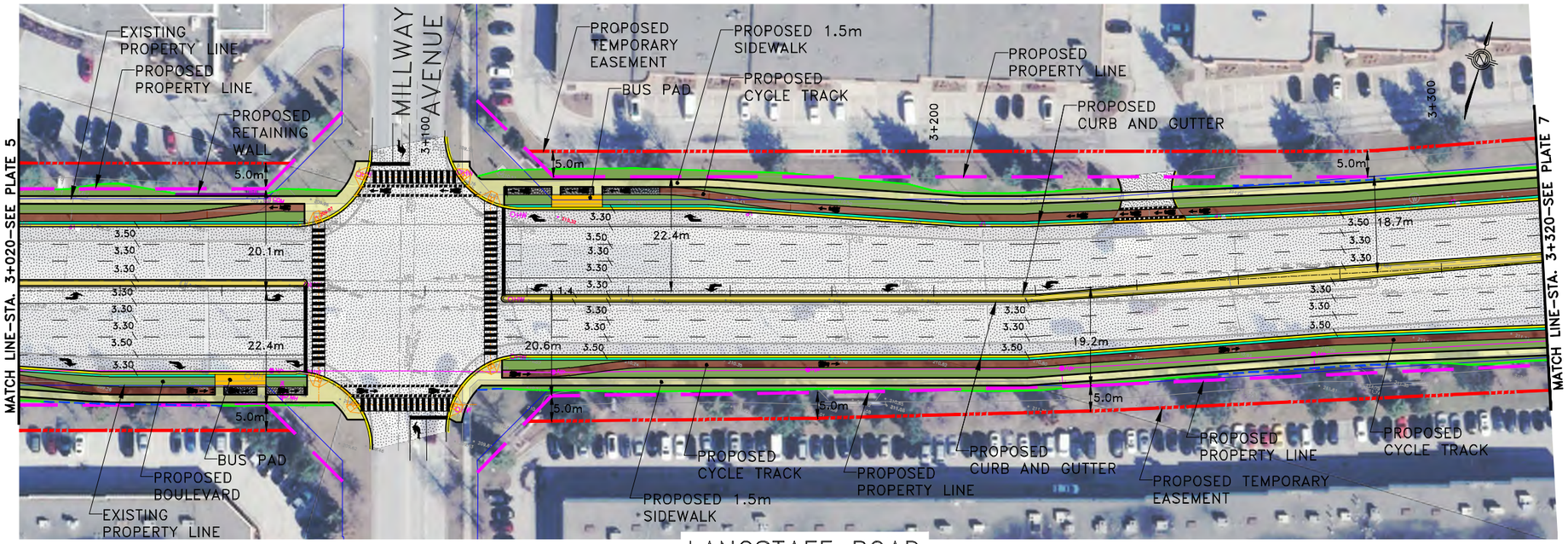
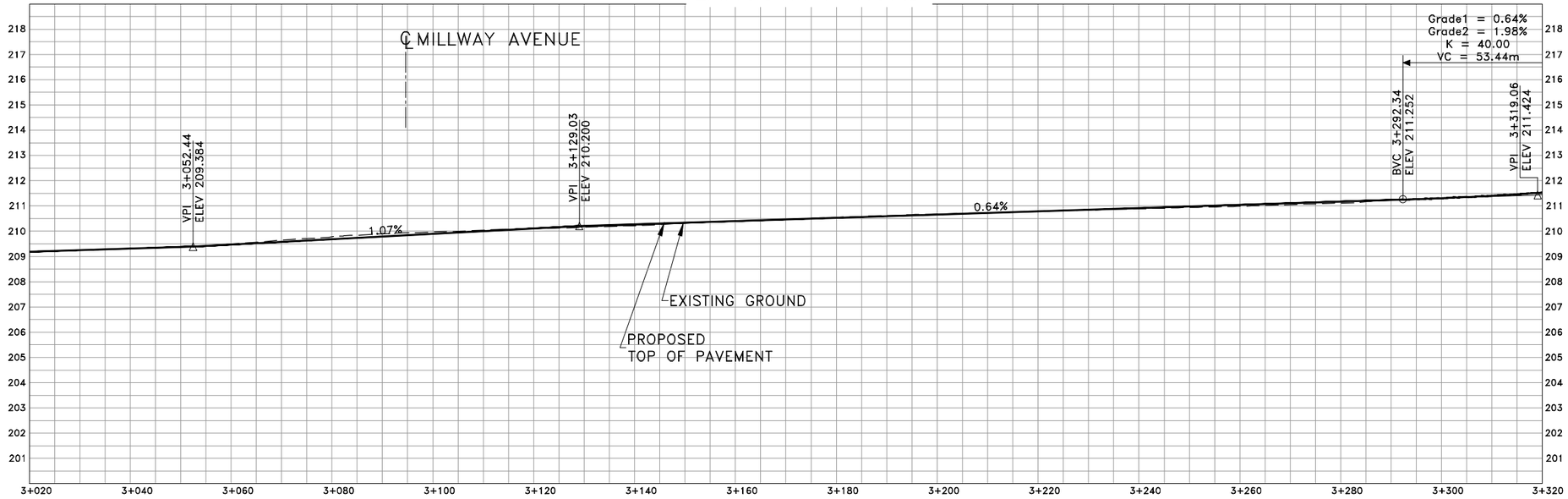
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200



LANGSTAFF ROAD

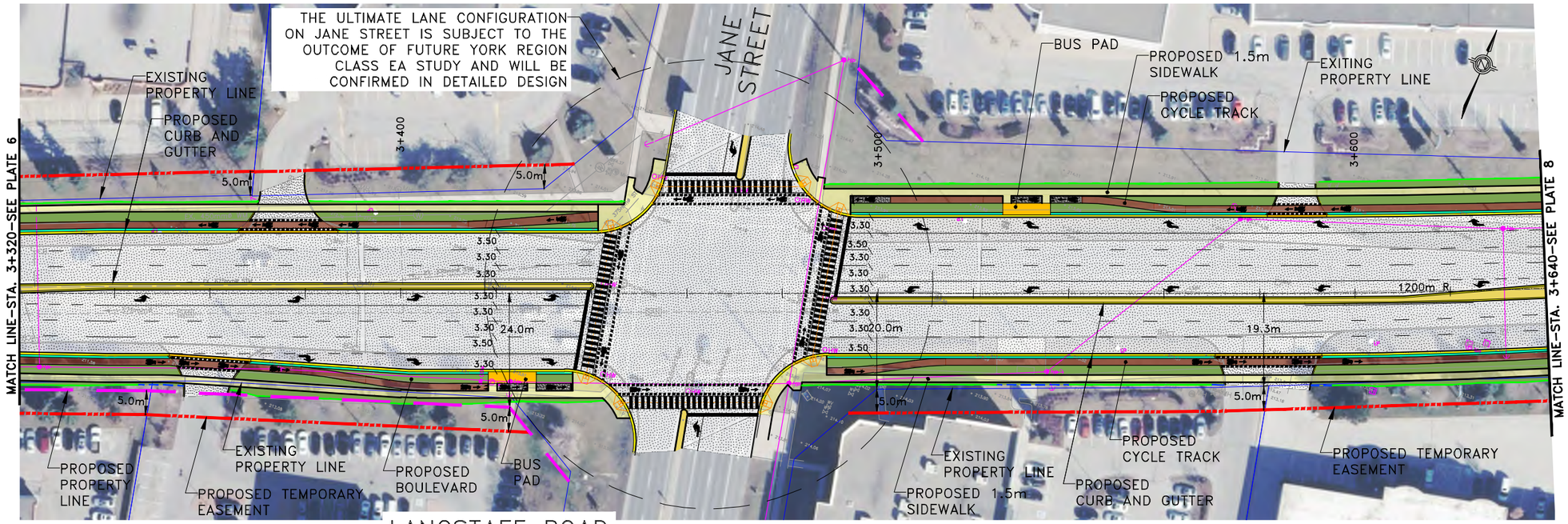


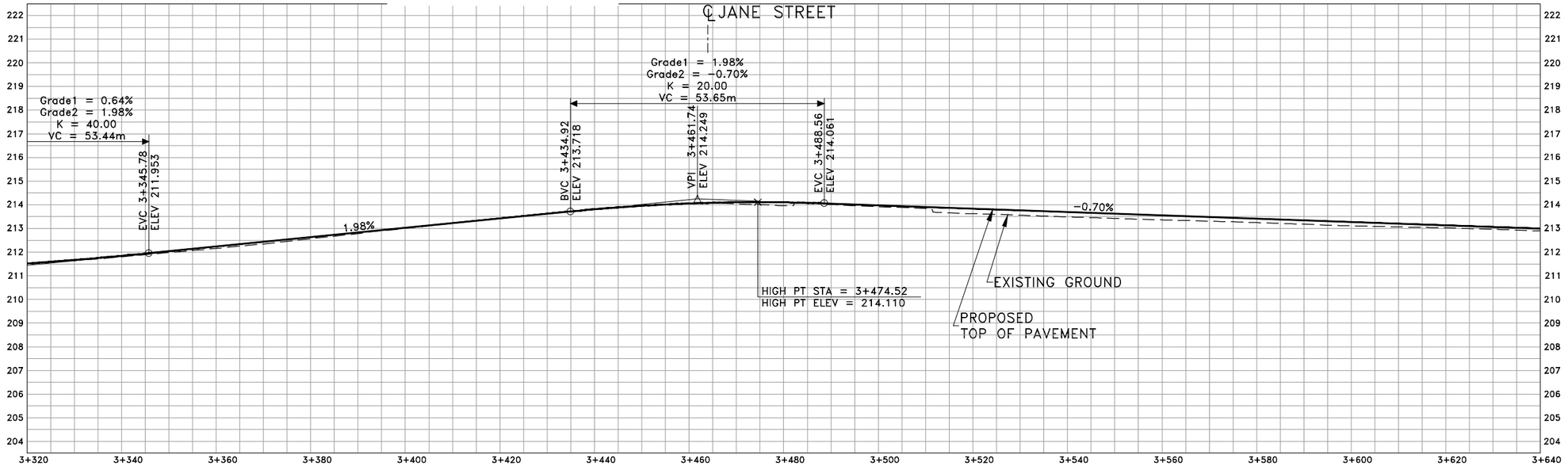
LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIDEWALK / MULTI-USE PATHWAY
- PROPOSED CURB AND GUTTER
- PROPOSED MEDIAN
- PROPOSED CYCLE TRACK
- PROPOSED DROP CURB
- PROPOSED RETAINING WALL / PARAPET WALL
- PROPOSED CONCRETE BARRIER
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 7

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
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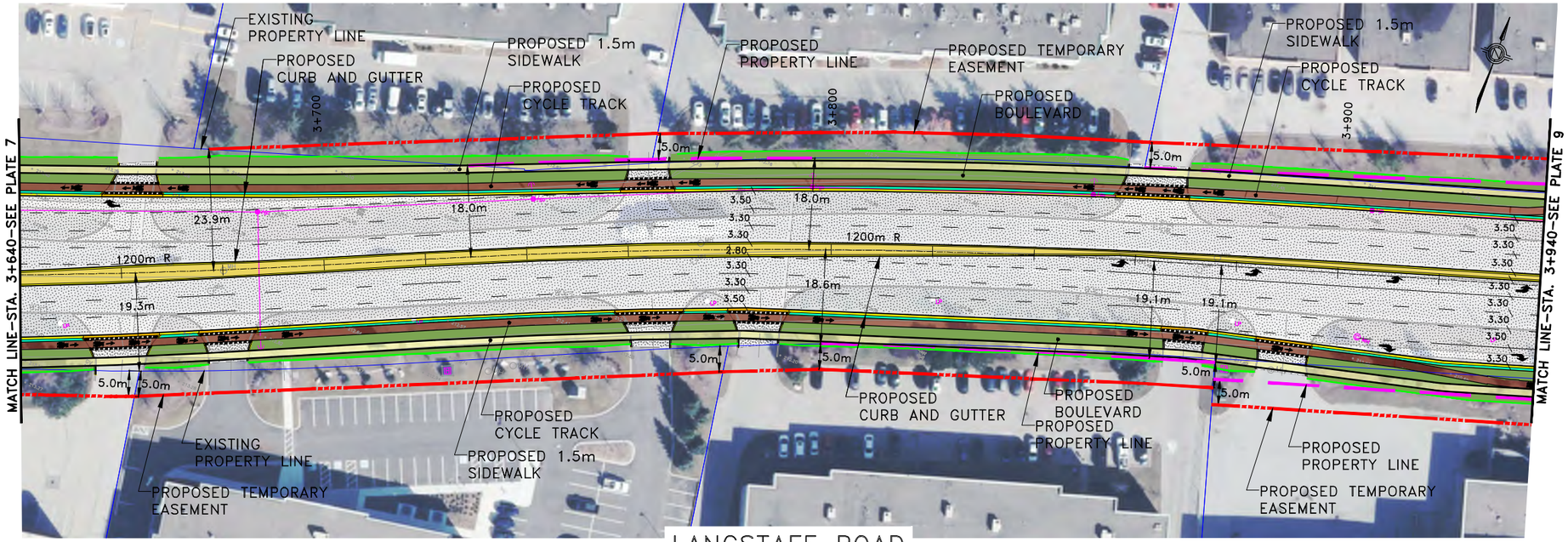
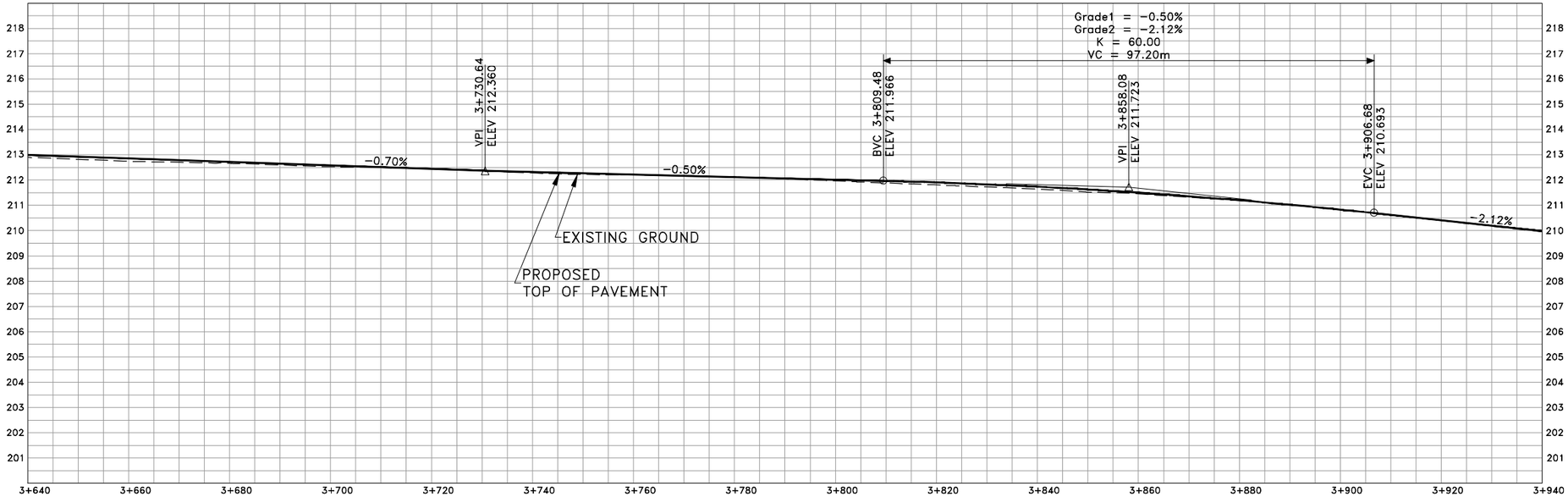
Plate 8

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200



LANGSTAFF ROAD



LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
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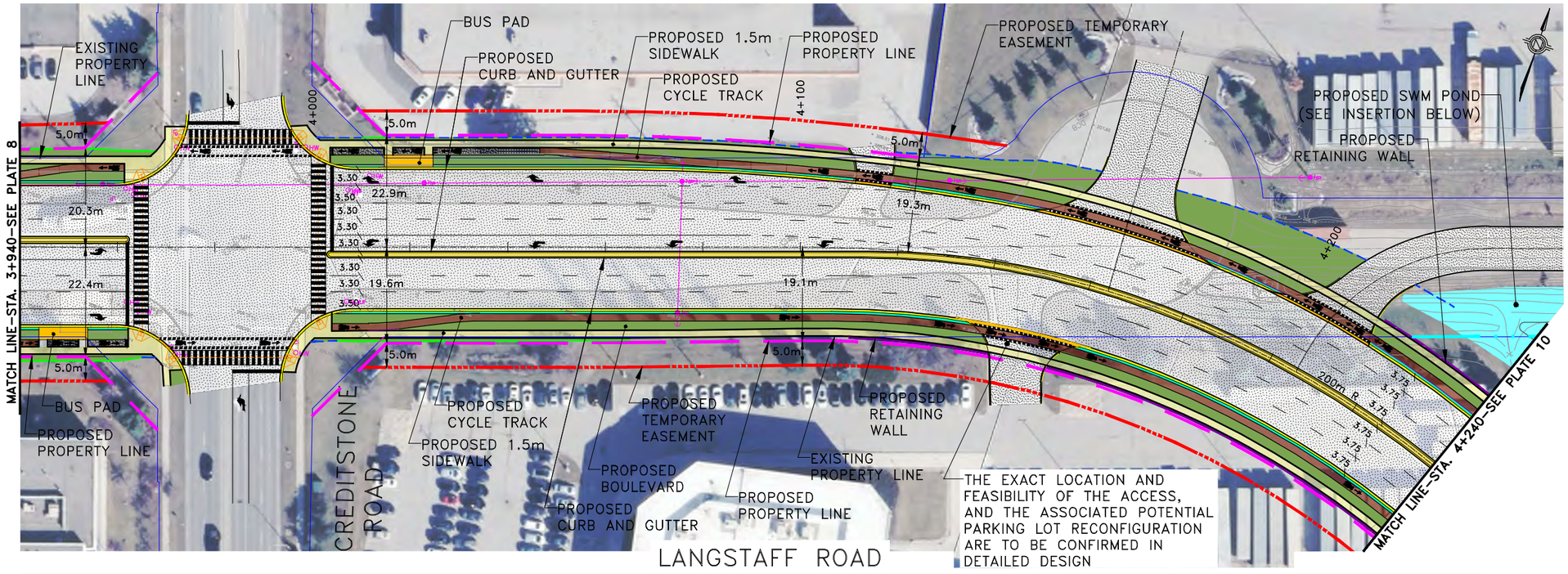
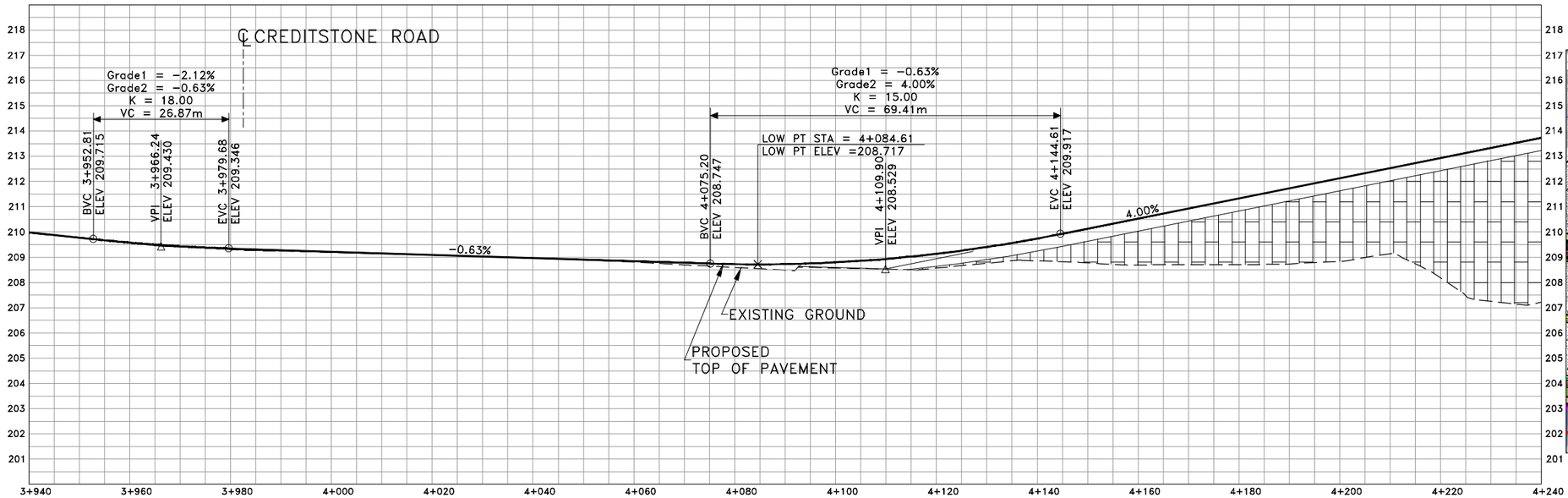
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE





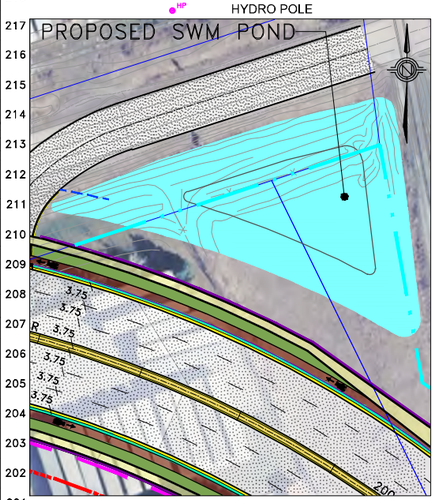


Plate 9

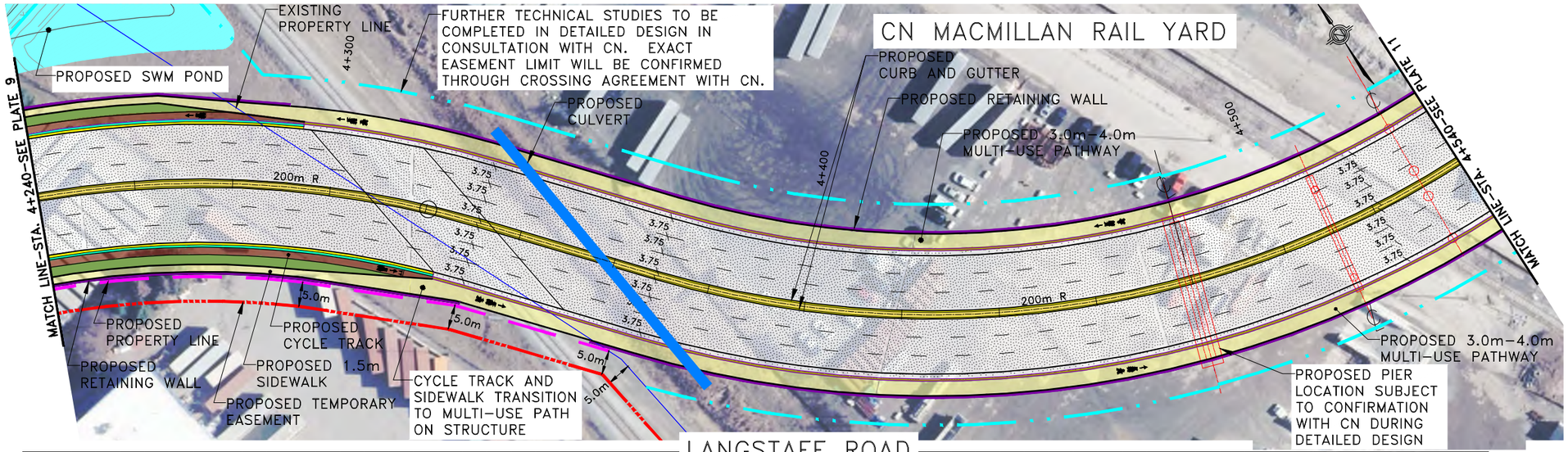
Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200

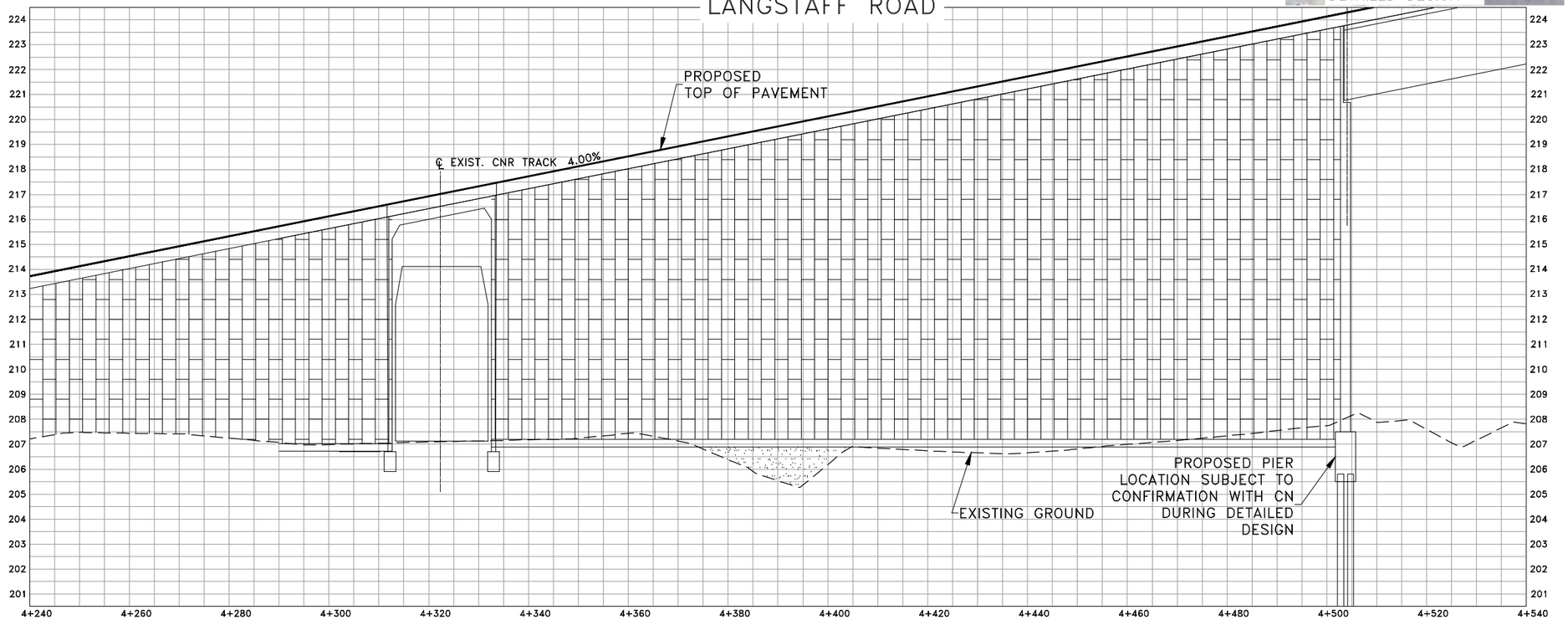
LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIDEWALK / MULTI-USE PATHWAY
- PROPOSED CURB AND GUTTER
- PROPOSED MEDIAN
- PROPOSED CYCLE TRACK
- PROPOSED DROP CURB
- PROPOSED RETAINING WALL / PARAPET WALL
- PROPOSED CONCRETE BARRIER
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 10

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
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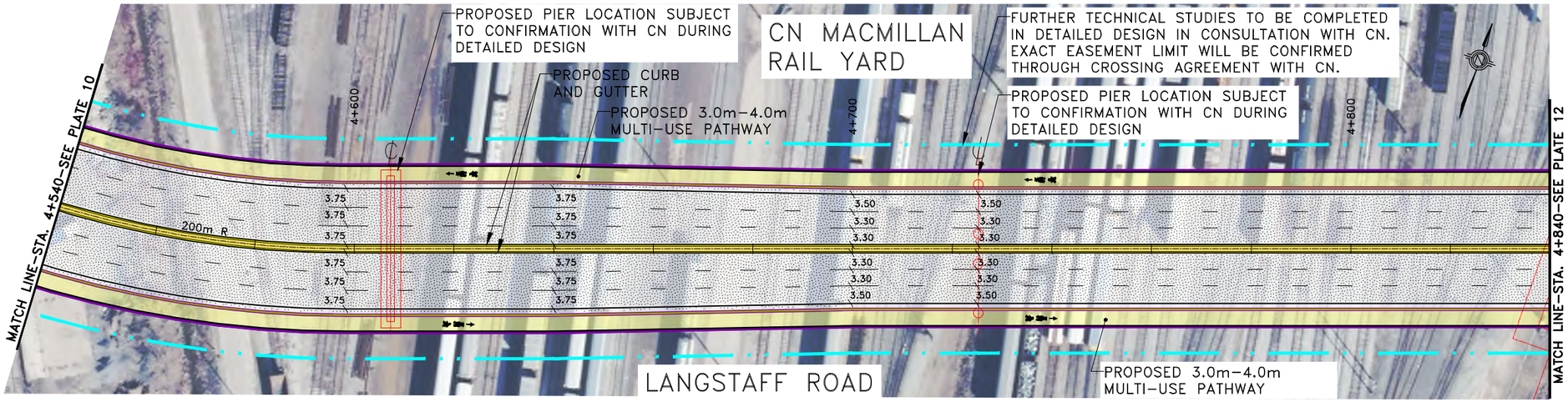

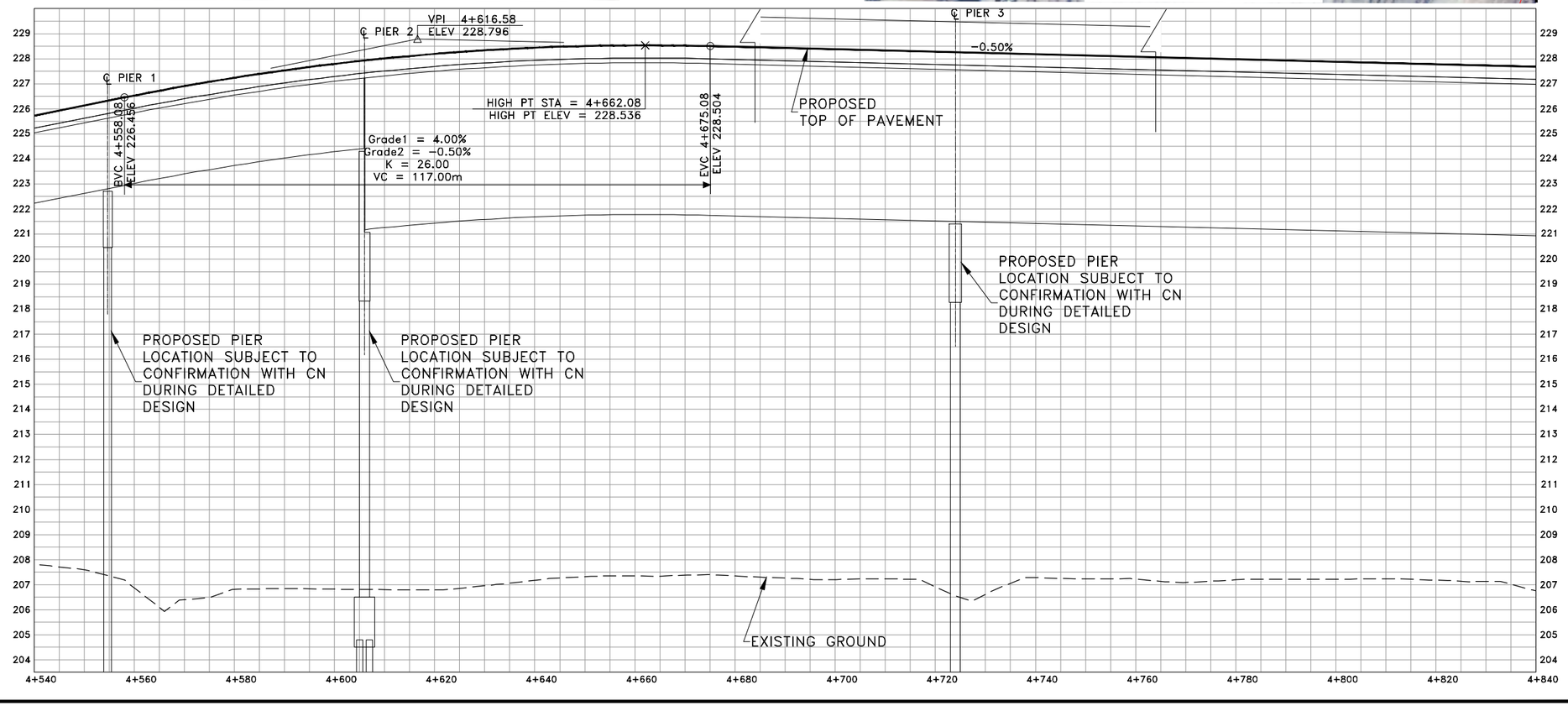

Plate 11

Scale

5m 0 10m 20m HORIZ. 1:1000

1m 0 2m 4m VERT. 1:200

LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
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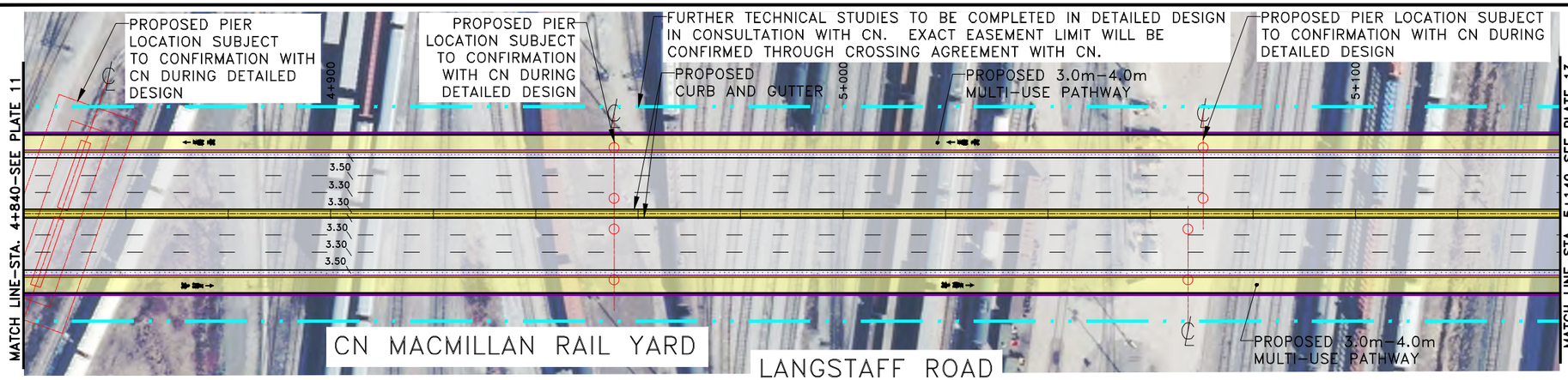

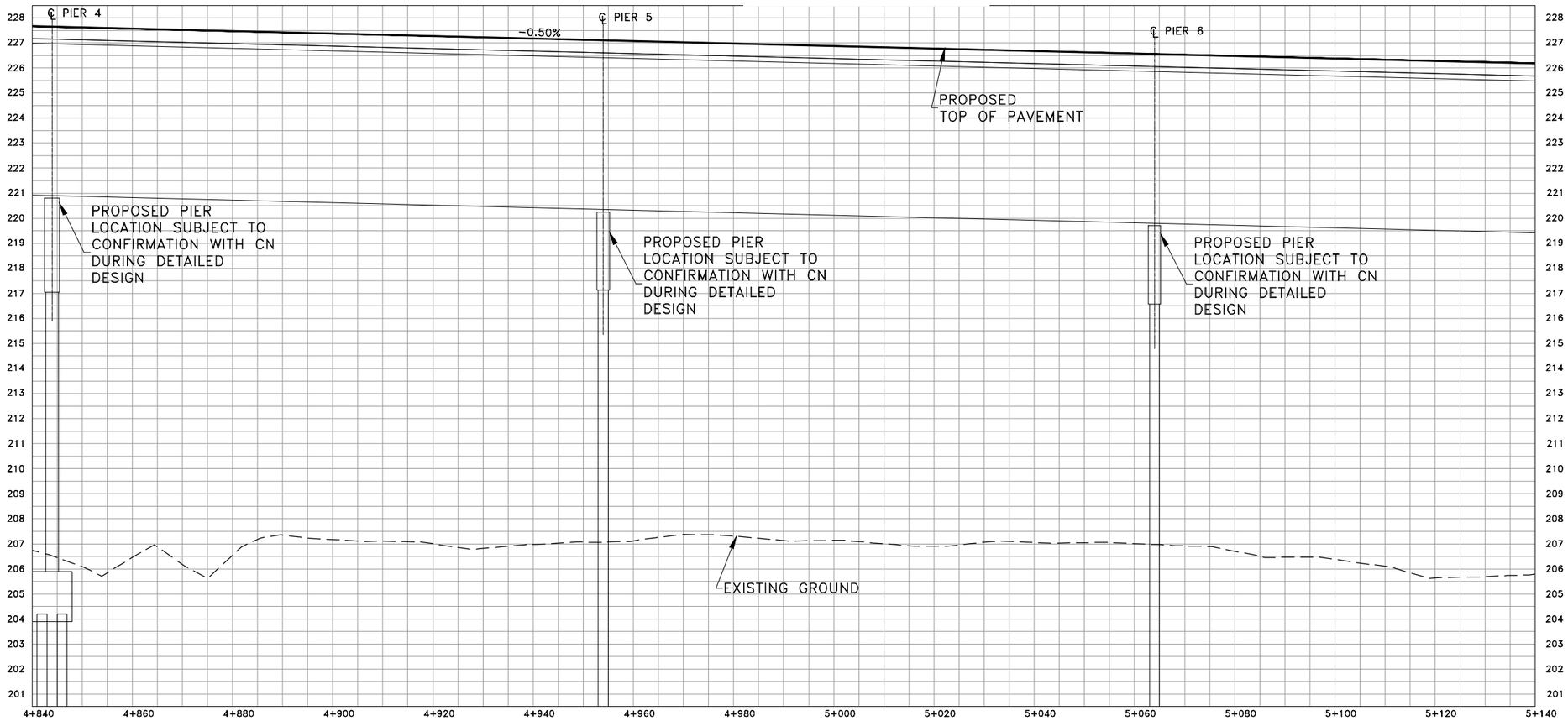

Plate 12

Scale

5m 0 10m 20m HORIZ. 1:1000

1m 0 2m 4m VERT. 1:200

LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
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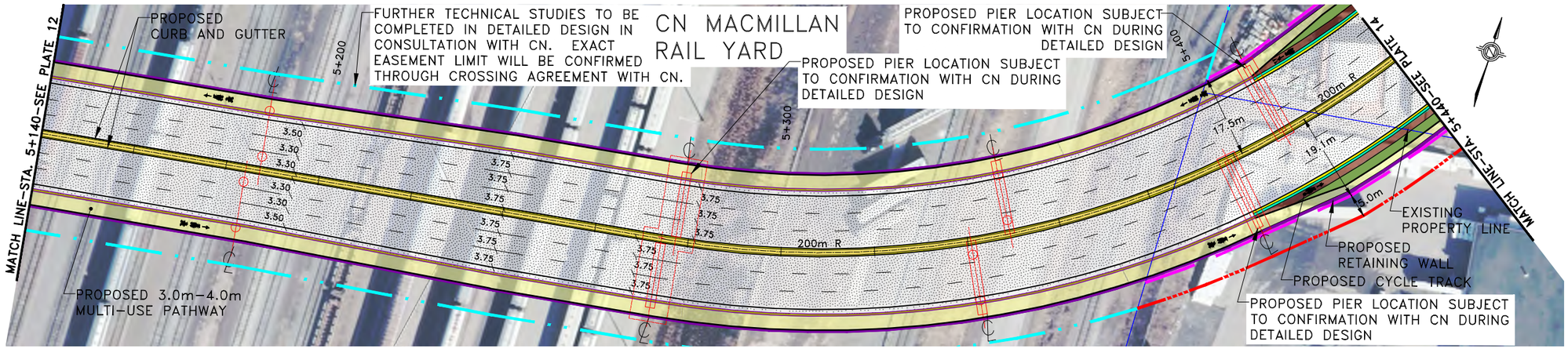

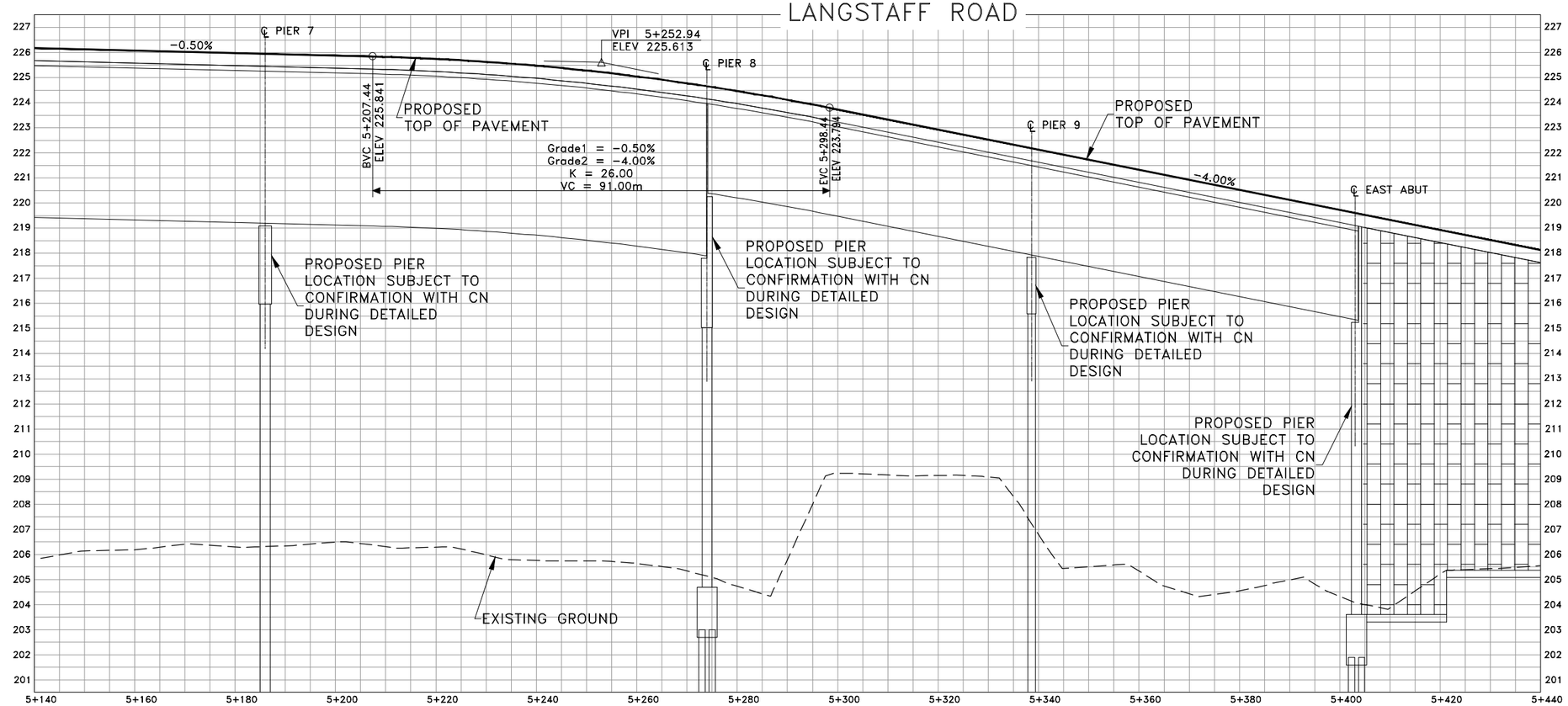

Plate 13

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200

LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
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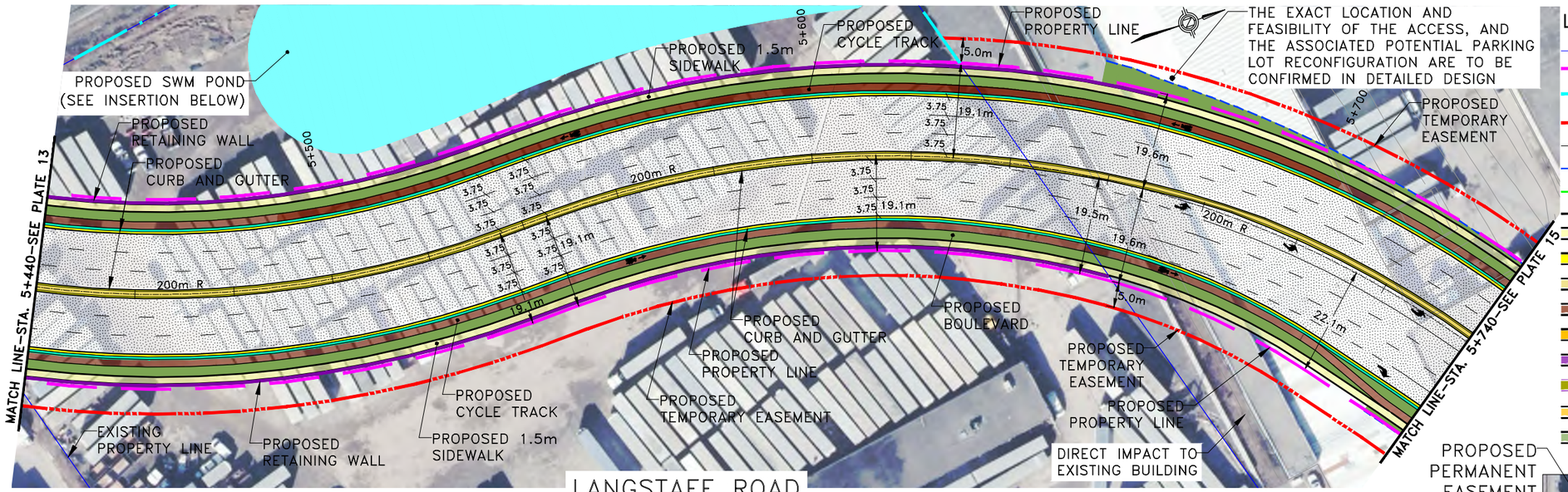

LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
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- PROPOSED GRADING CUT
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- PROPOSED RETAINING WALL / PARAPET WALL
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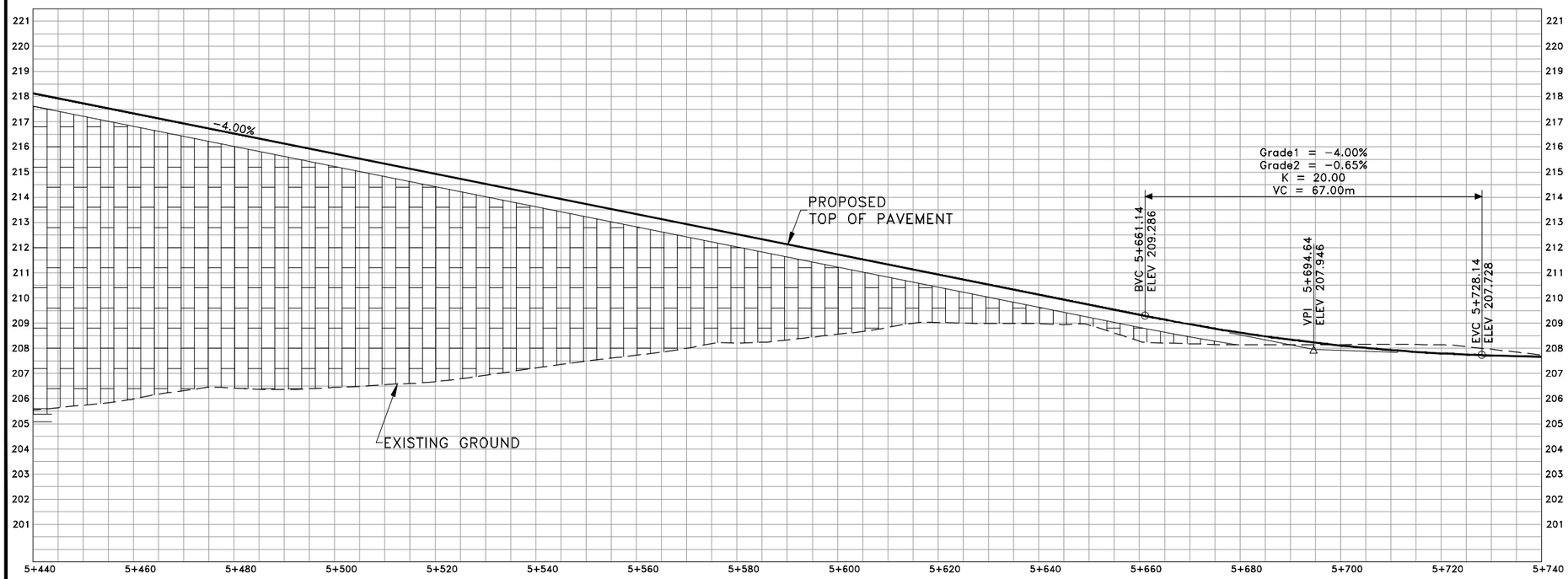
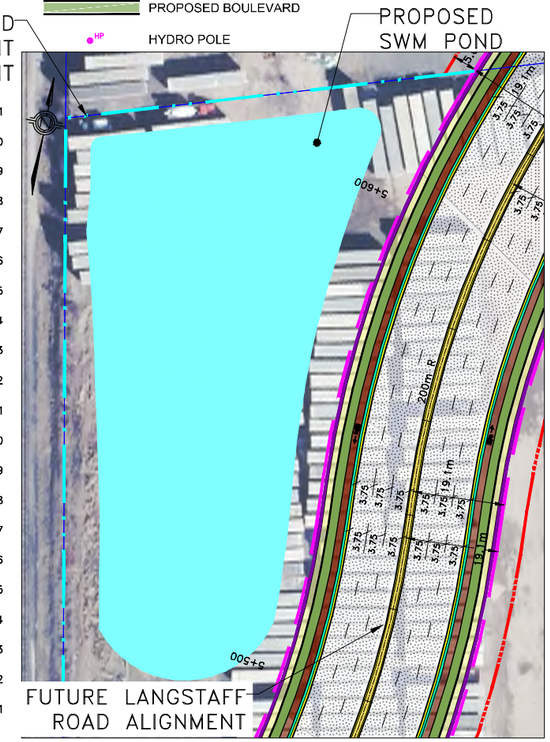
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 14

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





PROPOSED SWM POND

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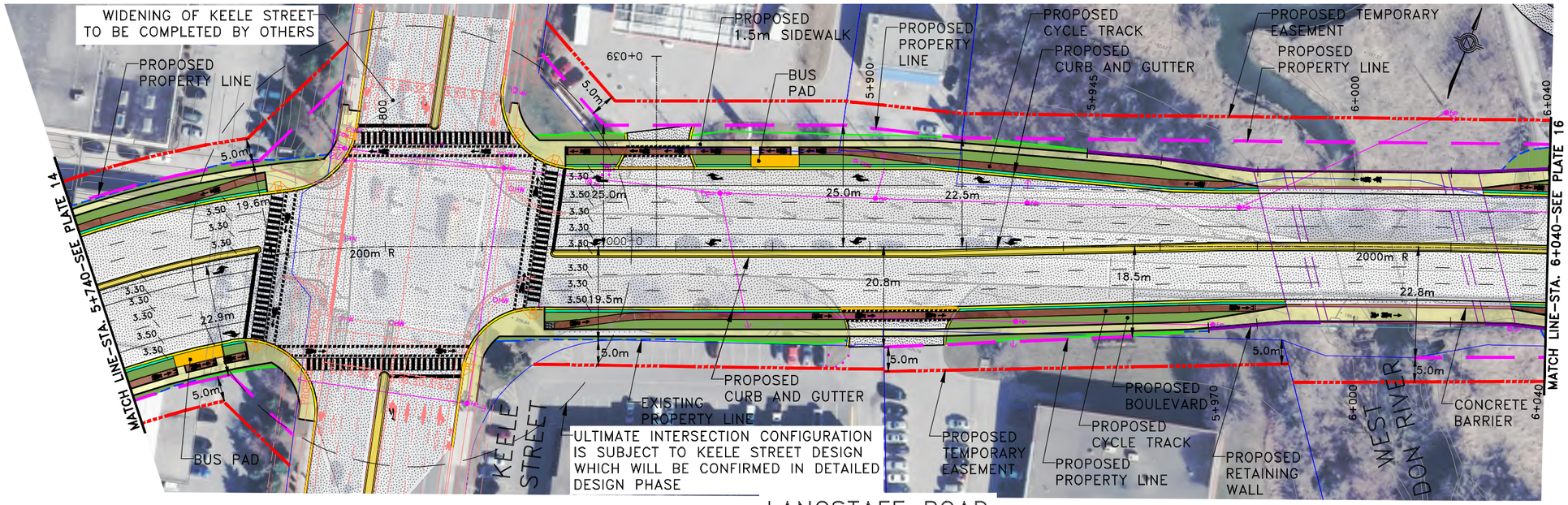
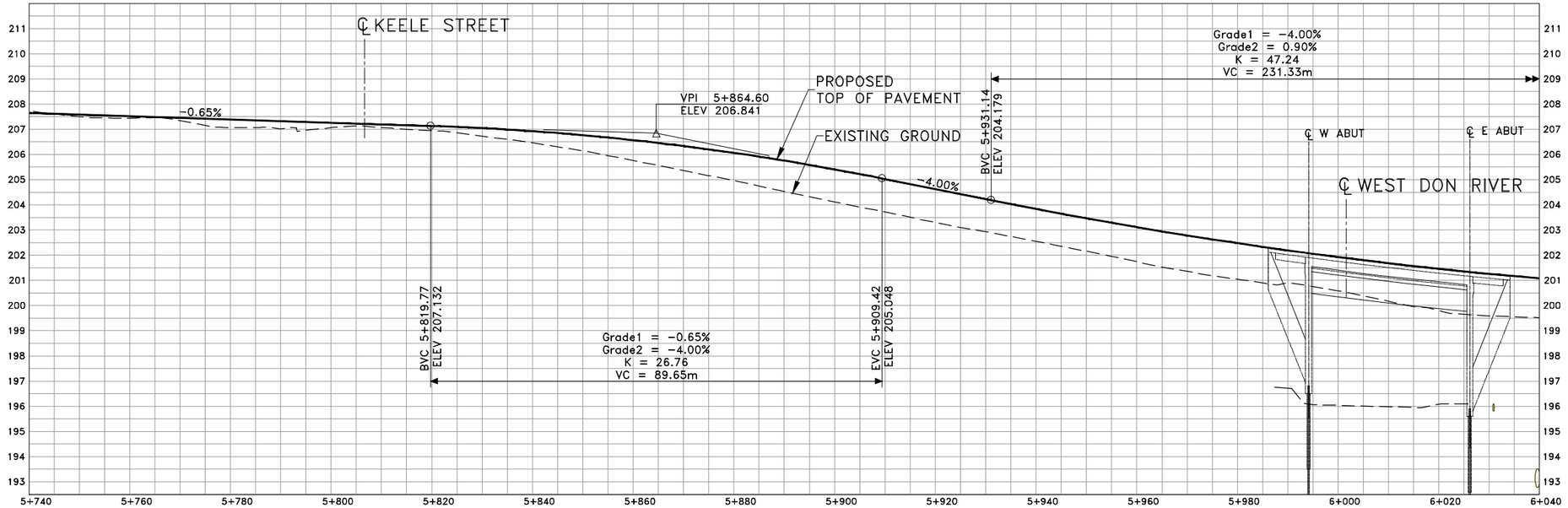
Plate 15

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
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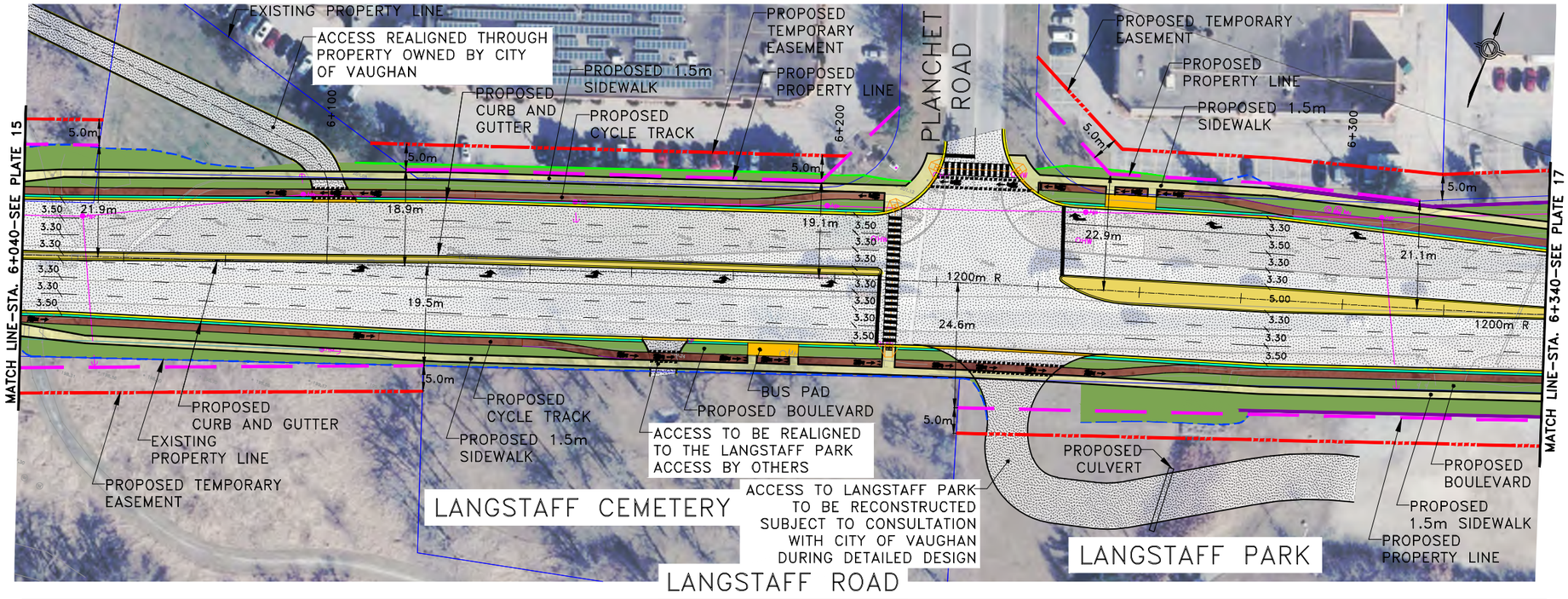

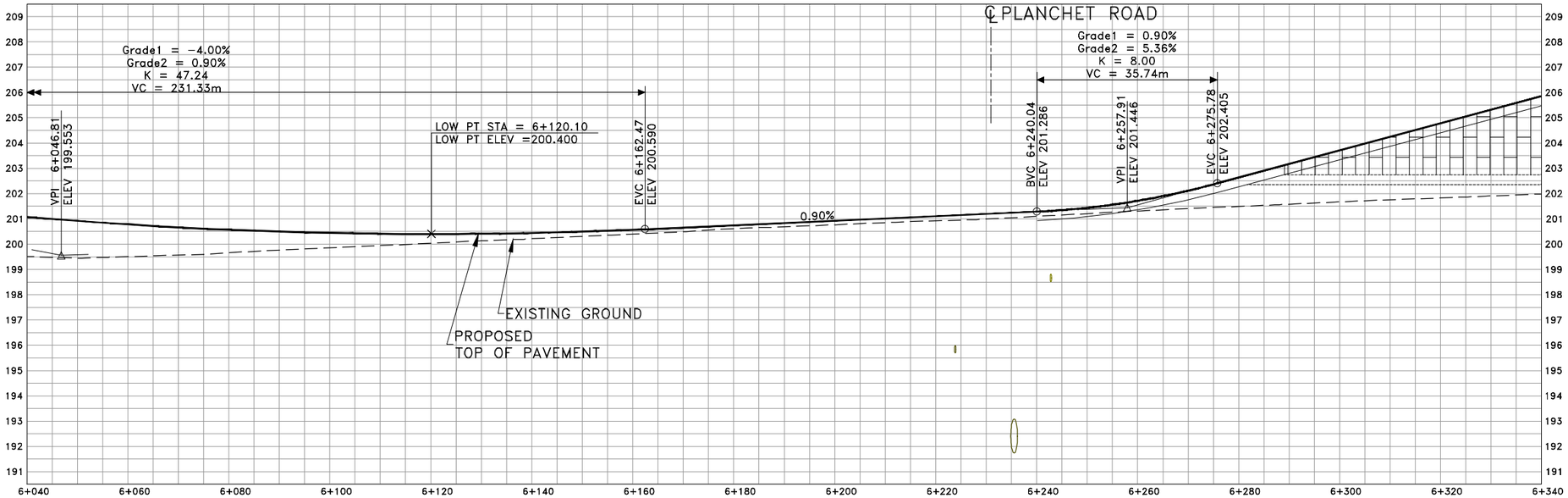

Plate 16

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200

LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
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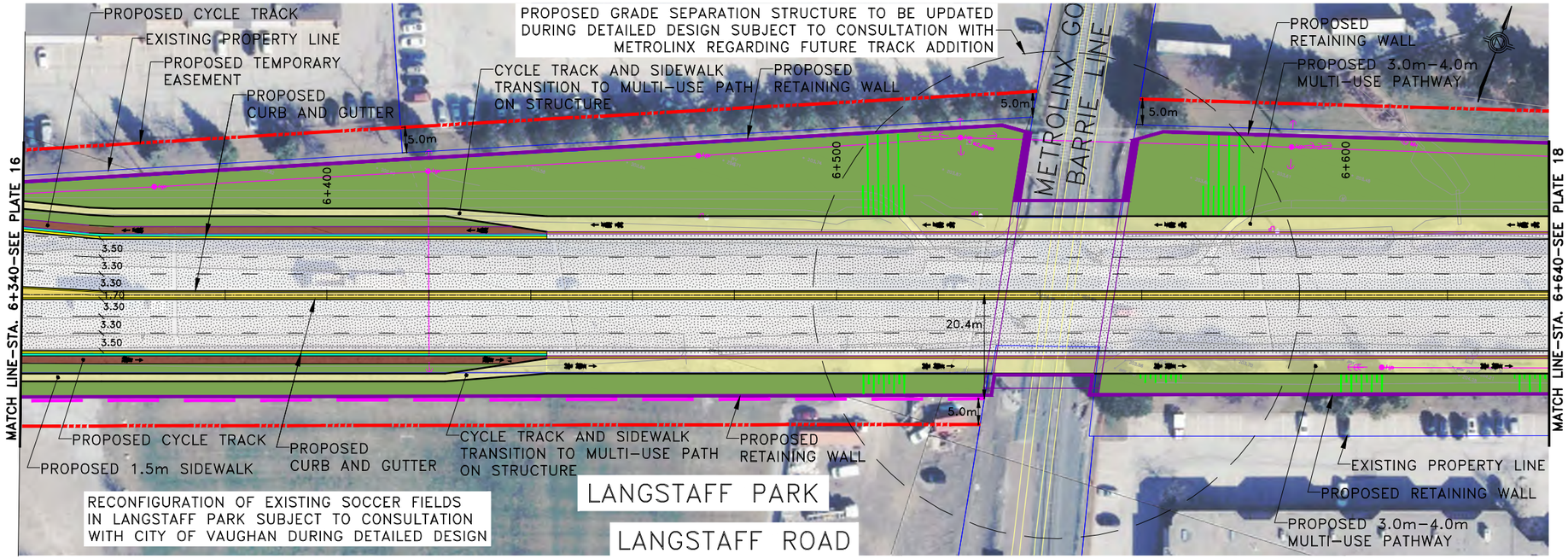
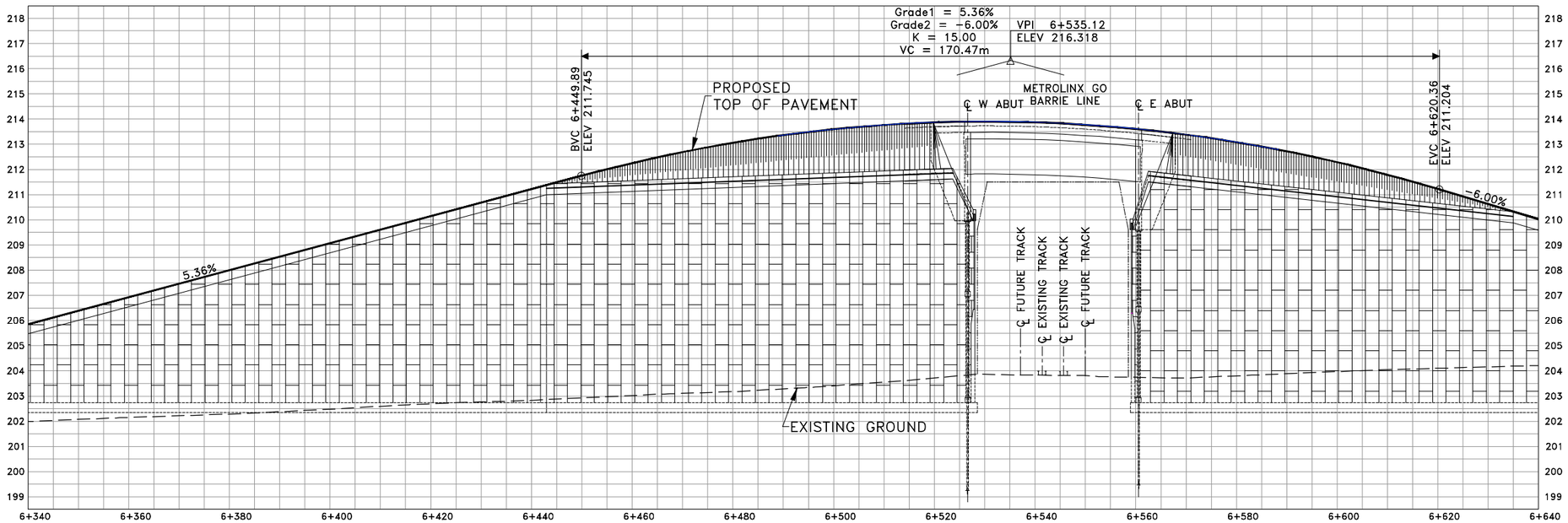
York Region

Plate 17

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
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- PROPOSED DROP CURB
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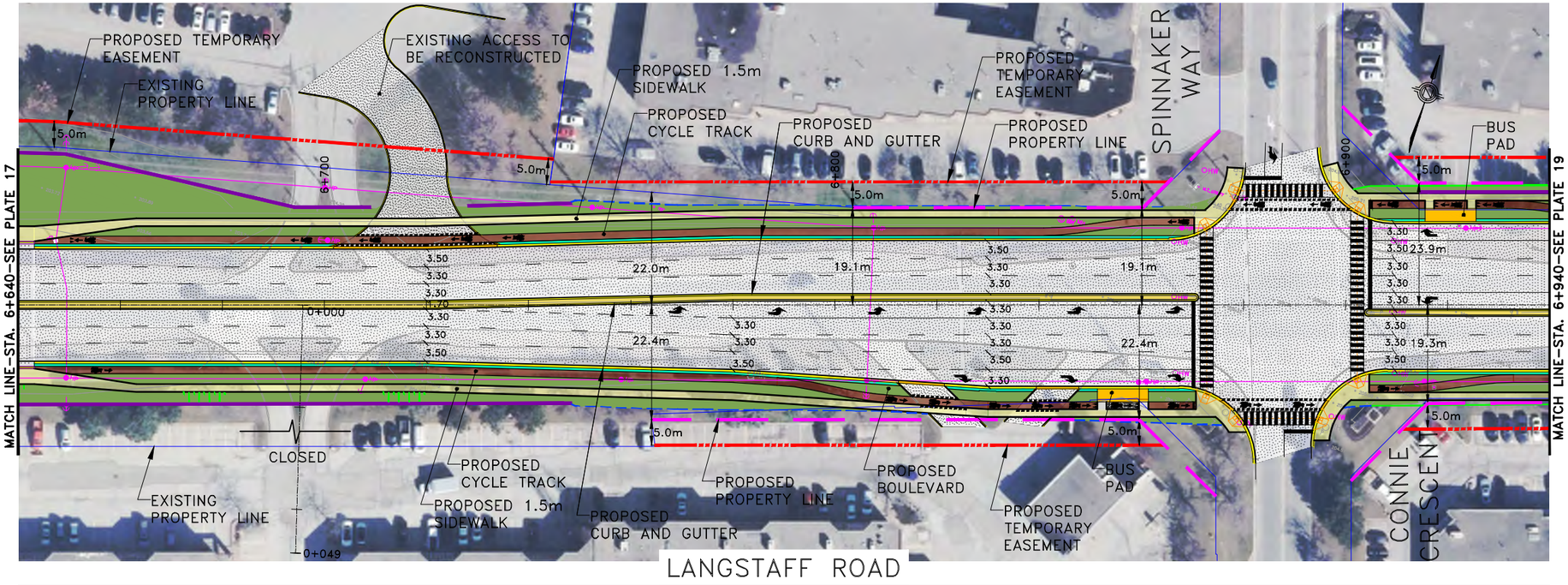
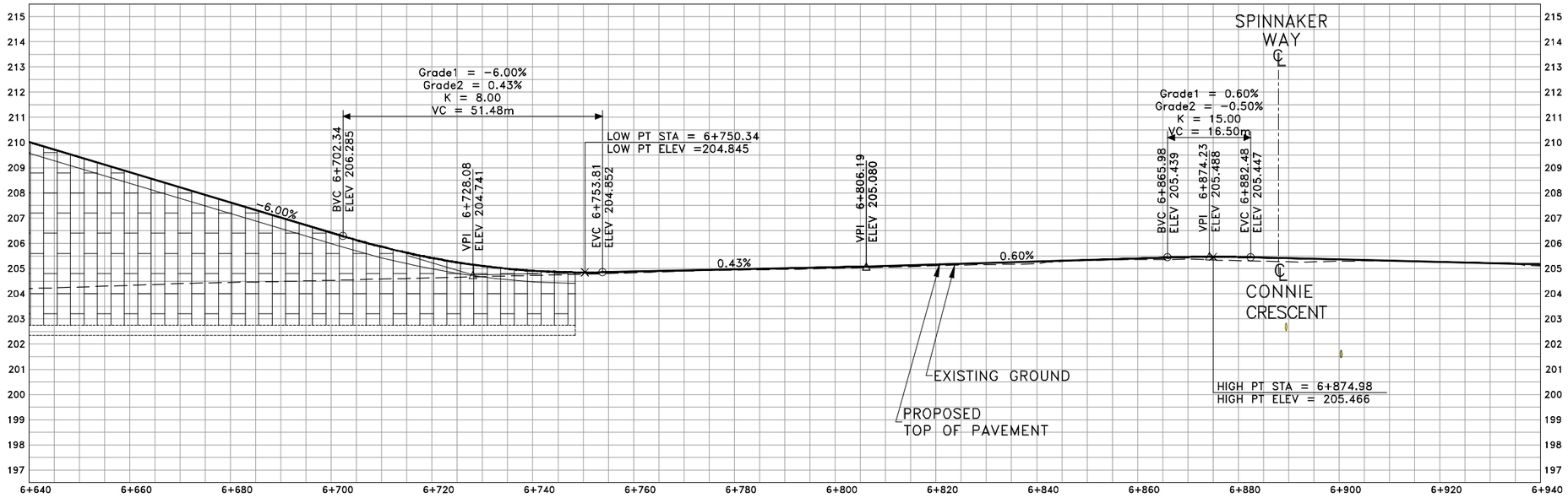
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 18

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
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- PROPOSED C/L
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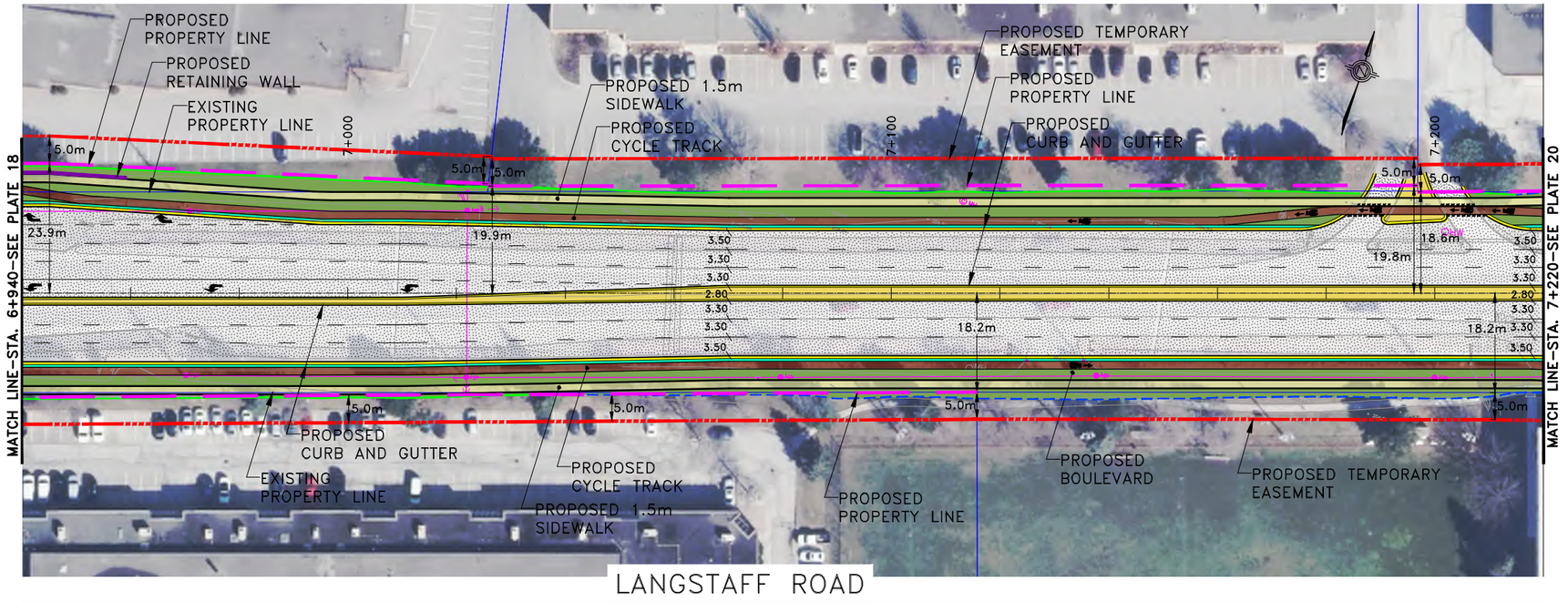
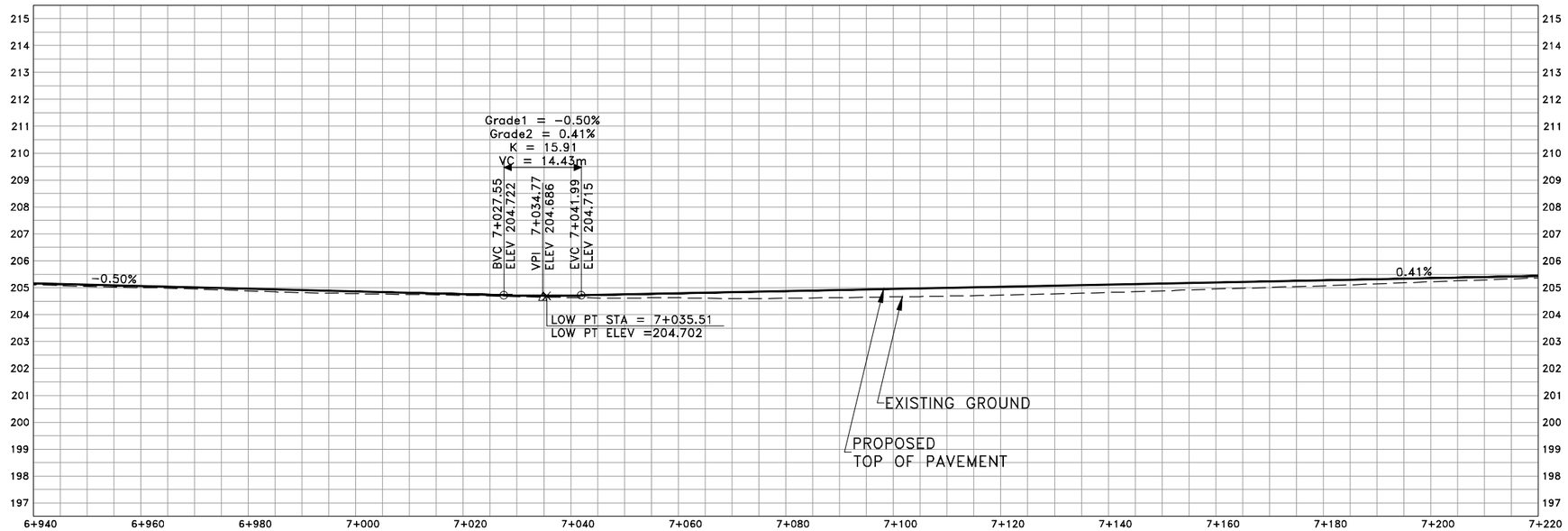
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 19

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
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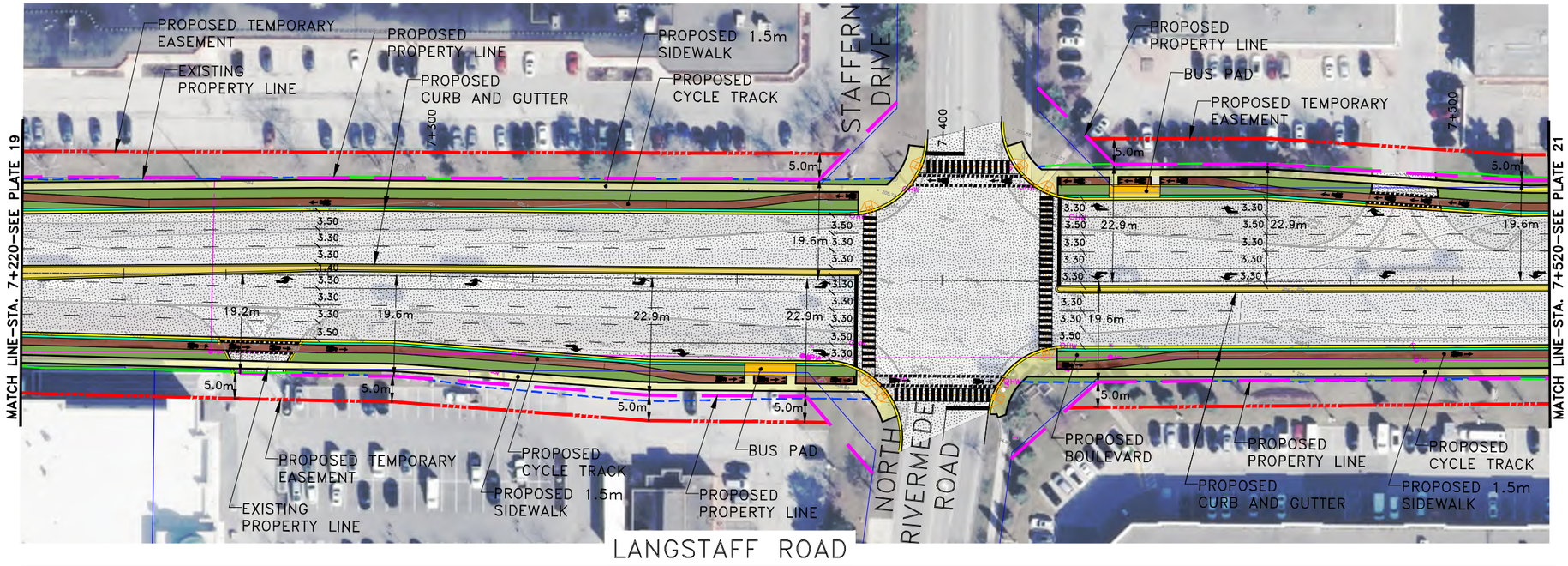
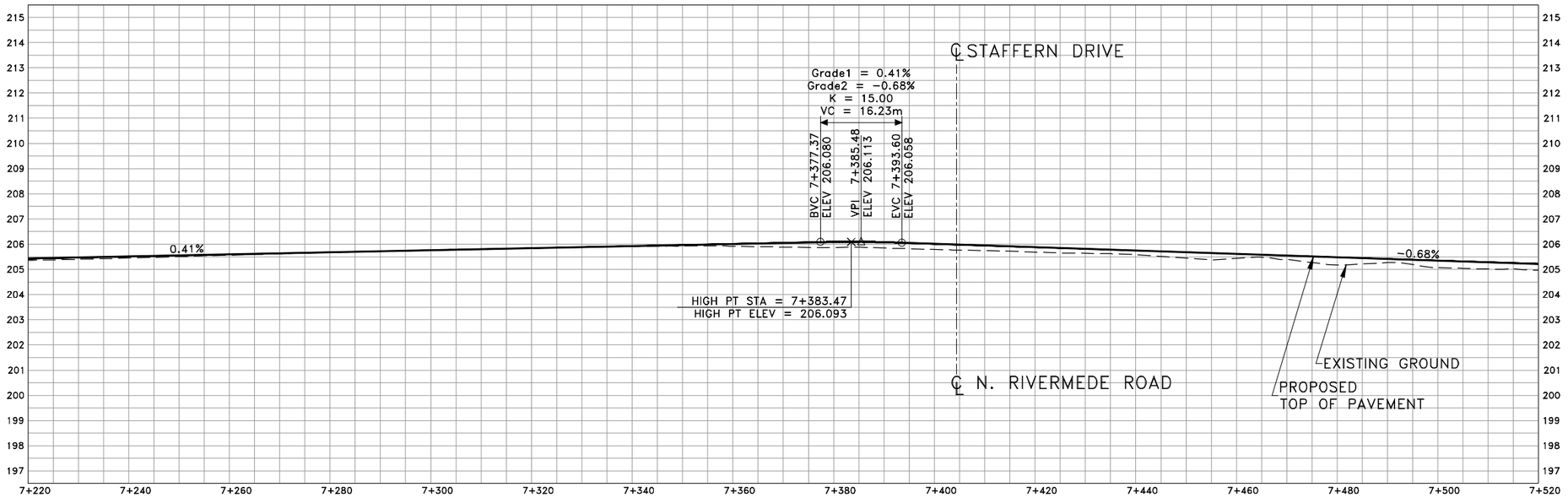
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 20

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIDEWALK / MULTI-USE PATHWAY
- PROPOSED CURB AND GUTTER
- PROPOSED MEDIAN
- PROPOSED CYCLE TRACK
- PROPOSED DROP CURB
- PROPOSED RETAINING WALL / PARAPET WALL
- PROPOSED CONCRETE BARRIER
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

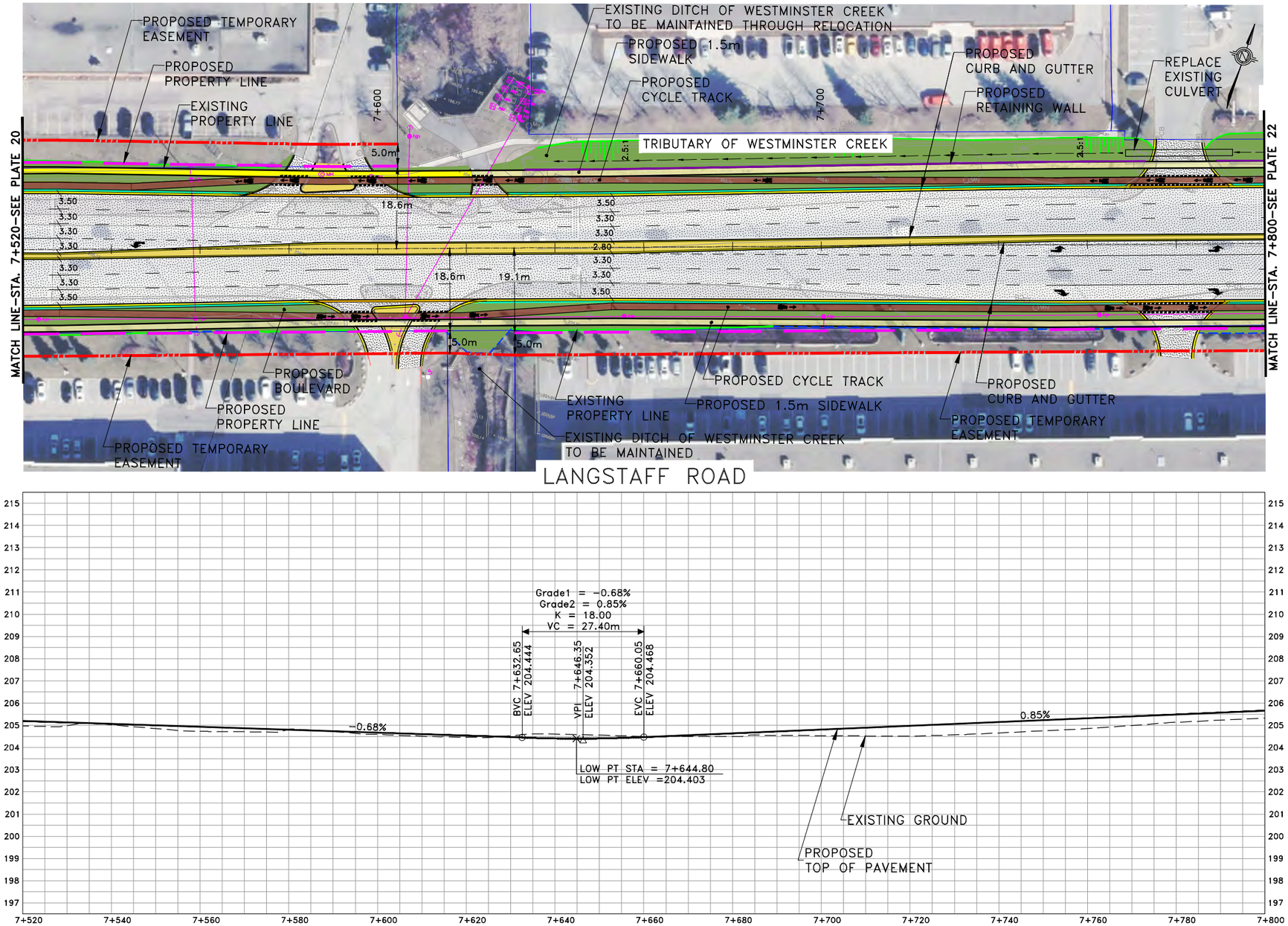


Plate 21

Scale

5m 0 10m 20m HORIZ. 1:1000

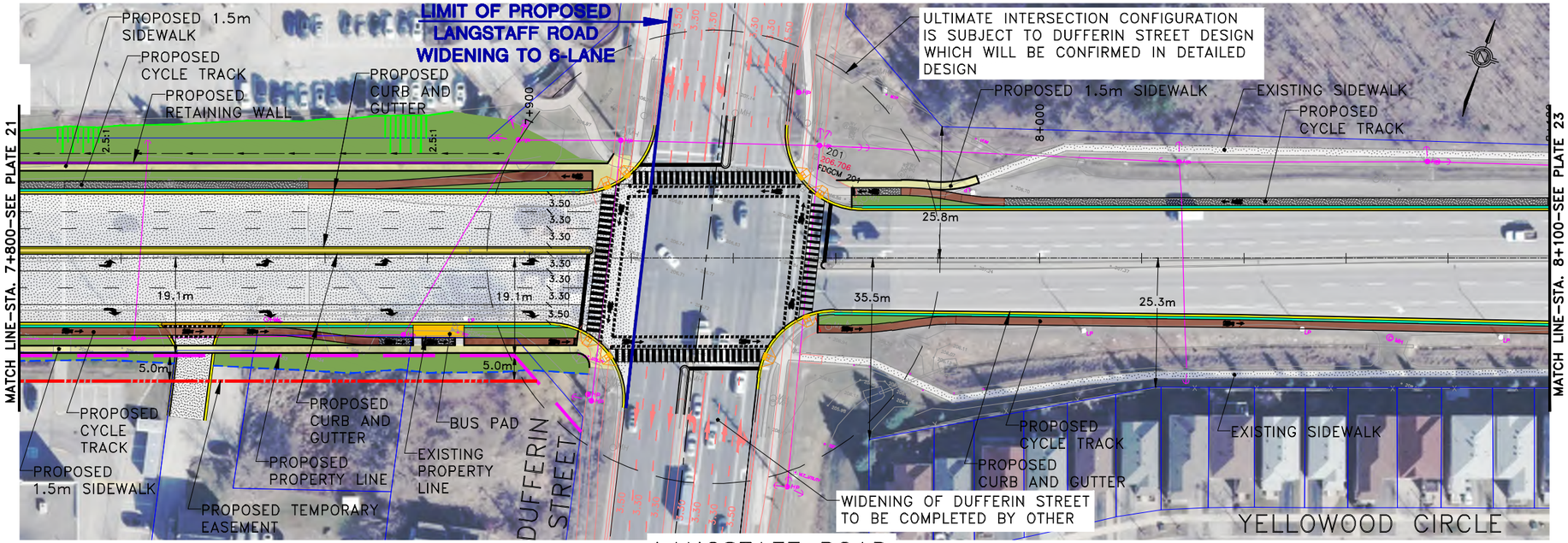
1m 0 2m 4m VERT. 1:200

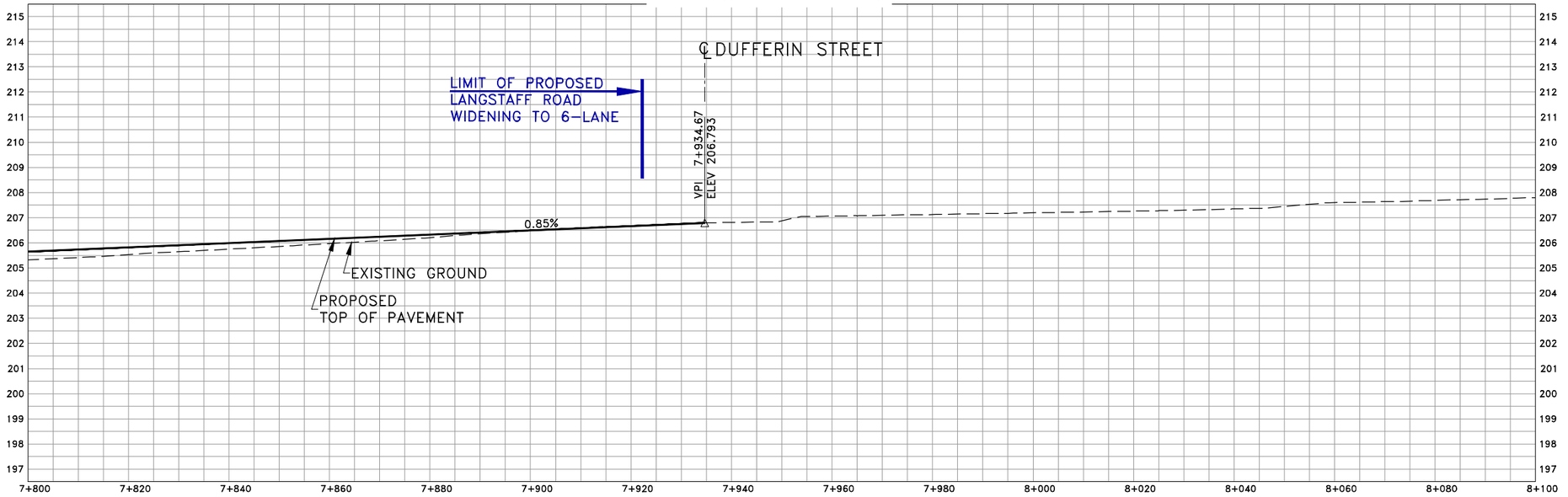
LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- PROPOSED C/L
- PROPOSED GRADING FILL
- PROPOSED GRADING CUT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SIDEWALK / MULTI-USE PATHWAY
- PROPOSED CURB AND GUTTER
- PROPOSED MEDIAN
- PROPOSED CYCLE TRACK
- PROPOSED DROP CURB
- PROPOSED RETAINING WALL / PARAPET WALL
- PROPOSED CONCRETE BARRIER
- PROPOSED BUS PAD
- PROPOSED BOULEVARD
- HYDRO POLE

Plate 22

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

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- PROPOSED PROPERTY LINE
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- PROPOSED C/L
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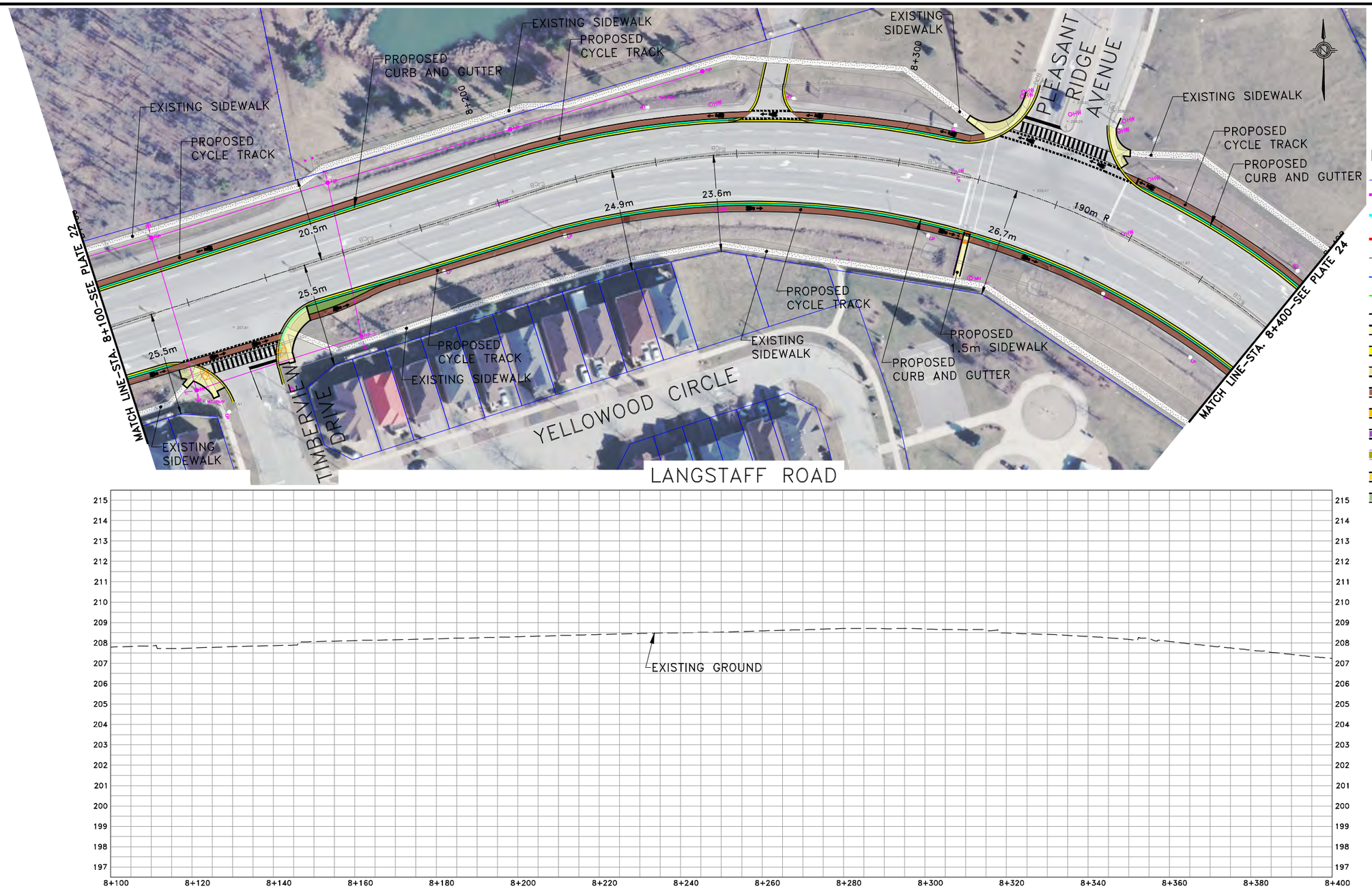

Plate 23

Scale

5m 0 10m 20m HORIZ. 1:1000

1m 0 2m 4m VERT. 1:200

LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
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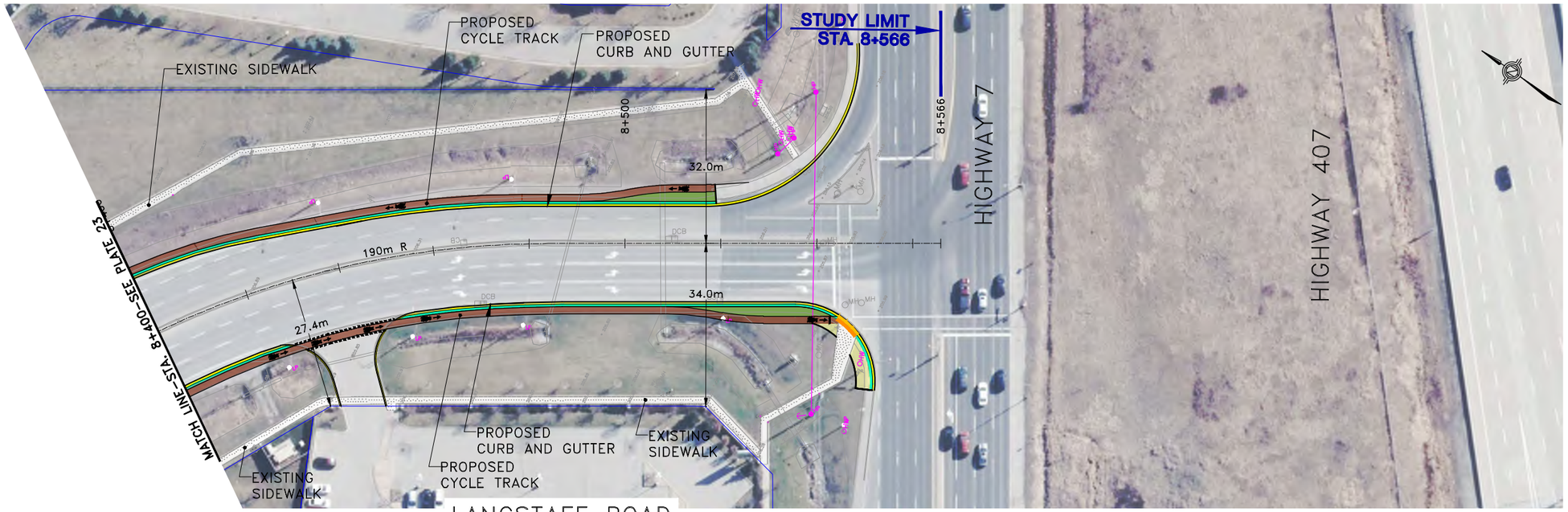
GREAT STREETS
Building Roads that Build Community

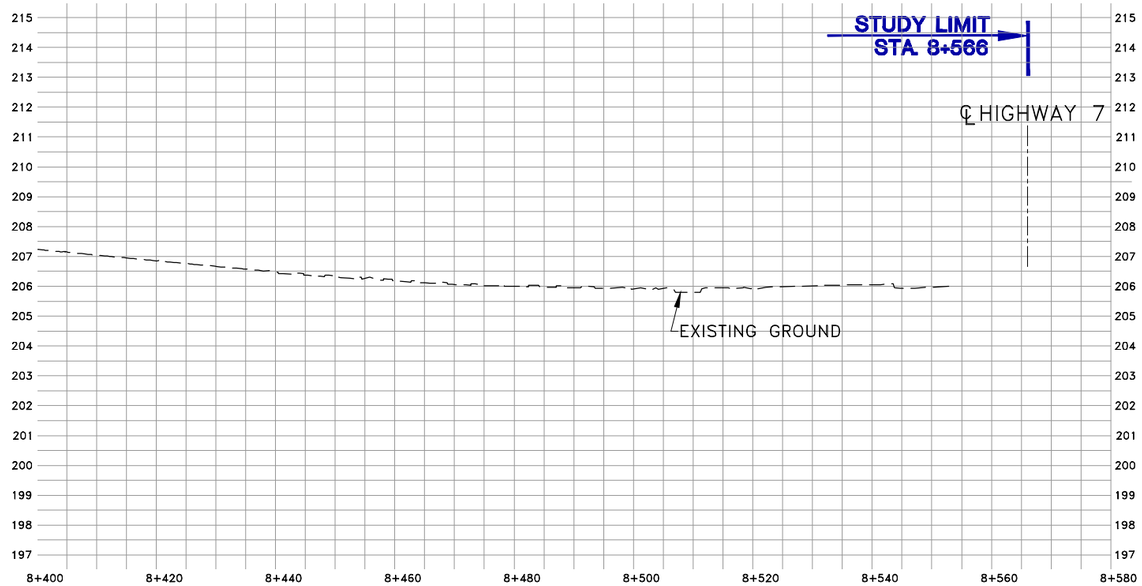
LANGSTAFF ROAD MUNICIPAL CLASS EA STUDY
WESTON ROAD TO HIGHWAY 7
PREFERRED DESIGN PRELIMINARY PLAN AND PROFILE

York Region

Plate 24

Scale
5m 0 10m 20m HORIZ. 1:1000
1m 0 2m 4m VERT. 1:200





LEGEND:

- EXISTING ROW AND LOT LINE
- PROPOSED PROPERTY LINE
- PROPOSED PERMANENT EASEMENT
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GREAT STREETS
Building Roads that Build Community

LANGSTAFF ROAD MUNICIPAL CLASS EA STUDY
WESTON ROAD TO HIGHWAY 7
PREFERRED DESIGN PRELIMINARY PLAN AND PROFILE

York Region

Representative Receptors
Dufferin Street and Langstaff Road

Langstaff Road – Weston Road to Highway 7, Vaughan, Ontario Project #1603246

Drawn by: SVG	Figure:	2
Approx. Scale:		1:2000
Date Revised:		Oct. 3 2019

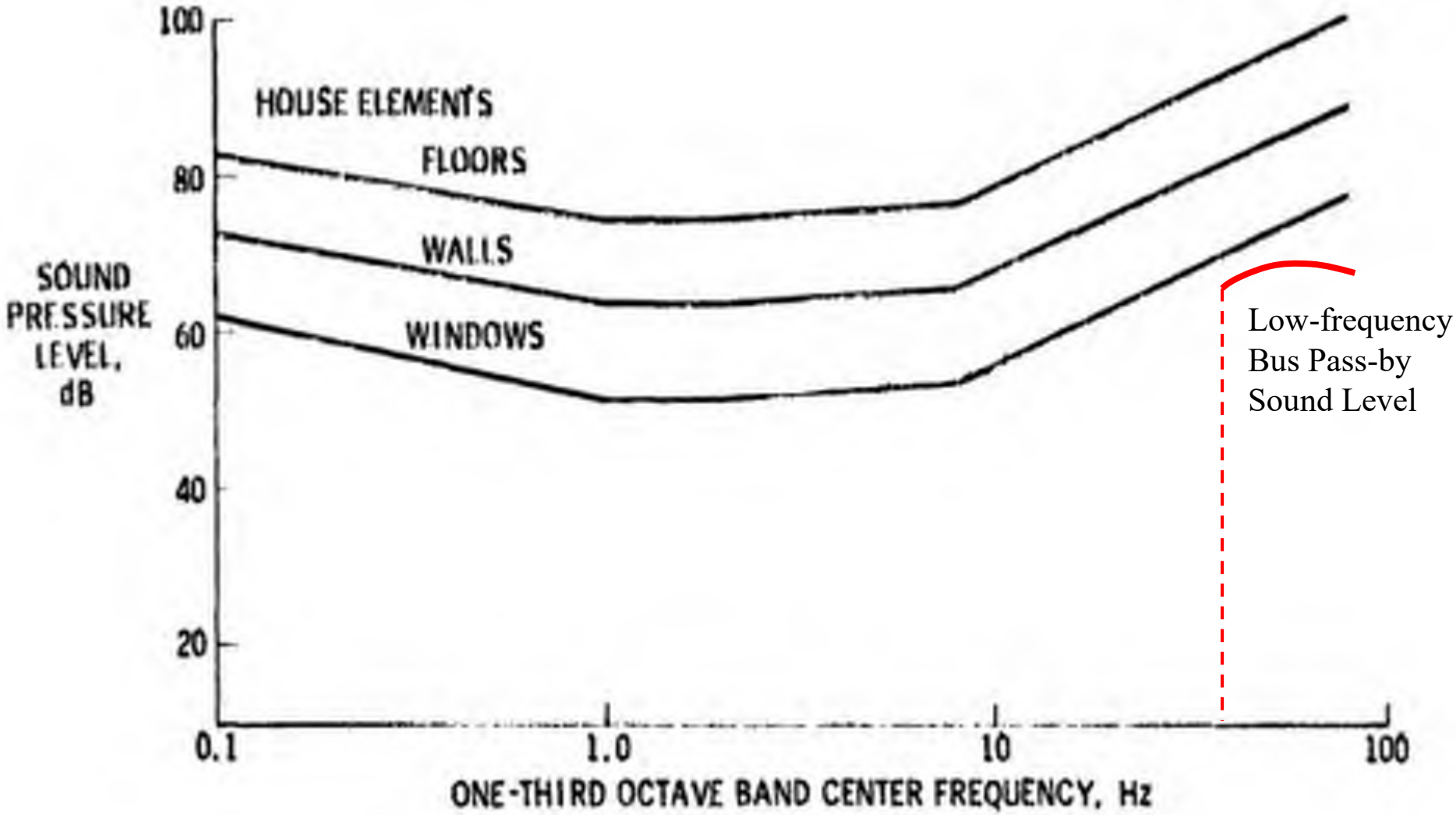
RWDI

Representative Receptors
Weston Road and Langstaff Road

Langstaff Road – Weston Road to Highway 7, Vaughan, Ontario Project #1603246

Drawn by: SVG	Figure:	3
Approx. Scale:		1:2000
Date Revised:		Oct. 3, 2019

RWDI



Low Frequency 1/3 Octave Band Sound Levels at NR12
Air-borne vibration assessment

Langstaff Road – Weston Road to Highway 7, Vaughan, Ontario Project #1603246

Drawn by: SVG	Figure: 4
Approx. Scale:	N/A
Date Revised:	Oct. 3, 2019

RWDI

APPENDIX A

TRANSPORTATION SOUND BASICS

Sound Levels

Sound is, in its simplest form, a dynamic, fluctuating pressure, in a fluid medium. That medium can be air, other gases, or liquids such as water. These fluctuations are transmitted by pressure waves through the medium from the source to the receiver. For the majority of transportation engineering purposes, the primary interest is with sound waves in air, with human beings as the receptor. Noise is defined as unwanted sound. The standard practice within the acoustical industry is to use these two terms interchangeably.

Decibels

A decibel (dB) is a logarithmic ratio of a value to a reference level. The general mathematical format is:

$$\text{Level in dB} = 10 \log (\text{Value} / \text{Reference})$$

Any value can be expressed in decibels. Decibels are very useful in performing comparisons where there are huge ranges in levels. For example, an acoustical engineer can expect to deal with acoustical energy values ranging from 0.00001 W to 100 W (sound power), and pressures ranging from 0.002 Pa to 200 Pa (sound pressure).[1] For completeness, decibels should always be stated with their reference level (e.g., 20 dB re: 20 µPa). However, in practice the reference level is often left out.

Sound Pressure Level

Sound pressure level is what humans experience as sound. Sound waves create small fluctuations around the normal atmospheric pressure. These pressure fluctuations come into contact with eardrums and create the sensation of sound. Sound pressure is measured in decibels, according to the following equation:

$$\text{Sound Pressure Level, dB} = 10 \log (p^2 / p_o^2)$$

Where: p = root mean square (r.m.s.) sound pressure, in Pa
p_o = reference sound pressure, 20 µPa

The reference pressure represents the faintest sound that a "typical" human being can hear. The typical abbreviation for sound pressure level is SPL, although L_p is also often used in equations. "Sound level" or "noise level" are also sometimes used.

---

[1] Equivalent to Sound Power Levels ranging from 70 to 140 dB and Sound Pressure Levels ranging from 20 dB to 140 dB

Octave Bands

Sounds are composed of varying frequencies or pitches. Human sensitivity to noise varies by frequency, with a greater sensitivity to higher frequency sounds. The propagation of sound also varies by frequency. The unit of frequency is Hertz (Hz), which refers the number of cycles per second (number of wave peaks per second of the propagating sound wave). The typical human hearing response runs from 20 Hz to 20,000 Hz. Frequencies below 20 Hz are generally inaudible, although response is variable, and some individuals may be able to hear or perceive them.

Sound is typically analysed in octave bands or 1/3-octave bands. An octave band is defined as a band or range of sound frequencies where the frequency range doubles for succeeding octave (alternately, the highest frequency in the range is twice the value of the lowest frequency). Octave band and 1/3-octave band frequencies of interest frequencies of interest are shown in the table on the following page. Road and rail transportation noise sources tend to be broadband in nature, having roughly equal sound energy in many octave bands. Heavy rail traffic and heavy truck traffic may produce significant noise in lower frequencies < 200 Hz.

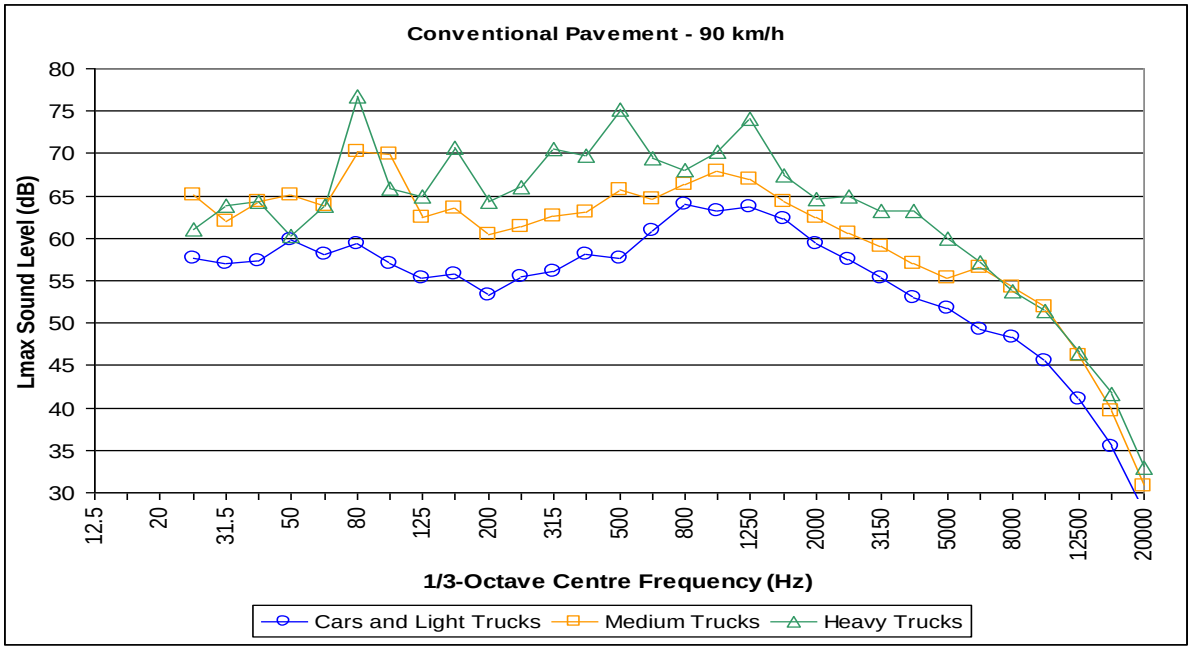
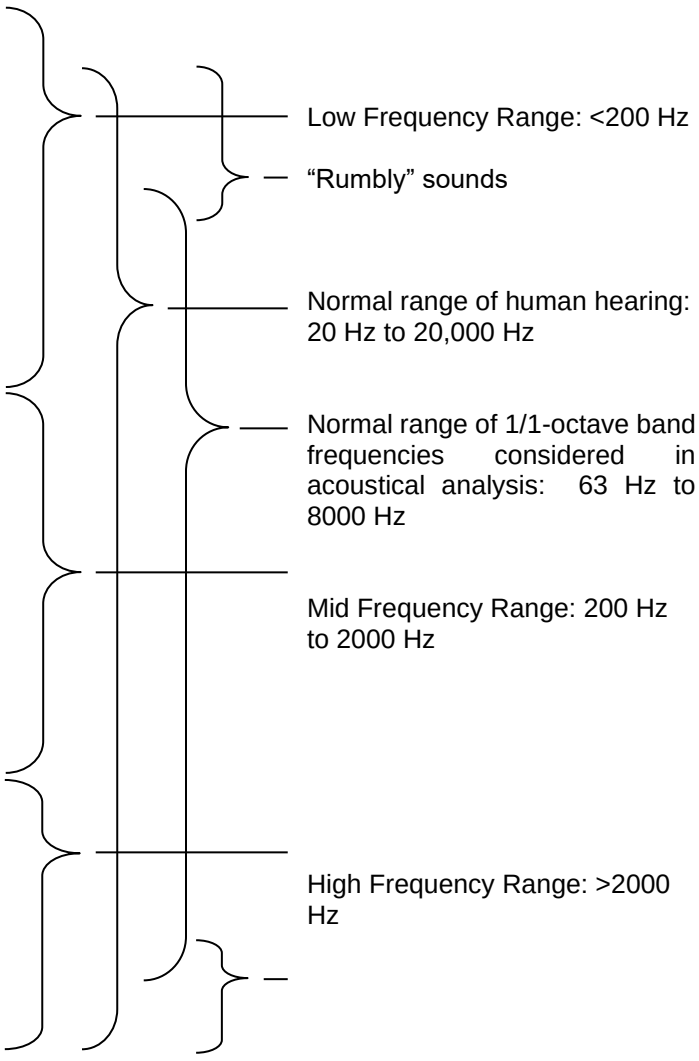


Figure 1: Typical Frequency Spectra of Traffic Noise - Vehicle Pass-bys at 90 km/h

Table 1: Octave Band Frequencies of Interest

Centre-Frequency (Hz)		Band No.	Frequency Range (Hz)
1/3-Octave	1/1-Octave		
12.5	16	N/A	11 to 22
16			
20			
25	31.5	0	22 to 45
31.5			
40			
50	63	1	45 to 89
63			
80			
100	125	2	89 to 177
125			
160			
200	250	3	177 to 345
250			
315			
400	500	4	345 to 707
500			
630			
800	1,000	5	707 to 1,414
1,000			
1,250			
1,600	2,000	6	1,414 to 2,828
2,000			
2,500			
3,150	4,000	7	2,828 to 5,657
4,000			
5,000			
6,300	8,000	8	5,657 to 11,314
8,000			
10,000			
12,500	16,000	N/A	11,314 to 22,627
16,000			
20,000			



Note: Per ISO 266-1975

A-Weighting

When the overall sound pressure level is expressed as a single value (i.e., not expressed in frequency band levels) the variation in human frequency response must be accounted for. People do not hear low frequency noise as well as noise in mid or high frequencies. To account for this, frequency-weighting networks have been developed to better account for human hearing response. The most frequently used networks are the A-Weighting and C-Weighting.

The A-Weighting network was developed to correspond to how humans hear low to medium levels of noise. The A-Weighting is the most frequently used scheme, and the majority of noise guidelines are expressed in A-Weighted decibel values, denoted as "dBA" levels. C-Weighted "dBC" values are sometimes used in assessing low-frequency noise impacts, which are generally not of concern in transportation noise impact assessment. The A-Weighting and C-Weighting values are shown in the following table and figure.

Table 2: A- and C-Weighting Values

1/1-Octave Frequency (Hz)	A-Weighting Value (dB)	C-Weighting Value (dB)
31.5	-39.4	-3.0
63	-26.2	-0.8
125	-16.1	-0.2
250	-8.6	0
500	-3.2	0
1,000	0	0
2,000	1.2	-0.2
4,000	1.0	-0.8
8,000	-1.1	-3.0

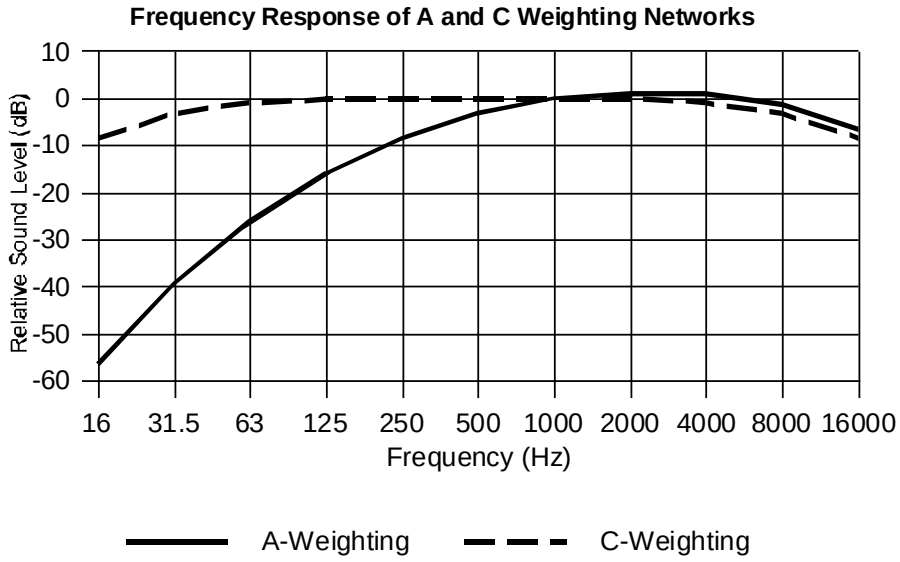


Figure 2: A-Weighting and C-Weighting Networks

Ranges of Sound Levels

People experience a wide range of sound levels in their daily activities. The table below presents a graphical comparison of "typical" noise levels which might be encountered, and the general human perception of the level.

Table 3: Ranges of Sound Levels

Sound Levels		Sources of Noise
Human Perception	**SPL, in dBA**	
Deafening	125	Sonic booms
	120	Threshold of Feeling / Pain
	115	Maximum level, hard rock band concert
	110	Accelerating Motorcycle at a few feet away
Very Loud	105	Loud auto horn at 3 m (10 ft) away
	100	Dance club / maximum human vocal output at 1 m (3 ft) distance
	95	Jack hammer at 15 m (50 ft) distance
	90	Indoors in a noisy factory
Loud	85	Heavy truck pass-by at 15 m (50 ft) distance
	80	School cafeteria / noisy bar; Vacuum Cleaner at 1.5 m (5 ft)
	75	Near edge of major Highway
	70	Inside automobile at 60 km/h
	65	Normal human speech (unraised voice) at 1 m (3 ft) distance
Moderate	60	Typical background noise levels in a large department store
	55	General objective for outdoor sound levels; typical urban sound level
	50	Typical suburban / semi-rural sound level (24h)
	45	Typical noise levels in an office due to HVAC; typical rural levels (24h)
Faint	40	Typical background noise levels in a library
	35	
	30	Broadcast Studio
	25	Average whisper
Very Faint	20	Deep woods on a very calm day
	15	
	10	
	5	Human breathing
	0	Quietest sound that can be heard

Sound levels from 40 to 65 dBA are in the faint to moderate range. The vast majority of the outdoor noise environment, even within the busiest city cores, will lie within this area. Sound levels from 65 to 90 are perceived as loud. This area includes very noisy commercial and industrial spaces. Sound levels greater than 90 dB are very loud to deafening, and may result in hearing damage.

Transportation noise events, which vary with time, can also be considered in terms of their maximum noise level (L_{max}) during a vehicle pass-by, as shown in the following table:

Table 4: Typical Pass-By Noise Levels at 15 m from Noise Source

Event	Range of Noise Levels (dBA) at 15 m
Semi-Trailer Trucks	75 - 85
Aircraft	69 – 85 [1]
Conventional Light Rapid Transit (Streetcars)	72 – 80 [2]
Large Trucks	71 - 78
Street Motorcycle	76
Diesel or Natural Gas Bus	70 - 78
Trolley Bus	69 - 73
Small Motorcycle	67
General Busy Auto Traffic	66 - 70
Individual Automobiles	63 - 69

Notes: Source: BKL Consultants Ltd.

[1] Aircraft flyover not at 15 m distance

[2] Based on data provided for the Calgary, Edmonton and Portland LRT systems.

Noise Descriptors – Leq Values

At this time, the best available research indicates that long-term human responses to noise are best evaluated using energy equivalent sound exposure levels (L_{eq} values), in A-Weighted decibels (L_{eq} values in dBA)[2, 3] including adjustments to account for particularly annoying characteristics of the sounds being analyzed.

Sound levels in the ambient environment vary each instant. In a downtown urban environment, the background noise is formed by an "urban hum", composed of noise from distant road traffic and from commercial sources. As traffic passes near a noise receptor, the instantaneous sound level may increase as a vehicle approaches, and then decrease as it passes and travels farther away. The energy equivalent sound exposure level L_{eq} is the average sound level over the same period of time with same acoustical energy as the actual environment (i.e., it is the average of the sound energy measured over a time period T). As a time-average, all L_{eq} values must have a time period associated with them. This is typically placed in brackets beside the L_{eq} tag. For example, a thirty-minute L_{eq} measurement would be reported as an L_{eq} (30 min) value.

The L_{eq} concept is illustrated in Figure 3, showing noise levels beside a small roadway, over a 100 second time period, with two vehicle pass-bys:

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2 Berglund and Lindvall, Community Noise, 1995.

3 ISO 1996:2003(E), *Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures*.

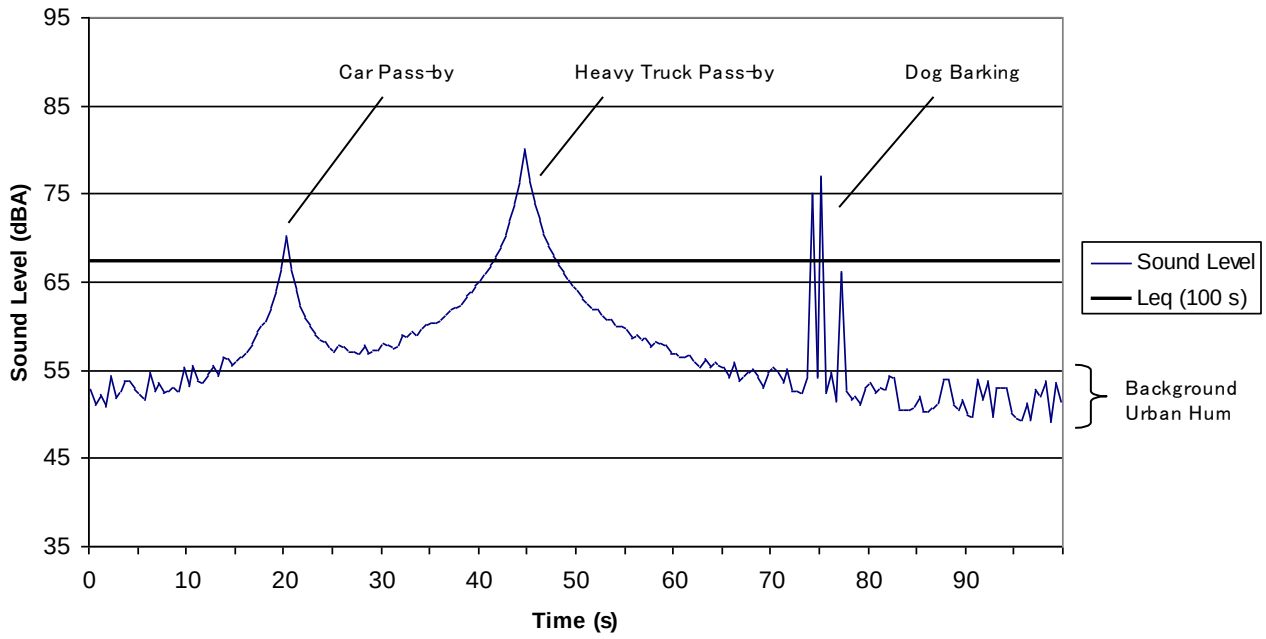

Figure 3: Example of the L_{eq} Concept

In this example, the background "urban hum" is between 47 and 53 dBA. A car passes by at 20 seconds. As it approaches, the noise level increases to a maximum, and then decreases as it speeds away. At 45 seconds, a heavy truck passes by. Near 75 seconds, a dog barks three times. The maximum sound level (L_{max}) over the period is 80 dBA and the minimum is 47 dBA. For almost 50% of the time, the sound level is lower than 55 dBA.

The L_{eq} (100s) for the above example is 67 dBA, which is much higher than the statistical mean sound level of 55 dBA. This illustrates that the L_{eq} value is very sensitive to loud noise events, which contain much more sound energy (as sound is ranked on a logarithmic scale) than the normal background. It is also sensitive to the number of events during the time period, and the duration of those events. If only the truck had passed by during the measurement (no car and no dog barks), the L_{eq} (100s) would be 66 dBA. If only the car and dog barks had occurred, the L_{eq} (100s) would have been 61 dBA. This shows that the truck pass-by is the dominant event in our example, due to its level and duration.

The ability of the L_{eq} metric to account for the three factors of level, duration and frequency of events makes it a robust predictor of human response to noise. It is for this reason that the vast majority of noise standards are based on L_{eq} values.

Typical Durations for Leq Analyses

For transportation noise impact analyses, the following durations are typically used:

L_{eq} (24h) – The sound exposure level over then entire 24-hour day

L_{eq} Day – Either: L_{eq} (15h), from 7am to 10 pm; or
L_{eq} (16h), from 7am to 11 am

L_{eq} Night – Either: L_{eq} (9h), from 10 pm to 7 am; or
L_{eq} (8h), from 11 pm to 7 am

L_{dn} – A special L_{eq} (24h) value with a 10 dB night-time penalty applied to overnight sound levels (10pm to 7am)

L_{eq} (1-h) – The sound exposure over a 1-hour time period

L_{eq} (24h) values are appropriate for examining impacts of transportation noise sources with small changes in sound exposure levels over the 24-hour day. For example, freeway noise levels are generally consistent over the 24-hour day. Therefore, for freeways, there is little difference between L_{eq} (24h) values and the corresponding L_{eq} Day and L_{eq} Night values.

L_{eq} Day values, covering off the AM-peak and PM-peak travel periods, are generally appropriate for examining the impacts of non-freeway highways and municipal arterial roadways. The vast majority of noise associated with these sources is concentrated in the daytime hours, where typically, 85% to 90% of the daily road traffic will occur.[4] Thus, if reasonable sound levels occur during the daytime (and appropriate guideline limits are met), they will also occur (and be met) at night.

To account for increased annoyance with noise overnight in a single value, the U.S. Environmental Protection Agency (U.S. EPA) developed the L_{dn} metric. It is a special form of the L_{eq} (24h) with a +10 dB night-time penalty. L_{dn} values and a related metric, the day-evening-night level (L_{den}) are also used in some European guidelines. L_{dn} values are not used in Canadian Provincial jurisdictions in evaluating transportation noise. Instead, guideline limits for separate L_{eq} Day and L_{eq} Night periods are generally used.

L_{eq} (1-h) values are the average sound levels over a one-hour time period. These tend to fluctuate more over the day, as traffic levels can fluctuate significantly hour to hour. L_{eq} (1-h) values are useful in assessing the impact of transportation sources which also vary hourly, and which may vary in a different manner than the background traffic. These values are often used to assess haul route noise impacts, for example.

[4] Based on research conducted by Ontario Ministry of Transportation, and provided in the *MTO Environmental Office Manual Technical Areas – Noise*. Daytime refers to a 16 hour day from 7am to 11 pm.

Some transportation noise sources may have significant traffic levels occurring over-night. For example, freight rail traffic in heavily used corridors can be shifted to over-night periods, with daytime track use being reserved for freight switcher traffic and passenger traffic. In situations such as this, an assessment of both daytime and night-time noise impacts may be appropriate.

Decibel Addition

Decibels are logarithmic numbers, and therefore have special properties of addition. Decibel values must be added logarithmically. If two sources, each emitting the same amount of sound energy, are placed side-by-side, then the total increase in sound level will only be 3 dB. If the difference in sound energy emitted is greater than 10 dB, then effectively the sound level will be the same as for the loudest unit (i.e., the increase in noise will be less than a decibel). This is shown in Table 5.

Table 5: Decibel Addition Chart

dB Difference Of	dB Value to Add to Highest Number
0	3.0
1	2.5
2	2.1
3	1.8
4	1.5
5	1.2
6	1.0
7	0.8
8	0.6
9	0.5
10	0.4

This affects transportation noise from projects, as noise emission is logarithmically related to traffic volume. Doubling the traffic volume (essentially the same as adding a source with the same sound emission) will only result in a 3 dB increase over the original levels. The decibel increase in noise due to the increase in traffic volume, assuming all other factors remain the same, can be estimated by:

$$\text{dB increase} = 10 \log (\text{new volume} / \text{original volume}).$$

Human Response to Changes in Sound Levels

The human ear does not interpret changes in sound level in a linear manner. The general subjective human perception of changes in sound level is shown in the following table.

Table 6: Subjective Human Perception of Changes in Sound Level [5,6]

Change in Broadband Sound Level (dB)	Human Perception of Change
< 3	Imperceptible change
3	Just-perceptible change
4 to 5	Cleary noticeable change
6 to 9	Substantial change
> 10 and more	Very substantial change (half or twice as loud)
> 20 and more	Very substantial change (much quieter or louder)

Notes: Adapted from Bies and Hansen, p53, and MOE Noise Guidelines for Landfill Sites, 1998. Applies to changes in broadband noise sources only (i.e., increases or decreases in the same noise or same type of noise only). Changes in frequency content or the addition of tonal or temporal changes would affect the perception of the change.

The above table is directly applicable to changes in sound level where the noise sources are of the same general character. For example, existing road traffic noise levels can be directly compared to future road traffic noise levels, using the above relationships. In comparing road traffic noise to road plus rail traffic noise, the different frequency and temporal nature of the noise means that the rail noise may be more noticeable. Adjustments for the nature of the new sound can be applied to better account for temporal and frequency differences.

For transportation noise sources, research conducted by the U.S. Environmental Protection Agency indicates that a 5 dB change in sound levels is required to trigger a change in large-scale community response to noise. This correlates to a clearly noticeable increase in noise levels.

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5 Bies, D.A., and C.H. Hansen 1988. *Engineering Noise Control – Theory and Practice, 2nd Ed.* E & FN Spon, London, p 53.

6 Ontario Ministry of the Environment 1998. Noise Guidelines for Landfill Sites. Queen's Printer for Ontario.

Decay of Noise with Distance

Noise levels decrease with increasing distance from a source of noise. The rate of decay is partially dependent on the nature of the ground between the source: whether it is hard (acoustically reflective) or soft (acoustically absorptive). Transportation noise sources in general act as *line sources* of sound. For line sources, the rate of decay is approximately:

- Hard ground: 3 dB for each doubling of distance from the source
- Soft ground: 5 dB for each doubling of distance from the source

This is shown graphically in Figure 4, based on a reference distance of 15 m from the source:

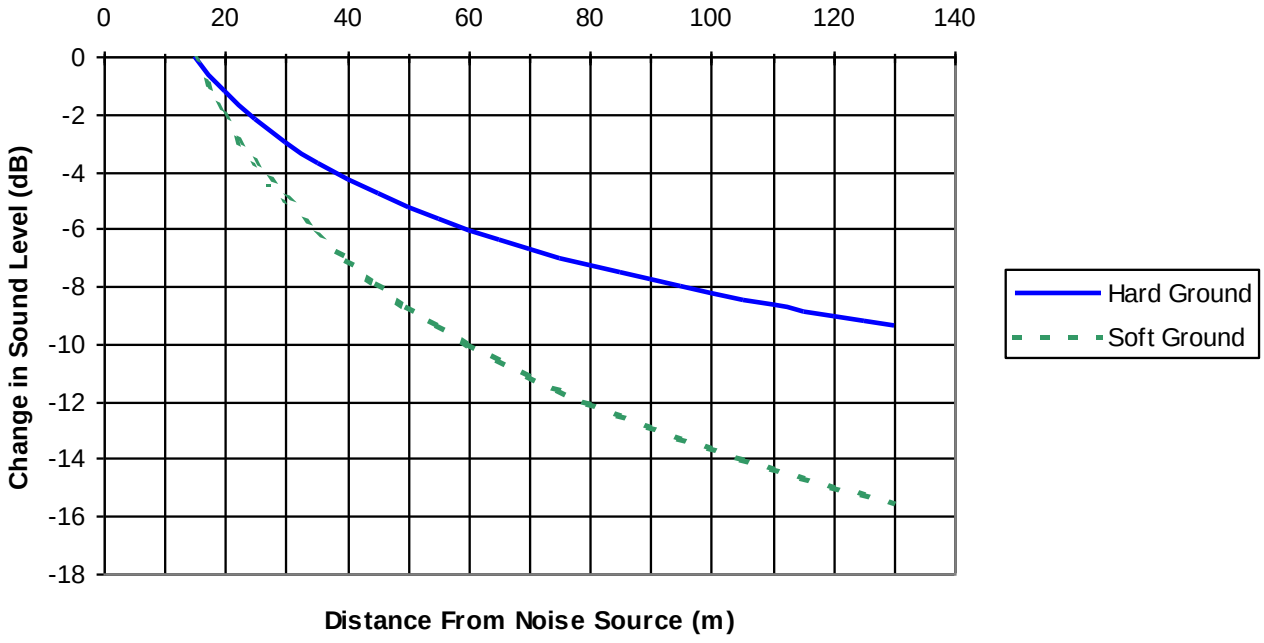

Figure 4: Decay of Noise Versus Distance for Line Sources

APPENDIX B

Road	Segment	Direction	Time	Future No Build AADTs			Future Build AADTs			Speed (km/h)
				Auto	Med	Heavy	Auto	Med	Heavy	
Residences at Dufferin and Langstaff										
Langstaff	East of Dufferin	EB	Day	9,886	349	172	15,170	535	263	66 (1)
			Night	608	21	11	933	33	16	
		WB	Day	9,339	329	162	14,331	505	249	64 (1)
			Night	1,241	44	22	1,904	67	33	
Dufferin	North of Langstaff	NB	Day	17,306	918	274	16,741	888	265	60 (2)
			Night	1,698	90	27	1,643	87	26	
		SB	Day	17,749	738	249	17,168	714	241	60 (2)
			Night	1,814	75	25	1,755	73	25	
Residences at Weston and Langstaff										
Langstaff	West of Weston	EB	Day	14,563	872	429	15,386	921	454	60 (2)
			Night	1,440	86	42	1,521	91	45	
		WB	Day	14,560	717	353	15,384	758	373	60 (2)
			Night	1,181	58	29	1,248	61	30	
Weston	South of Langstaff	NB	Day	15,811	1,311	66	15,590	1,293	65	60 (2)
			Night	1,097	91	5	1,082	90	5	
		SB	Day	15,950	1,283	75	15,727	1,265	73	60 (2)
			Night	1,217	98	6	1,200	97	6	
	North of Langstaff	NB	Day	18,556	986	70	18,408	978	69	60 (2)
			Night	1,635	87	6	1,622	86	6	
		SB	Day	17,315	677	48	17,178	671	48	60 (2)
			Night	1,592	62	4	1,579	62	4	

Note:
(1) - 85th percentile is higher than posted speed limit
(2) - Posted speed limits obtained from Google Maps

APPENDIX C

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:41:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr1_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 34.00 / 34.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

↟
Road data, segment # 2: Langstaff WB (day/night)

Car traffic volume : 9339/1241 veh/TimePeriod
Medium truck volume : 329/44 veh/TimePeriod
Heavy truck volume : 162/22 veh/TimePeriod
Posted speed limit : 64 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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 : 44.00 / 44.00 m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 3.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  :  49.00 / 49.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 56.01 + 0.00) = 56.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.84   0.00  -3.55   0.00   0.00   0.00  -7.27  56.01
-------------------------------------------------------------------------------

Segment Leq : 56.01 dBA
```



```
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 54.44 + 0.00) = 54.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
   -90     90   0.00  66.29   0.00  -4.67   0.00   0.00   0.00  -7.17  54.44
-------------------------------------------------------------------------------

Segment Leq : 54.44 dBA

↟
Results segment # 3: Dufferin NB (day)
-------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 54.79 + 0.00) = 54.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.64   0.00  -3.55  -3.01   0.00   0.00  -7.29  54.79
-------------------------------------------------------------------------------

Segment Leq : 54.79 dBA

↟
Results segment # 4: Dufferin SB (day)
-------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 52.99 + 0.00) = 52.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.30   0.00  -5.14  -3.01   0.00   0.00  -7.16  52.99
-------------------------------------------------------------------------------

Segment Leq : 52.99 dBA

Total Leq All Segments: 60.71 dBA
```

↟
Results segment # 1: Langstaff EB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	4.06	4.06

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	90	0.00	57.78	0.00	-3.55	0.00	0.00	0.00	-0.23	54.00*
-90	90	0.00	57.78	0.00	-3.55	0.00	0.00	0.00	0.00	54.23

* Bright Zone !

Segment Leq : 54.23 dBA

↟
Results segment # 2: Langstaff WB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	4.23	4.23

ROAD (0.00 + 55.90 + 0.00) = 55.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.57	0.00	-4.67	0.00	0.00	0.00	-0.16	55.74*
-90	90	0.00	60.57	0.00	-4.67	0.00	0.00	0.00	0.00	55.90

* Bright Zone !

Segment Leq : 55.90 dBA

↟
Results segment # 3: Dufferin NB (night)

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

Source height = 1.10 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.05 !         4.05

ROAD (0.00 + 55.01 + 0.00) = 55.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.57   0.00  -3.55  -3.01   0.00   0.00  -0.23  54.78*
     0     90   0.00  61.57   0.00  -3.55  -3.01   0.00   0.00   0.00  55.01
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.01 dBA

↟
Results segment # 4: Dufferin SB (night)
---------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        4.50 !        4.18 !         4.18

ROAD (0.00 + 53.23 + 0.00) = 53.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.38   0.00  -5.14  -3.01   0.00   0.00  -0.21  53.02*
     0     90   0.00  61.38   0.00  -5.14  -3.01   0.00   0.00   0.00  53.23
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.23 dBA

Total Leq All Segments: 60.72 dBA

↟
```

TOTAL Leq FROM ALL SOURCES (DAY): 60.71
(NIGHT): 60.72

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:42:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr1_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 15170/933 veh/TimePeriod
Medium truck volume : 535/33 veh/TimePeriod
Heavy truck volume : 263/16 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 34.00 / 34.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 3.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 14331/1904 veh/TimePeriod
Medium truck volume : 505/67 veh/TimePeriod
Heavy truck volume : 249/33 veh/TimePeriod
Posted speed limit : 64 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  44.00 / 44.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 3.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 16741/1643  veh/TimePeriod
Medium truck volume :   888/87    veh/TimePeriod
Heavy truck volume  :   265/26    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
```

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

Data for Segment # 4: Dufferin SB (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  :  49.00 / 49.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

🠝
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 57.87 + 0.00) = 57.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.70   0.00  -3.55   0.00   0.00   0.00  -7.27  57.87
-------------------------------------------------------------------------------

Segment Leq : 57.87 dBA

🠝
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

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

```
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 56.30 + 0.00) = 56.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.15   0.00  -4.67   0.00   0.00   0.00  -7.17  56.30
-------------------------------------------------------------------------------

Segment Leq : 56.30 dBA

↟
Results segment # 3: Dufferin NB (day)
--------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 54.64 + 0.00) = 54.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.49   0.00  -3.55  -3.01   0.00   0.00  -7.29  54.64
-------------------------------------------------------------------------------

Segment Leq : 54.64 dBA

↟
Results segment # 4: Dufferin SB (day)
--------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 52.85 + 0.00) = 52.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.16   0.00  -5.14  -3.01   0.00   0.00  -7.16  52.85
```

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

Segment Leq : 52.85 dBA

Total Leq All Segments: 61.83 dBA

↟
Results segment # 1: Langstaff EB (night)
----------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        4.15 !         4.15

ROAD (0.00 + 56.03 + 0.00) = 56.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  59.58   0.00  -3.55   0.00   0.00   0.00  -0.17  55.86*
   -90     90   0.00  59.58   0.00  -3.55   0.00   0.00   0.00   0.00  56.03
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.03 dBA

↟
Results segment # 2: Langstaff WB (night)
----------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        4.23 !         4.23

ROAD (0.00 + 57.71 + 0.00) = 57.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  62.39   0.00  -4.67   0.00   0.00   0.00  -0.16  57.56*
   -90     90   0.00  62.39   0.00  -4.67   0.00   0.00   0.00   0.00  57.71
--------------------------------------------------------------------------------
```

* Bright Zone !

Segment Leq : 57.71 dBA

↟
Results segment # 3: Dufferin NB (night)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	4.50	4.05	4.05

ROAD (0.00 + 54.86 + 0.00) = 54.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.42	0.00	-3.55	-3.01	0.00	0.00	-0.23	54.63*
0	90	0.00	61.42	0.00	-3.55	-3.01	0.00	0.00	0.00	54.86

* Bright Zone !

Segment Leq : 54.86 dBA

↟
Results segment # 4: Dufferin SB (night)

Source height = 1.08 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.08	4.50	4.19	4.19

ROAD (0.00 + 53.13 + 0.00) = 53.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.28	0.00	-5.14	-3.01	0.00	0.00	-0.21	52.93*
0	90	0.00	61.28	0.00	-5.14	-3.01	0.00	0.00	0.00	53.13

* Bright Zone !

Segment Leq : 53.13 dBA

Total Leq All Segments: 61.77 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.83
(NIGHT): 61.77

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:43:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr2_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 29.00 / 29.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 9339/1241 veh/TimePeriod
Medium truck volume : 329/44 veh/TimePeriod

```
Heavy truck volume  :   162/22    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  :  54.00 / 54.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  :  68.00 / 68.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

🠝
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.44 !         1.44

ROAD (0.00 + 56.63 + 0.00) = 56.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.84   0.00  -2.86   0.00   0.00   0.00  -7.35  56.63
-------------------------------------------------------------------------------

Segment Leq : 56.63 dBA

🠝
Results segment # 2: Langstaff WB (day)
---------------------------------------
```

Source height = 1.13 m

Barrier height for grazing incidence

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

ROAD (0.00 + 54.82 + 0.00) = 54.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.29	0.00	-4.26	0.00	0.00	0.00	-7.21	54.82

Segment Leq : 54.82 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.47	1.47

ROAD (0.00 + 52.95 + 0.00) = 52.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.64	0.00	-5.56	-3.01	0.00	0.00	-7.12	52.95

Segment Leq : 52.95 dBA

Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

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

```
       1.07 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 51.66 + 0.00) = 51.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.30   0.00  -6.56  -3.01   0.00   0.00  -7.07  51.66
-------------------------------------------------------------------------------

Segment Leq : 51.66 dBA

Total Leq All Segments: 60.44 dBA

🠉
Results segment # 1: Langstaff EB (night)
----------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        3.98 !         3.98

ROAD (0.00 + 54.92 + 0.00) = 54.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  57.78   0.00  -2.86   0.00   0.00   0.00  -0.24  54.67*
   -90     90   0.00  57.78   0.00  -2.86   0.00   0.00   0.00   0.00  54.92
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.92 dBA

🠉
Results segment # 2: Langstaff WB (night)
----------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        4.12 !         4.12

ROAD (0.00 + 56.31 + 0.00) = 56.31 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  60.57   0.00  -4.26   0.00   0.00   0.00  -0.22  56.09*
   -90     90   0.00  60.57   0.00  -4.26   0.00   0.00   0.00   0.00  56.31
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.31 dBA

↟
Results segment # 3: Dufferin NB (night)
----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.22 !         4.22

ROAD (0.00 + 53.00 + 0.00) = 53.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     90   0.00  61.57   0.00  -5.56  -3.01   0.00   0.00  -0.20  52.80*
     0     90   0.00  61.57   0.00  -5.56  -3.01   0.00   0.00   0.00  53.00
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.00 dBA

↟
Results segment # 4: Dufferin SB (night)
----------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        4.50 !        4.27 !         4.27

ROAD (0.00 + 51.80 + 0.00) = 51.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
```

```
     0     90   0.00  61.38   0.00  -6.56  -3.01   0.00   0.00  -0.19  51.61*
     0     90   0.00  61.38   0.00  -6.56  -3.01   0.00   0.00   0.00  51.80
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.80 dBA

Total Leq All Segments: 60.37 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 60.44
                           (NIGHT): 60.37
↟
↟
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:44:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr2_f.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  : 15170/933   veh/TimePeriod
Medium truck volume :   535/33    veh/TimePeriod
Heavy truck volume  :   263/16    veh/TimePeriod
Posted speed limit  :    66 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Car traffic volume : 14331/1904 veh/TimePeriod
Medium truck volume : 505/67 veh/TimePeriod
Heavy truck volume : 249/33 veh/TimePeriod
Posted speed limit : 64 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.00 / 40.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 16741/1643 veh/TimePeriod
Medium truck volume : 888/87 veh/TimePeriod
Heavy truck volume : 265/26 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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 : 54.00 / 54.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m

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

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  :  68.00 / 68.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.44 !         1.44

ROAD (0.00 + 58.48 + 0.00) = 58.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.70   0.00  -2.86   0.00   0.00   0.00  -7.35  58.48
-------------------------------------------------------------------------------
```

Segment Leq : 58.48 dBA

↟
Results segment # 2: Langstaff WB (day)

Source height = 1.13 m

Barrier height for grazing incidence

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

ROAD (0.00 + 56.68 + 0.00) = 56.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.15	0.00	-4.26	0.00	0.00	0.00	-7.21	56.68

Segment Leq : 56.68 dBA

↟
Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.47	1.47

ROAD (0.00 + 52.80 + 0.00) = 52.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.49	0.00	-5.56	-3.01	0.00	0.00	-7.12	52.80

Segment Leq : 52.80 dBA

↟
Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	1.50	1.47	1.47

ROAD (0.00 + 51.51 + 0.00) = 51.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.16	0.00	-6.56	-3.01	0.00	0.00	-7.07	51.51

Segment Leq : 51.51 dBA

Total Leq All Segments: 61.77 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	4.50	3.98	3.98

ROAD (0.00 + 56.72 + 0.00) = 56.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.58	0.00	-2.86	0.00	0.00	0.00	-0.25	56.47*
-90	90	0.00	59.58	0.00	-2.86	0.00	0.00	0.00	0.00	56.72

* Bright Zone !

Segment Leq : 56.72 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.13 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        4.12 !         4.12

ROAD (0.00 + 58.13 + 0.00) = 58.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  62.39   0.00  -4.26   0.00   0.00   0.00  -0.22  57.91*
   -90     90   0.00  62.39   0.00  -4.26   0.00   0.00   0.00   0.00  58.13
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.13 dBA

↟
Results segment # 3: Dufferin NB (night)
----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.22 !         4.22

ROAD (0.00 + 52.85 + 0.00) = 52.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.42   0.00  -5.56  -3.01   0.00   0.00  -0.20  52.65*
     0     90   0.00  61.42   0.00  -5.56  -3.01   0.00   0.00   0.00  52.85
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.85 dBA

↟
Results segment # 4: Dufferin SB (night)
----------------------------------------

Source height = 1.08 m

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

```
------------+-------------+-------------+--------------
       1.08 !        4.50 !        4.27 !         4.27

ROAD (0.00 + 51.71 + 0.00) = 51.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.28   0.00  -6.56  -3.01   0.00   0.00  -0.19  51.52*
     0     90   0.00  61.28   0.00  -6.56  -3.01   0.00   0.00   0.00  51.71
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.71 dBA

Total Leq All Segments: 61.65 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 61.77
                           (NIGHT): 61.65
```

```
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:45:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr3_base.te          Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  :  9886/608   veh/TimePeriod
Medium truck volume :   349/21    veh/TimePeriod
Heavy truck volume  :   172/11    veh/TimePeriod
Posted speed limit  :    66 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  26.00 / 26.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
```

```
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 2: Langstaff WB (day/night)
------------------------------------------------
Car traffic volume  :  9339/1241  veh/TimePeriod
Medium truck volume :   329/44    veh/TimePeriod
Heavy truck volume  :   162/22    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  37.00 / 37.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Dufferin NB (day/night)
------------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  :  71.00 / 71.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  :  86.00 / 86.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.44 !         1.44
```

ROAD (0.00 + 57.03 + 0.00) = 57.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.84	0.00	-2.39	0.00	0.00	0.00	-7.42	57.03

Segment Leq : 57.03 dBA

Results segment # 2: Langstaff WB (day)

Source height = 1.13 m

Barrier height for grazing incidence

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

ROAD (0.00 + 55.13 + 0.00) = 55.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.29	0.00	-3.92	0.00	0.00	0.00	-7.24	55.13

Segment Leq : 55.13 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.47	1.47

ROAD (0.00 + 51.82 + 0.00) = 51.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.64	0.00	-6.75	-3.01	0.00	0.00	-7.05	51.82

Segment Leq : 51.82 dBA

Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	1.50	1.48	1.48

ROAD (0.00 + 50.68 + 0.00) = 50.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.30	0.00	-7.58	-3.01	0.00	0.00	-7.02	50.68

Segment Leq : 50.68 dBA

Total Leq All Segments: 60.41 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	3.92	3.92

ROAD (0.00 + 55.39 + 0.00) = 55.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	57.78	0.00	-2.39	0.00	0.00	0.00	-0.26	55.13*
-90	90	0.00	57.78	0.00	-2.39	0.00	0.00	0.00	0.00	55.39

 * Bright Zone !

Segment Leq : 55.39 dBA

Results segment # 2: Langstaff WB (night)

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

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        4.09 !         4.09

ROAD (0.00 + 56.65 + 0.00) = 56.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.57   0.00  -3.92   0.00   0.00   0.00  -0.22  56.43*
   -90     90   0.00  60.57   0.00  -3.92   0.00   0.00   0.00   0.00  56.65
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.65 dBA

↟
Results segment # 3: Dufferin NB (night)
---------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.28 !         4.28

ROAD (0.00 + 51.81 + 0.00) = 51.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.57   0.00  -6.75  -3.01   0.00   0.00  -0.19  51.62*
     0     90   0.00  61.57   0.00  -6.75  -3.01   0.00   0.00   0.00  51.81
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.81 dBA

↟
Results segment # 4: Dufferin SB (night)
---------------------------------------
```

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	4.50	4.32	4.32

ROAD (0.00 + 50.78 + 0.00) = 50.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.38	0.00	-7.58	-3.01	0.00	0.00	-0.18	50.60*
0	90	0.00	61.38	0.00	-7.58	-3.01	0.00	0.00	0.00	50.78

* Bright Zone !

Segment Leq : 50.78 dBA

Total Leq All Segments: 60.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.41
(NIGHT): 60.33

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:45:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr3_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume	: 15170/933	veh/TimePeriod
Medium truck volume	: 535/33	veh/TimePeriod
Heavy truck volume	: 263/16	veh/TimePeriod
Posted speed limit	: 66 km/h	
Road gradient	: 0 %	
Road pavement	: 1 (Typical asphalt or concrete)	

Data for Segment # 1: Langstaff EB (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  :  26.00 / 26.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 2: Langstaff WB (day/night)
-----------------------------------------------
Car traffic volume  : 14331/1904  veh/TimePeriod
Medium truck volume :   505/67    veh/TimePeriod
Heavy truck volume  :   249/33    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  37.00 / 37.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 16741/1643  veh/TimePeriod
Medium truck volume :   888/87    veh/TimePeriod
Heavy truck volume  :   265/26    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 3: Dufferin NB (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  :  71.00 / 71.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  :  86.00 / 86.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   3.50 / 3.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m
```

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.44	1.44

ROAD (0.00 + 58.89 + 0.00) = 58.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.70	0.00	-2.39	0.00	0.00	0.00	-7.42	58.89

Segment Leq : 58.89 dBA

Results segment # 2: Langstaff WB (day)

Source height = 1.13 m

Barrier height for grazing incidence

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

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	90	0.00	68.15	0.00	-3.92	0.00	0.00	0.00	-7.24	56.99

Segment Leq : 56.99 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.47	1.47

ROAD (0.00 + 51.68 + 0.00) = 51.68 dBA

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     90   0.00  68.49   0.00  -6.75  -3.01   0.00   0.00  -7.05  51.68
-------------------------------------------------------------------------

Segment Leq : 51.68 dBA

🠉
Results segment # 4: Dufferin SB (day)
--------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 50.17 + 0.00) = 50.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     90   0.00  68.16   0.00  -7.58  -3.01   0.00   0.00  -7.40  50.17
-------------------------------------------------------------------------

Segment Leq : 50.17 dBA

Total Leq All Segments: 61.83 dBA

🠉
Results segment # 1: Langstaff EB (night)
-----------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        3.92 !         3.92

ROAD (0.00 + 57.19 + 0.00) = 57.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  59.58   0.00  -2.39   0.00   0.00   0.00  -0.26  56.93*
   -90     90   0.00  59.58   0.00  -2.39   0.00   0.00   0.00   0.00  57.19
-------------------------------------------------------------------------
```

* Bright Zone !

Segment Leq : 57.19 dBA

↟
Results segment # 2: Langstaff WB (night)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	4.50	4.09	4.09

ROAD (0.00 + 58.47 + 0.00) = 58.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	62.39	0.00	-3.92	0.00	0.00	0.00	-0.22	58.24*
-90	90	0.00	62.39	0.00	-3.92	0.00	0.00	0.00	0.00	58.47

* Bright Zone !

Segment Leq : 58.47 dBA

↟
Results segment # 3: Dufferin NB (night)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	4.50	4.28	4.28

ROAD (0.00 + 51.66 + 0.00) = 51.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.42	0.00	-6.75	-3.01	0.00	0.00	-0.19	51.47*
0	90	0.00	61.42	0.00	-6.75	-3.01	0.00	0.00	0.00	51.66

* Bright Zone !

Segment Leq : 51.66 dBA

↟
Results segment # 4: Dufferin SB (night)

Source height = 1.08 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.08	4.50	4.36	4.36

ROAD (0.00 + 50.69 + 0.00) = 50.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.28	0.00	-7.58	-3.01	0.00	0.00	-0.14	50.55*
0	90	0.00	61.28	0.00	-7.58	-3.01	0.00	0.00	0.00	50.69

---

 * Bright Zone !

Segment Leq : 50.69 dBA

Total Leq All Segments: 61.73 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 61.83
(NIGHT): 61.73
↟
↟
STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:46:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr4_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %

```
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Langstaff WB (day/night)
-----------------------------------------------
Car traffic volume  :  9339/1241  veh/TimePeriod
Medium truck volume :   329/44    veh/TimePeriod
Heavy truck volume  :   162/22    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
```

```
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  :  90.00 / 90.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

♠
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 103.00 / 103.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

Results segment # 1: Langstaff EB (day)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.43	1.43

ROAD (0.00 + 57.33 + 0.00) = 57.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.84	0.00	-2.04	0.00	0.00	0.00	-7.47	57.33

Segment Leq : 57.33 dBA

Results segment # 2: Langstaff WB (day)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.45	1.45

ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.29	0.00	-3.55	0.00	0.00	0.00	-7.27	55.46

Segment Leq : 55.46 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 50.84 + 0.00) = 50.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.64   0.00  -7.78  -3.01   0.00   0.00  -7.01  50.84
-------------------------------------------------------------------------------

Segment Leq : 50.84 dBA

↟
Results segment # 4: Dufferin SB (day)
-------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 49.93 + 0.00) = 49.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.30   0.00  -8.37  -3.01   0.00   0.00  -7.00  49.93
-------------------------------------------------------------------------------

Segment Leq : 49.93 dBA

Total Leq All Segments: 60.46 dBA

↟
Results segment # 1: Langstaff EB (night)
----------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  57.78   0.00  -2.04   0.00   0.00   0.00  -0.27  55.47*
   -90     90   0.00  57.78   0.00  -2.04   0.00   0.00   0.00   0.00  55.74
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.74 dBA

↟
Results segment # 2: Langstaff WB (night)
-----------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        4.06 !         4.06

ROAD (0.00 + 57.02 + 0.00) = 57.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00  -0.23  56.79*
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00   0.00  57.02
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.02 dBA

↟
Results segment # 3: Dufferin NB (night)
----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.33 !         4.33

ROAD (0.00 + 50.78 + 0.00) = 50.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
```

```
     0     90   0.00  61.57   0.00  -7.78  -3.01   0.00   0.00  -0.18  50.60*
     0     90   0.00  61.57   0.00  -7.78  -3.01   0.00   0.00   0.00  50.78
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.78 dBA

🠉
Results segment # 4: Dufferin SB (night)
----------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        4.50 !        4.35 !         4.35

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.38   0.00  -8.37  -3.01   0.00   0.00  -0.18  49.82*
     0     90   0.00  61.38   0.00  -8.37  -3.01   0.00   0.00   0.00  50.00
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.00 dBA

Total Leq All Segments: 60.41 dBA

🠉



TOTAL Leq FROM ALL SOURCES (DAY): 60.46
                           (NIGHT): 60.41
🠉
🠉
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:47:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr4_f.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
```

```
------------------------------------------------
Car traffic volume  : 15170/933   veh/TimePeriod
Medium truck volume :   535/33    veh/TimePeriod
Heavy truck volume  :   263/16    veh/TimePeriod
Posted speed limit  :    66 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

♠
Road data, segment # 2: Langstaff WB (day/night)
------------------------------------------------
Car traffic volume  : 14331/1904  veh/TimePeriod
Medium truck volume :   505/67    veh/TimePeriod
Heavy truck volume  :   249/33    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
```

```
Reference angle           :   0.00

↟
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 16741/1643  veh/TimePeriod
Medium truck volume :   888/87    veh/TimePeriod
Heavy truck volume  :   265/26    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  :  90.00 / 90.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 103.00 / 103.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
```

```
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 59.18 + 0.00) = 59.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.70   0.00  -2.04   0.00   0.00   0.00  -7.47  59.18
-------------------------------------------------------------------------------

Segment Leq : 59.18 dBA
```

↟

```
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 57.32 + 0.00) = 57.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.15   0.00  -3.55   0.00   0.00   0.00  -7.27  57.32
-------------------------------------------------------------------------------

Segment Leq : 57.32 dBA
```

↟

```
Results segment # 3: Dufferin NB (day)
```

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

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 50.69 + 0.00) = 50.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.49   0.00  -7.78  -3.01   0.00   0.00  -7.01  50.69
-------------------------------------------------------------------------------

Segment Leq : 50.69 dBA

🠉
Results segment # 4: Dufferin SB (day)
------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 49.78 + 0.00) = 49.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.16   0.00  -8.37  -3.01   0.00   0.00  -7.00  49.78
-------------------------------------------------------------------------------

Segment Leq : 49.78 dBA

Total Leq All Segments: 61.99 dBA

🠉
Results segment # 1: Langstaff EB (night)
-----------------------------------------

Source height = 1.13 m

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

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 57.54 + 0.00) = 57.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00  -0.27  57.27*
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00   0.00  57.54
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.54 dBA

🠉
Results segment # 2: Langstaff WB (night)
-----------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        4.05 !         4.05

ROAD (0.00 + 58.83 + 0.00) = 58.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  62.39   0.00  -3.55   0.00   0.00   0.00  -0.23  58.61*
   -90     90   0.00  62.39   0.00  -3.55   0.00   0.00   0.00   0.00  58.83
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.83 dBA

🠉
Results segment # 3: Dufferin NB (night)
-----------------------------------------

Source height = 1.10 m

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

```
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.33 !         4.33

ROAD (0.00 + 50.63 + 0.00) = 50.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.42   0.00  -7.78  -3.01   0.00   0.00  -0.18  50.45*
     0     90   0.00  61.42   0.00  -7.78  -3.01   0.00   0.00   0.00  50.63
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.63 dBA

🠉
Results segment # 4: Dufferin SB (night)
-----------------------------------------

Source height = 1.08 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.08 !        4.50 !        4.35 !         4.35

ROAD (0.00 + 49.91 + 0.00) = 49.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.28   0.00  -8.37  -3.01   0.00   0.00  -0.18  49.73*
     0     90   0.00  61.28   0.00  -8.37  -3.01   0.00   0.00   0.00  49.91
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.91 dBA

Total Leq All Segments: 61.89 dBA

🠉



TOTAL Leq FROM ALL SOURCES (DAY): 61.99
                           (NIGHT): 61.89
🠉
🠉
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:49:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
```

Filename: nr5_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 24.00 / 24.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 9339/1241 veh/TimePeriod
Medium truck volume : 329/44 veh/TimePeriod
Heavy truck volume : 162/22 veh/TimePeriod
Posted speed limit : 64 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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 : 34.00 / 34.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)

```
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  : 117.00 / 117.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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   : 131.00 / 131.00 m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             :   0.00 deg   Angle2 : 90.00 deg
Barrier height             :   2.30 m
Barrier receiver distance  :   4.50 / 4.50   m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00
```

🠝

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 57.33 + 0.00) = 57.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.84   0.00  -2.04   0.00   0.00   0.00  -7.47  57.33
-------------------------------------------------------------------------------

Segment Leq : 57.33 dBA
```

🠝

```
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.29   0.00  -3.55   0.00   0.00   0.00  -7.27  55.46
```

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

Segment Leq : 55.46 dBA

↟
Results segment # 3: Dufferin NB (day)
------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 49.73 + 0.00) = 49.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     90   0.00  68.64   0.00  -8.92  -3.01   0.00   0.00  -6.97  49.73
--------------------------------------------------------------------------------

Segment Leq : 49.73 dBA

↟
Results segment # 4: Dufferin SB (day)
------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 48.91 + 0.00) = 48.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     90   0.00  68.30   0.00  -9.41  -3.01   0.00   0.00  -6.97  48.91
--------------------------------------------------------------------------------

Segment Leq : 48.91 dBA

Total Leq All Segments: 60.27 dBA

↟
Results segment # 1: Langstaff EB (night)
```

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

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  57.78   0.00  -2.04   0.00   0.00   0.00  -0.27  55.47*
   -90     90   0.00  57.78   0.00  -2.04   0.00   0.00   0.00   0.00  55.74
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.74 dBA

🠉
Results segment # 2: Langstaff WB (night)
---------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        4.06 !         4.06

ROAD (0.00 + 57.02 + 0.00) = 57.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00  -0.23  56.79*
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00   0.00  57.02
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.02 dBA

🠉
Results segment # 3: Dufferin NB (night)
---------------------------------------
```

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	4.50	4.37	4.37

ROAD (0.00 + 49.64 + 0.00) = 49.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.57	0.00	-8.92	-3.01	0.00	0.00	-0.18	49.46*
0	90	0.00	61.57	0.00	-8.92	-3.01	0.00	0.00	0.00	49.64

* Bright Zone !

Segment Leq : 49.64 dBA

Results segment # 4: Dufferin SB (night)

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	4.50	4.38	4.38

ROAD (0.00 + 48.96 + 0.00) = 48.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.38	0.00	-9.41	-3.01	0.00	0.00	-0.18	48.78*
0	90	0.00	61.38	0.00	-9.41	-3.01	0.00	0.00	0.00	48.96

* Bright Zone !

Segment Leq : 48.96 dBA

Total Leq All Segments: 60.21 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.27
(NIGHT): 60.21

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:49:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr5_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 15170/933 veh/TimePeriod
Medium truck volume : 535/33 veh/TimePeriod
Heavy truck volume : 263/16 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 24.00 / 24.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 14331/1904 veh/TimePeriod
Medium truck volume : 505/67 veh/TimePeriod
Heavy truck volume : 249/33 veh/TimePeriod
Posted speed limit : 64 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 16741/1643  veh/TimePeriod
Medium truck volume :   888/87    veh/TimePeriod
Heavy truck volume  :   265/26    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  : 117.00 / 117.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 4: Dufferin SB (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  : 131.00 / 131.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 59.18 + 0.00) = 59.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.70   0.00  -2.04   0.00   0.00   0.00  -7.47  59.18
-------------------------------------------------------------------------------

Segment Leq : 59.18 dBA

Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

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

```
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 57.32 + 0.00) = 57.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.15   0.00  -3.55   0.00   0.00   0.00  -7.27  57.32
-------------------------------------------------------------------------------

Segment Leq : 57.32 dBA

🠉
Results segment # 3: Dufferin NB (day)
-----------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 49.59 + 0.00) = 49.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.49   0.00  -8.92  -3.01   0.00   0.00  -6.97  49.59
-------------------------------------------------------------------------------

Segment Leq : 49.59 dBA

🠉
Results segment # 4: Dufferin SB (day)
-----------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 48.77 + 0.00) = 48.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.16   0.00  -9.41  -3.01   0.00   0.00  -6.97  48.77
-------------------------------------------------------------------------------
```

Segment Leq : 48.77 dBA

Total Leq All Segments: 61.86 dBA

↟
Results segment # 1: Langstaff EB (night)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	4.50	3.87	3.87

ROAD (0.00 + 57.54 + 0.00) = 57.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.58	0.00	-2.04	0.00	0.00	0.00	-0.27	57.27*
-90	90	0.00	59.58	0.00	-2.04	0.00	0.00	0.00	0.00	57.54

* Bright Zone !

Segment Leq : 57.54 dBA

↟
Results segment # 2: Langstaff WB (night)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	4.50	4.05	4.05

ROAD (0.00 + 58.83 + 0.00) = 58.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	62.39	0.00	-3.55	0.00	0.00	0.00	-0.23	58.61*
-90	90	0.00	62.39	0.00	-3.55	0.00	0.00	0.00	0.00	58.83

* Bright Zone !

Segment Leq : 58.83 dBA

↟
Results segment # 3: Dufferin NB (night)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	4.50	4.37	4.37

ROAD (0.00 + 49.49 + 0.00) = 49.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.42	0.00	-8.92	-3.01	0.00	0.00	-0.18	49.31*
0	90	0.00	61.42	0.00	-8.92	-3.01	0.00	0.00	0.00	49.49

* Bright Zone !

Segment Leq : 49.49 dBA

↟
Results segment # 4: Dufferin SB (night)

Source height = 1.08 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.08	4.50	4.38	4.38

ROAD (0.00 + 48.86 + 0.00) = 48.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.28	0.00	-9.41	-3.01	0.00	0.00	-0.18	48.69*
0	90	0.00	61.28	0.00	-9.41	-3.01	0.00	0.00	0.00	48.86

* Bright Zone !

Segment Leq : 48.86 dBA

Total Leq All Segments: 61.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.86
(NIGHT): 61.75

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:50:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr6_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 24.00 / 24.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 9339/1241 veh/TimePeriod
Medium truck volume : 329/44 veh/TimePeriod
Heavy truck volume : 162/22 veh/TimePeriod
Posted speed limit : 64 km/h

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

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  : 145.00 / 145.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
```

```
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 160.00 / 160.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

🠝
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 57.33 + 0.00) = 57.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.84   0.00  -2.04   0.00   0.00   0.00  -7.47  57.33
-------------------------------------------------------------------------------

Segment Leq : 57.33 dBA

🠝
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m
```

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.45	1.45

ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.29	0.00	-3.55	0.00	0.00	0.00	-7.27	55.46

Segment Leq : 55.46 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.49	1.49

ROAD (0.00 + 48.82 + 0.00) = 48.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.64	0.00	-9.85	-3.01	0.00	0.00	-6.95	48.82

Segment Leq : 48.82 dBA

Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	1.50	1.49	1.49

ROAD (0.00 + 48.07 + 0.00) = 48.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.30	0.00	-10.28	-3.01	0.00	0.00	-6.95	48.07

Segment Leq : 48.07 dBA

Total Leq All Segments: 60.14 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	3.87	3.87

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	57.78	0.00	-2.04	0.00	0.00	0.00	-0.27	55.47*
-90	90	0.00	57.78	0.00	-2.04	0.00	0.00	0.00	0.00	55.74

* Bright Zone !

Segment Leq : 55.74 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	4.06	4.06

ROAD (0.00 + 57.02 + 0.00) = 57.02 dBA

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

```
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00  -0.23  56.79*
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00   0.00  57.02
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.02 dBA

🠝
Results segment # 3: Dufferin NB (night)
----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.39 !         4.39

ROAD (0.00 + 48.71 + 0.00) = 48.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.57   0.00  -9.85  -3.01   0.00   0.00  -0.18  48.53*
     0     90   0.00  61.57   0.00  -9.85  -3.01   0.00   0.00   0.00  48.71
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.71 dBA

🠝
Results segment # 4: Dufferin SB (night)
----------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        4.50 !        4.40 !         4.40

ROAD (0.00 + 48.09 + 0.00) = 48.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.38   0.00 -10.28  -3.01   0.00   0.00  -0.17  47.91*
     0     90   0.00  61.38   0.00 -10.28  -3.01   0.00   0.00   0.00  48.09
```

---

 * Bright Zone !

Segment Leq : 48.09 dBA

Total Leq All Segments: 60.07 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 60.14
(NIGHT): 60.07

↟
↟

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:52:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr6_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 15170/933 veh/TimePeriod
Medium truck volume : 535/33 veh/TimePeriod
Heavy truck volume : 263/16 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 24.00 / 24.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

↟

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

Car traffic volume : 14331/1904 veh/TimePeriod
Medium truck volume : 505/67 veh/TimePeriod
Heavy truck volume : 249/33 veh/TimePeriod
Posted speed limit : 64 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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 : 34.00 / 34.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 16741/1643 veh/TimePeriod
Medium truck volume : 888/87 veh/TimePeriod
Heavy truck volume : 265/26 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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 : 145.00 / 145.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m

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

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 160.00 / 160.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 59.18 + 0.00) = 59.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.70   0.00  -2.04   0.00   0.00   0.00  -7.47  59.18
-------------------------------------------------------------------------------

Segment Leq : 59.18 dBA
```

Results segment # 2: Langstaff WB (day)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.45	1.45

ROAD (0.00 + 57.32 + 0.00) = 57.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.15	0.00	-3.55	0.00	0.00	0.00	-7.27	57.32

Segment Leq : 57.32 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.49	1.49

ROAD (0.00 + 48.68 + 0.00) = 48.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.49	0.00	-9.85	-3.01	0.00	0.00	-6.95	48.68

Segment Leq : 48.68 dBA

Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

```
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 47.92 + 0.00) = 47.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.16   0.00 -10.28  -3.01   0.00   0.00  -6.95  47.92
-------------------------------------------------------------------------------

Segment Leq : 47.92 dBA

Total Leq All Segments: 61.77 dBA

↟
Results segment # 1: Langstaff EB (night)
-----------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 57.54 + 0.00) = 57.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00  -0.27  57.27*
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00   0.00  57.54
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.54 dBA

↟
Results segment # 2: Langstaff WB (night)
-----------------------------------------

Source height = 1.13 m

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

```
------------+-------------+-------------+--------------
       1.13 !        4.50 !        4.05 !         4.05

ROAD (0.00 + 58.83 + 0.00) = 58.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  62.39   0.00  -3.55   0.00   0.00   0.00  -0.23  58.61*
   -90     90   0.00  62.39   0.00  -3.55   0.00   0.00   0.00   0.00  58.83
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.83 dBA

🠉
Results segment # 3: Dufferin NB (night)
-----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.39 !         4.39

ROAD (0.00 + 48.56 + 0.00) = 48.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.42   0.00  -9.85  -3.01   0.00   0.00  -0.18  48.38*
     0     90   0.00  61.42   0.00  -9.85  -3.01   0.00   0.00   0.00  48.56
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.56 dBA

🠉
Results segment # 4: Dufferin SB (night)
-----------------------------------------

Source height = 1.08 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.08 !        4.50 !        4.40 !         4.40
```

ROAD (0.00 + 47.99 + 0.00) = 47.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.28	0.00	-10.28	-3.01	0.00	0.00	-0.17	47.82*
0	90	0.00	61.28	0.00	-10.28	-3.01	0.00	0.00	0.00	47.99

* Bright Zone !

Segment Leq : 47.99 dBA

Total Leq All Segments: 61.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.77
(NIGHT): 61.66

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:53:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr7_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 24.00 / 24.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.30 m
Barrier receiver distance : 4.50 / 4.50 m

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

↟

```
Road data, segment # 2: Langstaff WB (day/night)
-----------------------------------------------
Car traffic volume  :  9339/1241  veh/TimePeriod
Medium truck volume :   329/44    veh/TimePeriod
Heavy truck volume  :   162/22    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Dufferin NB (day/night)
-----------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  : 230.00 / 230.00 m
Receiver height           :   1.50 / 4.50   m
```

```
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 244.00 / 244.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 57.33 + 0.00) = 57.33 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.84   0.00  -2.04   0.00   0.00   0.00  -7.47  57.33
-------------------------------------------------------------------------------

Segment Leq : 57.33 dBA

🠝
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.29   0.00  -3.55   0.00   0.00   0.00  -7.27  55.46
-------------------------------------------------------------------------------

Segment Leq : 55.46 dBA

🠝
Results segment # 3: Dufferin NB (day)
--------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 46.86 + 0.00) = 46.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.64   0.00 -11.86  -3.01   0.00   0.00  -6.92  46.86
-------------------------------------------------------------------------------

Segment Leq : 46.86 dBA

🠝
```

Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	1.50	1.49	1.49

ROAD (0.00 + 46.26 + 0.00) = 46.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.30	0.00	-12.11	-3.01	0.00	0.00	-6.92	46.26

Segment Leq : 46.26 dBA

Total Leq All Segments: 59.93 dBA

🠉
Results segment # 1: Langstaff EB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	3.87	3.87

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	57.78	0.00	-2.04	0.00	0.00	0.00	-0.27	55.47*
-90	90	0.00	57.78	0.00	-2.04	0.00	0.00	0.00	0.00	55.74

* Bright Zone !

Segment Leq : 55.74 dBA

🠉
Results segment # 2: Langstaff WB (night)

Source height = 1.14 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.14	4.50	4.06	4.06

ROAD (0.00 + 57.02 + 0.00) = 57.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.57	0.00	-3.55	0.00	0.00	0.00	-0.23	56.79*
-90	90	0.00	60.57	0.00	-3.55	0.00	0.00	0.00	0.00	57.02

* Bright Zone !

Segment Leq : 57.02 dBA

🠉

Results segment # 3: Dufferin NB (night)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	4.50	4.43	4.43

ROAD (0.00 + 46.70 + 0.00) = 46.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.57	0.00	-11.86	-3.01	0.00	0.00	-0.17	46.53*
0	90	0.00	61.57	0.00	-11.86	-3.01	0.00	0.00	0.00	46.70

* Bright Zone !

Segment Leq : 46.70 dBA

🠉

Results segment # 4: Dufferin SB (night)

Source height = 1.07 m

```
Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        4.50 !        4.44 !         4.44

ROAD (0.00 + 46.25 + 0.00) = 46.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.38   0.00 -12.11  -3.01   0.00   0.00  -0.17  46.08*
     0     90   0.00  61.38   0.00 -12.11  -3.01   0.00   0.00   0.00  46.25
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.25 dBA

Total Leq All Segments: 59.86 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 59.93
                           (NIGHT): 59.86
↟
↟
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:53:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr7_f.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  : 15170/933   veh/TimePeriod
Medium truck volume :   535/33    veh/TimePeriod
Heavy truck volume  :   263/16    veh/TimePeriod
Posted speed limit  :    66 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 2: Langstaff WB (day/night)
------------------------------------------------
Car traffic volume  : 14331/1904  veh/TimePeriod
Medium truck volume :   505/67    veh/TimePeriod
Heavy truck volume  :   249/33    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Dufferin NB (day/night)
------------------------------------------------
Car traffic volume  : 16741/1643  veh/TimePeriod
Medium truck volume :   888/87    veh/TimePeriod
Heavy truck volume  :   265/26    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  : 230.00 / 230.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17168/1755  veh/TimePeriod
Medium truck volume :   714/73    veh/TimePeriod
Heavy truck volume  :   241/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 244.00 / 244.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.13 m

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

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 59.18 + 0.00) = 59.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.70   0.00  -2.04   0.00   0.00   0.00  -7.47  59.18
-------------------------------------------------------------------------------

Segment Leq : 59.18 dBA

🠉
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 57.32 + 0.00) = 57.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.15   0.00  -3.55   0.00   0.00   0.00  -7.27  57.32
-------------------------------------------------------------------------------

Segment Leq : 57.32 dBA

🠉
Results segment # 3: Dufferin NB (day)
--------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 46.71 + 0.00) = 46.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
     0     90   0.00  68.49   0.00 -11.86  -3.01   0.00   0.00  -6.92  46.71
-------------------------------------------------------------------------------

Segment Leq : 46.71 dBA

🡅
Results segment # 4: Dufferin SB (day)
---------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 46.12 + 0.00) = 46.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.16   0.00 -12.11  -3.01   0.00   0.00  -6.92  46.12
-------------------------------------------------------------------------------

Segment Leq : 46.12 dBA

Total Leq All Segments: 61.63 dBA

🡅
Results segment # 1: Langstaff EB (night)
------------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 57.54 + 0.00) = 57.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00  -0.27  57.27*
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00   0.00  57.54
-------------------------------------------------------------------------------

 * Bright Zone !
```

Segment Leq : 57.54 dBA

↟
Results segment # 2: Langstaff WB (night)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	4.50	4.05	4.05

ROAD (0.00 + 58.83 + 0.00) = 58.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	62.39	0.00	-3.55	0.00	0.00	0.00	-0.23	58.61*
-90	90	0.00	62.39	0.00	-3.55	0.00	0.00	0.00	0.00	58.83

* Bright Zone !

Segment Leq : 58.83 dBA

↟
Results segment # 3: Dufferin NB (night)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	4.50	4.43	4.43

ROAD (0.00 + 46.55 + 0.00) = 46.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.42	0.00	-11.86	-3.01	0.00	0.00	-0.17	46.38*
0	90	0.00	61.42	0.00	-11.86	-3.01	0.00	0.00	0.00	46.55

* Bright Zone !

Segment Leq : 46.55 dBA

↟
Results segment # 4: Dufferin SB (night)

Source height = 1.08 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.08	4.50	4.44	4.44

ROAD (0.00 + 46.16 + 0.00) = 46.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.28	0.00	-12.11	-3.01	0.00	0.00	-0.17	45.99*
0	90	0.00	61.28	0.00	-12.11	-3.01	0.00	0.00	0.00	46.16

 * Bright Zone !

Segment Leq : 46.16 dBA

Total Leq All Segments: 61.52 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 61.63
(NIGHT): 61.52
↟
↟
STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:54:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr8_base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 9886/608 veh/TimePeriod
Medium truck volume : 349/21 veh/TimePeriod
Heavy truck volume : 172/11 veh/TimePeriod
Posted speed limit : 66 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

```
Data for Segment # 1: Langstaff EB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 2: Langstaff WB (day/night)
-------------------------------------------------
Car traffic volume  :  9339/1241  veh/TimePeriod
Medium truck volume :   329/44    veh/TimePeriod
Heavy truck volume  :   162/22    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Dufferin NB (day/night)
-------------------------------------------------
Car traffic volume  : 17306/1698  veh/TimePeriod
Medium truck volume :   918/90    veh/TimePeriod
Heavy truck volume  :   274/27    veh/TimePeriod
```

```
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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  : 275.00 / 275.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 4: Dufferin SB (day/night)
-----------------------------------------------
Car traffic volume  : 17749/1814  veh/TimePeriod
Medium truck volume :   738/75    veh/TimePeriod
Heavy truck volume  :   249/25    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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  : 290.00 / 290.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Results segment # 1: Langstaff EB (day)
```

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

Source height = 1.13 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 57.33 + 0.00) = 57.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.84   0.00  -2.04   0.00   0.00   0.00  -7.47  57.33
-------------------------------------------------------------------------------

Segment Leq : 57.33 dBA

🠉
Results segment # 2: Langstaff WB (day)
-------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        1.50 !        1.45 !         1.45

ROAD (0.00 + 55.46 + 0.00) = 55.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.29   0.00  -3.55   0.00   0.00   0.00  -7.27  55.46
-------------------------------------------------------------------------------

Segment Leq : 55.46 dBA

🠉
Results segment # 3: Dufferin NB (day)
-------------------------------------

Source height = 1.10 m

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

```
------------+-------------+-------------+--------------
       1.10 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 46.09 + 0.00) = 46.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.64   0.00 -12.63  -3.01   0.00   0.00  -6.91  46.09
-------------------------------------------------------------------------------

Segment Leq : 46.09 dBA

🠝
Results segment # 4: Dufferin SB (day)
-------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 45.52 + 0.00) = 45.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.30   0.00 -12.86  -3.01   0.00   0.00  -6.91  45.52
-------------------------------------------------------------------------------

Segment Leq : 45.52 dBA

Total Leq All Segments: 59.86 dBA

🠝
Results segment # 1: Langstaff EB (night)
-----------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
   -90     90   0.00  57.78   0.00  -2.04   0.00   0.00   0.00  -0.27  55.47*
   -90     90   0.00  57.78   0.00  -2.04   0.00   0.00   0.00   0.00  55.74
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.74 dBA

🠝
Results segment # 2: Langstaff WB (night)
----------------------------------------

Source height = 1.14 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.14 !        4.50 !        4.06 !         4.06

ROAD (0.00 + 57.02 + 0.00) = 57.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00  -0.23  56.79*
   -90     90   0.00  60.57   0.00  -3.55   0.00   0.00   0.00   0.00  57.02
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.02 dBA

🠝
Results segment # 3: Dufferin NB (night)
----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.44 !         4.44

ROAD (0.00 + 45.93 + 0.00) = 45.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     90   0.00  61.57   0.00 -12.63  -3.01   0.00   0.00  -0.17  45.76*
     0     90   0.00  61.57   0.00 -12.63  -3.01   0.00   0.00   0.00  45.93
```

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

 * Bright Zone !

Segment Leq : 45.93 dBA

🠉
Results segment # 4: Dufferin SB (night)
----------------------------------------

Source height = 1.07 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.07 !        4.50 !        4.45 !         4.45

ROAD (0.00 + 45.50 + 0.00) = 45.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  61.38   0.00 -12.86  -3.01   0.00   0.00  -0.17  45.33*
     0     90   0.00  61.38   0.00 -12.86  -3.01   0.00   0.00   0.00  45.50
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.50 dBA

Total Leq All Segments: 59.79 dBA

🠉



TOTAL Leq FROM ALL SOURCES (DAY): 59.86
                           (NIGHT): 59.79
🠉
🠉
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:55:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr8_f.te             Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
------------------------------------------------
Car traffic volume  : 15170/933   veh/TimePeriod
```

```
Medium truck volume :   535/33    veh/TimePeriod
Heavy truck volume  :   263/16    veh/TimePeriod
Posted speed limit  :    66 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

♠
Road data, segment # 2: Langstaff WB (day/night)
-------------------------------------------------
Car traffic volume  : 14331/1904  veh/TimePeriod
Medium truck volume :   505/67    veh/TimePeriod
Heavy truck volume  :   249/33    veh/TimePeriod
Posted speed limit  :    64 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Car traffic volume : 16741/1643 veh/TimePeriod
Medium truck volume :   888/87   veh/TimePeriod
Heavy truck volume :   265/26   veh/TimePeriod
Posted speed limit :   60 km/h
Road gradient   :   0 %
Road pavement   :   1 (Typical asphalt or concrete)

Data for Segment # 3: Dufferin NB (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 : 275.00 / 275.00 m
Receiver height   :   1.50 / 4.50   m
Topography   :   2   (Flat/gentle slope; with barrier)
Barrier angle1   :   0.00 deg   Angle2 : 90.00 deg
Barrier height   :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation   :   0.00 m
Receiver elevation   :   0.00 m
Barrier elevation   :   0.00 m
Reference angle   :   0.00

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

Car traffic volume : 17168/1755 veh/TimePeriod
Medium truck volume :   714/73   veh/TimePeriod
Heavy truck volume :   241/25   veh/TimePeriod
Posted speed limit :   60 km/h
Road gradient   :   0 %
Road pavement   :   1 (Typical asphalt or concrete)

Data for Segment # 4: Dufferin SB (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 : 290.00 / 290.00 m
Receiver height   :   1.50 / 4.50   m
Topography   :   2   (Flat/gentle slope; with barrier)
Barrier angle1   :   0.00 deg   Angle2 : 90.00 deg
Barrier height   :   2.30 m
Barrier receiver distance :   4.50 / 4.50   m
Source elevation   :   0.00 m

Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: Langstaff EB (day)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.43	1.43

ROAD (0.00 + 59.18 + 0.00) = 59.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.70	0.00	-2.04	0.00	0.00	0.00	-7.47	59.18

Segment Leq : 59.18 dBA

Results segment # 2: Langstaff WB (day)

Source height = 1.13 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.13	1.50	1.45	1.45

ROAD (0.00 + 57.32 + 0.00) = 57.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.15	0.00	-3.55	0.00	0.00	0.00	-7.27	57.32

Segment Leq : 57.32 dBA

Results segment # 3: Dufferin NB (day)

Source height = 1.10 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.10	1.50	1.49	1.49

ROAD (0.00 + 45.94 + 0.00) = 45.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.49	0.00	-12.63	-3.01	0.00	0.00	-6.91	45.94

Segment Leq : 45.94 dBA

↟

Results segment # 4: Dufferin SB (day)

Source height = 1.07 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.07	1.50	1.49	1.49

ROAD (0.00 + 45.38 + 0.00) = 45.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.16	0.00	-12.86	-3.01	0.00	0.00	-6.91	45.38

Segment Leq : 45.38 dBA

Total Leq All Segments: 61.59 dBA

↟

Results segment # 1: Langstaff EB (night)

Source height = 1.13 m

Barrier height for grazing incidence

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

```
------------+-------------+-------------+--------------
       1.13 !        4.50 !        3.87 !         3.87

ROAD (0.00 + 57.54 + 0.00) = 57.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00  -0.27  57.27*
   -90     90   0.00  59.58   0.00  -2.04   0.00   0.00   0.00   0.00  57.54
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.54 dBA

🠝
Results segment # 2: Langstaff WB (night)
-----------------------------------------

Source height = 1.13 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.13 !        4.50 !        4.05 !         4.05

ROAD (0.00 + 58.83 + 0.00) = 58.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  62.39   0.00  -3.55   0.00   0.00   0.00  -0.23  58.61*
   -90     90   0.00  62.39   0.00  -3.55   0.00   0.00   0.00   0.00  58.83
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.83 dBA

🠝
Results segment # 3: Dufferin NB (night)
----------------------------------------

Source height = 1.10 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.10 !        4.50 !        4.44 !         4.44
```

ROAD (0.00 + 45.78 + 0.00) = 45.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.42	0.00	-12.63	-3.01	0.00	0.00	-0.17	45.61*
0	90	0.00	61.42	0.00	-12.63	-3.01	0.00	0.00	0.00	45.78

* Bright Zone !

Segment Leq : 45.78 dBA

Results segment # 4: Dufferin SB (night)

Source height = 1.08 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.08	4.50	4.45	4.45

ROAD (0.00 + 45.41 + 0.00) = 45.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.28	0.00	-12.86	-3.01	0.00	0.00	-0.17	45.24*
0	90	0.00	61.28	0.00	-12.86	-3.01	0.00	0.00	0.00	45.41

* Bright Zone !

Segment Leq : 45.41 dBA

Total Leq All Segments: 61.47 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.59
(NIGHT): 61.47

Filename: nr9_base.te Time Period: Day/Night 16/8 hours

Description:

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

Car traffic volume : 14563/1440 veh/TimePeriod
Medium truck volume : 872/86 veh/TimePeriod
Heavy truck volume : 429/42 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 23.00 / 23.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 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

↟
Road data, segment # 2: Langstaff WB (day/night)

Car traffic volume : 14560/1181 veh/TimePeriod
Medium truck volume : 717/58 veh/TimePeriod
Heavy truck volume : 353/29 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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 : 35.00 / 35.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 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
```

↟

```
Road data, segment # 3: Weston NB (day/night)
----------------------------------------------
Car traffic volume  : 18556/1635  veh/TimePeriod
Medium truck volume :   986/87    veh/TimePeriod
Heavy truck volume  :    70/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
----------------------------------------------
Angle1   Angle2           :   0.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 45.00 deg
Barrier height            :   2.00 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
```

↟

```
Road data, segment # 4: Weston SB (day/night)
----------------------------------------------
Car traffic volume  : 17315/1592  veh/TimePeriod
Medium truck volume :   677/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
----------------------------------------------
Angle1   Angle2           :   0.00 deg   45.00 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           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 45.00 deg
Barrier height            :   2.00 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: Langstaff EB (day)
-----------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.41 !         1.41

ROAD (0.00 + 61.25 + 0.00) = 61.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  69.04   0.00  -1.86   0.00   0.00   0.00  -5.93  61.25
-------------------------------------------------------------------------------

Segment Leq : 61.25 dBA
```



```
Results segment # 2: Langstaff WB (day)
-----------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.42 !         1.42

ROAD (0.00 + 59.07 + 0.00) = 59.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.47   0.00  -3.68   0.00   0.00   0.00  -5.72  59.07
-------------------------------------------------------------------------------
```

Segment Leq : 59.07 dBA

↟
Results segment # 3: Weston NB (day)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	1.50	1.43	1.43

ROAD (0.00 + 47.43 + 0.00) = 47.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	67.77	0.00	-8.53	-6.02	0.00	0.00	-5.79	47.43

Segment Leq : 47.43 dBA

↟
Results segment # 4: Weston SB (day)

Source height = 0.72 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.72	1.50	1.42	1.42

ROAD (0.00 + 47.01 + 0.00) = 47.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	66.89	0.00	-8.02	-6.02	0.00	0.00	-5.84	47.01

Segment Leq : 47.01 dBA

Total Leq All Segments: 63.51 dBA

↟
Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	3.10	3.10

ROAD (0.00 + 60.13 + 0.00) = 60.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.98	0.00	-1.86	0.00	0.00	0.00	-0.91	59.21*
-90	90	0.00	61.98	0.00	-1.86	0.00	0.00	0.00	0.00	60.13

* Bright Zone !

Segment Leq : 60.13 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	4.50	3.57	3.57

ROAD (0.00 + 56.92 + 0.00) = 56.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.60	0.00	-3.68	0.00	0.00	0.00	-0.52	56.39*
-90	90	0.00	60.60	0.00	-3.68	0.00	0.00	0.00	0.00	56.92

* Bright Zone !

Segment Leq : 56.92 dBA

Results segment # 3: Weston NB (night)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	4.50	4.15	4.15

ROAD (0.00 + 45.67 + 0.00) = 45.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	60.22	0.00	-8.53	-6.02	0.00	0.00	0.00	45.67*
0	45	0.00	60.22	0.00	-8.53	-6.02	0.00	0.00	0.00	45.67

* Bright Zone !

Segment Leq : 45.67 dBA

Results segment # 4: Weston SB (night)

Source height = 0.70 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.70	4.50	4.10	4.10

ROAD (0.00 + 45.46 + 0.00) = 45.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	59.50	0.00	-8.02	-6.02	0.00	0.00	0.00	45.46*
0	45	0.00	59.50	0.00	-8.02	-6.02	0.00	0.00	0.00	45.46

* Bright Zone !

Segment Leq : 45.46 dBA

Total Leq All Segments: 62.03 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.51
(NIGHT): 62.03

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:57:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr9_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 15386/1521 veh/TimePeriod
Medium truck volume : 921/91 veh/TimePeriod
Heavy truck volume : 454/45 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 23.00 / 23.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 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

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

Car traffic volume : 15384/1248 veh/TimePeriod
Medium truck volume : 758/61 veh/TimePeriod
Heavy truck volume : 373/30 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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   :  35.00 / 35.00  m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             : -90.00 deg   Angle2 : 90.00 deg
Barrier height             :   2.00 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
```

↟

```
Road data, segment # 3: Weston NB (day/night)
----------------------------------------------
Car traffic volume  : 18408/1622  veh/TimePeriod
Medium truck volume :   978/86    veh/TimePeriod
Heavy truck volume  :    69/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
----------------------------------------------
Angle1   Angle2            :   0.00 deg   45.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 107.00 / 107.00 m
Receiver height            :   1.50 / 4.50   m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             :   0.00 deg   Angle2 : 45.00 deg
Barrier height             :   2.00 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
```

↟

```
Road data, segment # 4: Weston SB (day/night)
----------------------------------------------
Car traffic volume  : 17178/1579  veh/TimePeriod
Medium truck volume :   671/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

```
-----------------------------------------
Angle1   Angle2           :   0.00 deg   45.00 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           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 45.00 deg
Barrier height            :   2.00 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: Langstaff EB (day)
-----------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.41 !         1.41

ROAD (0.00 + 61.49 + 0.00) = 61.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  69.29   0.00  -1.86   0.00   0.00   0.00  -5.93  61.49
-------------------------------------------------------------------------------

Segment Leq : 61.49 dBA
```

```
Results segment # 2: Langstaff WB (day)
-----------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.42 !         1.42
```

ROAD (0.00 + 59.31 + 0.00) = 59.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.71	0.00	-3.68	0.00	0.00	0.00	-5.72	59.31

Segment Leq : 59.31 dBA

Results segment # 3: Weston NB (day)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	1.50	1.43	1.43

ROAD (0.00 + 47.39 + 0.00) = 47.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	67.74	0.00	-8.53	-6.02	0.00	0.00	-5.79	47.39

Segment Leq : 47.39 dBA

Results segment # 4: Weston SB (day)

Source height = 0.72 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.72	1.50	1.42	1.42

ROAD (0.00 + 46.98 + 0.00) = 46.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	66.86	0.00	-8.02	-6.02	0.00	0.00	-5.84	46.98

Segment Leq : 46.98 dBA

Total Leq All Segments: 63.74 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	3.10	3.10

ROAD (0.00 + 60.39 + 0.00) = 60.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	62.25	0.00	-1.86	0.00	0.00	0.00	-0.91	59.48*
-90	90	0.00	62.25	0.00	-1.86	0.00	0.00	0.00	0.00	60.39

* Bright Zone !

Segment Leq : 60.39 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.22 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.22	4.50	3.56	3.56

ROAD (0.00 + 57.11 + 0.00) = 57.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.79	0.00	-3.68	0.00	0.00	0.00	-0.53	56.59*
-90	90	0.00	60.79	0.00	-3.68	0.00	0.00	0.00	0.00	57.11

* Bright Zone !

Segment Leq : 57.11 dBA

Results segment # 3: Weston NB (night)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	4.50	4.15	4.15

ROAD (0.00 + 45.63 + 0.00) = 45.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	60.19	0.00	-8.53	-6.02	0.00	0.00	0.00	45.63*
0	45	0.00	60.19	0.00	-8.53	-6.02	0.00	0.00	0.00	45.63

* Bright Zone !

Segment Leq : 45.63 dBA

Results segment # 4: Weston SB (night)

Source height = 0.70 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.70	4.50	4.10	4.10

ROAD (0.00 + 45.44 + 0.00) = 45.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	45	0.00	59.47	0.00	-8.02	-6.02	0.00	0.00	0.00	45.44*
0	45	0.00	59.47	0.00	-8.02	-6.02	0.00	0.00	0.00	45.44

* Bright Zone !

Segment Leq : 45.44 dBA

Total Leq All Segments: 62.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.74
(NIGHT): 62.25

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 14:58:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr10base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 14563/1440 veh/TimePeriod
Medium truck volume : 872/86 veh/TimePeriod
Heavy truck volume : 429/42 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -50.00 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 : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -50.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 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

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

Car traffic volume : 14560/1181 veh/TimePeriod
Medium truck volume : 717/58 veh/TimePeriod
Heavy truck volume : 353/29 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

```
Data for Segment # 2: Langstaff WB (day/night)
--------------------------------------------
Angle1   Angle2           : -50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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

Road data, segment # 3: Weston NB (day/night)
--------------------------------------------
Car traffic volume  : 15811/1097  veh/TimePeriod
Medium truck volume :  1311/91    veh/TimePeriod
Heavy truck volume  :    66/5     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: Weston SB (day/night)
--------------------------------------------
Car traffic volume  : 15950/1217  veh/TimePeriod
Medium truck volume :  1283/98    veh/TimePeriod
```

```
Heavy truck volume  :    75/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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: Langstaff EB (day)
---------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 57.07 + 0.00) = 57.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.00  69.04   0.00  -5.23  -1.09   0.00   0.00  -5.66  57.07
-------------------------------------------------------------------------------

Segment Leq : 57.07 dBA

🠝
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
```

```
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 55.52 + 0.00) = 55.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.00  68.47   0.00  -6.23  -1.09   0.00   0.00  -5.63  55.52
-------------------------------------------------------------------------------

Segment Leq : 55.52 dBA

↟
Results segment # 3: Weston NB (day)
-----------------------------------

Source height = 0.79 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.79 !        1.50 !        1.16 !         1.16

ROAD (0.00 + 57.01 + 0.00) = 57.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.95   0.00  -5.05   0.00   0.00   0.00  -5.89  57.01
-------------------------------------------------------------------------------

Segment Leq : 57.01 dBA

↟
Results segment # 4: Weston SB (day)
-----------------------------------

Source height = 0.81 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.81 !        1.50 !        1.30 !         1.30

ROAD (0.00 + 58.29 + 0.00) = 58.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
   -90     90   0.00  67.97   0.00  -3.68   0.00   0.00   0.00  -6.01  58.29
-------------------------------------------------------------------------------

Segment Leq : 58.29 dBA

Total Leq All Segments: 63.10 dBA

↟
Results segment # 1: Langstaff EB (night)
------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        4.50 !        3.86 !         3.86

ROAD (0.00 + 55.66 + 0.00) = 55.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.00  61.98   0.00  -5.23  -1.09   0.00   0.00  -0.26  55.40*
   -50     90   0.00  61.98   0.00  -5.23  -1.09   0.00   0.00   0.00  55.66
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.66 dBA

↟
Results segment # 2: Langstaff WB (night)
------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        4.50 !        3.98 !         3.98

ROAD (0.00 + 53.27 + 0.00) = 53.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.00  60.60   0.00  -6.23  -1.09   0.00   0.00  -0.24  53.03*
   -50     90   0.00  60.60   0.00  -6.23  -1.09   0.00   0.00   0.00  53.27
```

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

 * Bright Zone !

Segment Leq : 53.27 dBA

↟
Results segment # 3: Weston NB (night)
------------------------------------

Source height = 0.80 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.80 !        4.50 !        2.73 !         2.73

ROAD (0.00 + 54.36 + 0.00) = 54.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  59.41   0.00  -5.05   0.00   0.00   0.00  -4.18  50.18*
   -90     90   0.00  59.41   0.00  -5.05   0.00   0.00   0.00   0.00  54.36
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.36 dBA

↟
Results segment # 4: Weston SB (night)
------------------------------------

Source height = 0.82 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.82 !        4.50 !        3.45 !         3.45

ROAD (0.00 + 56.15 + 0.00) = 56.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  59.83   0.00  -3.68   0.00   0.00   0.00  -0.63  55.53*
   -90     90   0.00  59.83   0.00  -3.68   0.00   0.00   0.00   0.00  56.15
--------------------------------------------------------------------------------
```

```
 * Bright Zone !

Segment Leq : 56.15 dBA

Total Leq All Segments: 61.02 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 63.10
                           (NIGHT): 61.02
↟
↟
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 14:58:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr10_f.te            Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  : 15386/1521  veh/TimePeriod
Medium truck volume :   921/91    veh/TimePeriod
Heavy truck volume  :   454/45    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Angle1   Angle2           : -50.00 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           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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

↟
Road data, segment # 2: Langstaff WB (day/night)
-----------------------------------------------
```

```
Car traffic volume  : 15384/1248  veh/TimePeriod
Medium truck volume :   758/61    veh/TimePeriod
Heavy truck volume  :   373/30    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (day/night)
-----------------------------------------------
Angle1   Angle2           : -50.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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

↟
Road data, segment # 3: Weston NB (day/night)
-----------------------------------------------
Car traffic volume  : 15590/1082  veh/TimePeriod
Medium truck volume :  1293/90    veh/TimePeriod
Heavy truck volume  :    65/5     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Car traffic volume : 15727/1200 veh/TimePeriod
Medium truck volume : 1265/97 veh/TimePeriod
Heavy truck volume : 73/6 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 35.00 / 35.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 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: Langstaff EB (day)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	1.50	1.46	1.46

ROAD (0.00 + 57.31 + 0.00) = 57.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-50	90	0.00	69.29	0.00	-5.23	-1.09	0.00	0.00	-5.66	57.31

Segment Leq : 57.31 dBA

Results segment # 2: Langstaff WB (day)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	1.50	1.46	1.46

ROAD (0.00 + 55.76 + 0.00) = 55.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-50	90	0.00	68.71	0.00	-6.23	-1.09	0.00	0.00	-5.63	55.76

Segment Leq : 55.76 dBA

Results segment # 3: Weston NB (day)

Source height = 0.79 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.79	1.50	1.16	1.16

ROAD (0.00 + 56.95 + 0.00) = 56.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	67.89	0.00	-5.05	0.00	0.00	0.00	-5.89	56.95

Segment Leq : 56.95 dBA

Results segment # 4: Weston SB (day)

Source height = 0.81 m

Barrier height for grazing incidence

Source	Receiver	Barrier	Elevation of

```
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.81 !        1.50 !        1.30 !         1.30

ROAD (0.00 + 58.22 + 0.00) = 58.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.91   0.00  -3.68   0.00   0.00   0.00  -6.01  58.22
-------------------------------------------------------------------------------

Segment Leq : 58.22 dBA

Total Leq All Segments: 63.17 dBA

Results segment # 1: Langstaff EB (night)
-----------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        4.50 !        3.86 !         3.86

ROAD (0.00 + 55.93 + 0.00) = 55.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     90   0.00  62.25   0.00  -5.23  -1.09   0.00   0.00  -0.26  55.67*
   -50     90   0.00  62.25   0.00  -5.23  -1.09   0.00   0.00   0.00  55.93
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.93 dBA

Results segment # 2: Langstaff WB (night)
-----------------------------------------

Source height = 1.22 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.22 !        4.50 !        3.98 !         3.98
```

ROAD (0.00 + 53.47 + 0.00) = 53.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-50	90	0.00	60.79	0.00	-6.23	-1.09	0.00	0.00	-0.24	53.23*
-50	90	0.00	60.79	0.00	-6.23	-1.09	0.00	0.00	0.00	53.47

* Bright Zone !

Segment Leq : 53.47 dBA

Results segment # 3: Weston NB (night)

Source height = 0.81 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.81	4.50	2.73	2.73

ROAD (0.00 + 54.31 + 0.00) = 54.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.36	0.00	-5.05	0.00	0.00	0.00	-4.18	50.13*
-90	90	0.00	59.36	0.00	-5.05	0.00	0.00	0.00	0.00	54.31

* Bright Zone !

Segment Leq : 54.31 dBA

Results segment # 4: Weston SB (night)

Source height = 0.82 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.82	4.50	3.45	3.45

ROAD (0.00 + 56.11 + 0.00) = 56.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.79	0.00	-3.68	0.00	0.00	0.00	-0.62	55.48*
-90	90	0.00	59.79	0.00	-3.68	0.00	0.00	0.00	0.00	56.11

 * Bright Zone !

Segment Leq : 56.11 dBA

Total Leq All Segments: 61.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.17
(NIGHT): 61.11

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 16:35:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr11base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 14563/1440 veh/TimePeriod
Medium truck volume : 872/86 veh/TimePeriod
Heavy truck volume : 429/42 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 99.00 / 99.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 11.00 / 11.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m

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

↟

```
Road data, segment # 2: Langstaff WB (day/night)
-----------------------------------------------
Car traffic volume  : 14560/1181  veh/TimePeriod
Medium truck volume :   717/58    veh/TimePeriod
Heavy truck volume  :   353/29    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  : 111.00 / 111.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Weston NB (day/night)
-----------------------------------------------
Car traffic volume  : 15811/1097  veh/TimePeriod
Medium truck volume :  1311/91    veh/TimePeriod
Heavy truck volume  :    66/5     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
```

```
Barrier height            :   2.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Weston SB (day/night)
-----------------------------------------
Car traffic volume  : 15950/1217  veh/TimePeriod
Medium truck volume :  1283/98    veh/TimePeriod
Heavy truck volume  :    75/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 52.39 + 0.00) = 52.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
```

```
     0     90   0.00  69.04   0.00  -8.20  -3.01   0.00   0.00  -5.45  52.39
--------------------------------------------------------------------------------

Segment Leq : 52.39 dBA

↟
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 51.32 + 0.00) = 51.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     90   0.00  68.47   0.00  -8.69  -3.01   0.00   0.00  -5.45  51.32
--------------------------------------------------------------------------------

Segment Leq : 51.32 dBA

↟
Results segment # 3: Weston NB (day)
------------------------------------

Source height = 0.79 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.79 !        1.50 !        1.26 !         1.26

ROAD (0.00 + 58.14 + 0.00) = 58.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  67.95   0.00  -3.80   0.00   0.00   0.00  -6.01  58.14
--------------------------------------------------------------------------------

Segment Leq : 58.14 dBA

↟
Results segment # 4: Weston SB (day)
------------------------------------
```

Source height = 0.81 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.81	1.50	1.17	1.17

ROAD (0.00 + 59.23 + 0.00) = 59.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	67.97	0.00	-2.22	0.00	0.00	0.00	-6.52	59.23

Segment Leq : 59.23 dBA

Total Leq All Segments: 62.55 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	4.14	4.14

ROAD (0.00 + 50.78 + 0.00) = 50.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.98	0.00	-8.20	-3.01	0.00	0.00	-0.37	50.41*
0	90	0.00	61.98	0.00	-8.20	-3.01	0.00	0.00	0.00	50.78

* Bright Zone !

Segment Leq : 50.78 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	4.50	4.18	4.18

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	SubLeq
0	90	0.00	60.60	0.00	-8.69	-3.01	0.00	0.00	-0.36	48.53*
0	90	0.00	60.60	0.00	-8.69	-3.01	0.00	0.00	0.00	48.89

* Bright Zone !

Segment Leq : 48.89 dBA

Results segment # 3: Weston NB (night)

Source height = 0.80 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.80	4.50	3.27	3.27

ROAD (0.00 + 55.61 + 0.00) = 55.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.41	0.00	-3.80	0.00	0.00	0.00	-0.97	54.63*
-90	90	0.00	59.41	0.00	-3.80	0.00	0.00	0.00	0.00	55.61

* Bright Zone !

Segment Leq : 55.61 dBA

Results segment # 4: Weston SB (night)

Source height = 0.82 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.82 !        4.50 !        2.73 !         2.73

ROAD (0.00 + 57.61 + 0.00) = 57.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.83   0.00  -2.22   0.00   0.00   0.00  -3.27  54.35*
   -90     90   0.00  59.83   0.00  -2.22   0.00   0.00   0.00   0.00  57.61
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.61 dBA

Total Leq All Segments: 60.56 dBA
```

```
TOTAL Leq FROM ALL SOURCES (DAY): 62.55
                           (NIGHT): 60.56
```

```
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 16:36:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr11_f.te            Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  : 15386/1521  veh/TimePeriod
Medium truck volume :   921/91    veh/TimePeriod
Heavy truck volume  :   454/45    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  99.00 / 99.00  m
Receiver height           :   1.50 / 4.50   m
```

```
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 2: Langstaff WB (day/night)
------------------------------------------------
Car traffic volume  : 15384/1248  veh/TimePeriod
Medium truck volume :   758/61    veh/TimePeriod
Heavy truck volume  :   373/30    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  : 111.00 / 111.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Weston NB (day/night)
------------------------------------------------
Car traffic volume  : 15590/1082  veh/TimePeriod
Medium truck volume :  1293/90    veh/TimePeriod
Heavy truck volume  :    65/5     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
------------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
```

```
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Road data, segment # 4: Weston SB (day/night)
-----------------------------------------------
Car traffic volume  : 15727/1200  veh/TimePeriod
Medium truck volume :  1265/97    veh/TimePeriod
Heavy truck volume  :    73/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```



```
Results segment # 1: Langstaff EB (day)
-----------------------------------------

Source height = 1.28 m

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

```
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 52.63 + 0.00) = 52.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  69.29   0.00  -8.20  -3.01   0.00   0.00  -5.45  52.63
-------------------------------------------------------------------------------

Segment Leq : 52.63 dBA

🠝
Results segment # 2: Langstaff WB (day)
-------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.47 !         1.47

ROAD (0.00 + 51.56 + 0.00) = 51.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.71   0.00  -8.69  -3.01   0.00   0.00  -5.45  51.56
-------------------------------------------------------------------------------

Segment Leq : 51.56 dBA

🠝
Results segment # 3: Weston NB (day)
-----------------------------------

Source height = 0.79 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.79 !        1.50 !        1.26 !         1.26

ROAD (0.00 + 58.08 + 0.00) = 58.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.89   0.00  -3.80   0.00   0.00   0.00  -6.01  58.08
-------------------------------------------------------------------------------
```

Segment Leq : 58.08 dBA

Results segment # 4: Weston SB (day)

Source height = 0.81 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.81	1.50	1.17	1.17

ROAD (0.00 + 59.16 + 0.00) = 59.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	67.91	0.00	-2.22	0.00	0.00	0.00	-6.53	59.16

Segment Leq : 59.16 dBA

Total Leq All Segments: 62.54 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	4.14	4.14

ROAD (0.00 + 51.04 + 0.00) = 51.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	62.25	0.00	-8.20	-3.01	0.00	0.00	-0.37	50.67*
0	90	0.00	62.25	0.00	-8.20	-3.01	0.00	0.00	0.00	51.04

* Bright Zone !

Segment Leq : 51.04 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.22 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.22	4.50	4.18	4.18

ROAD (0.00 + 49.09 + 0.00) = 49.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	60.79	0.00	-8.69	-3.01	0.00	0.00	-0.36	48.73*
0	90	0.00	60.79	0.00	-8.69	-3.01	0.00	0.00	0.00	49.09

* Bright Zone !

Segment Leq : 49.09 dBA

Results segment # 3: Weston NB (night)

Source height = 0.81 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.81	4.50	3.27	3.27

ROAD (0.00 + 55.56 + 0.00) = 55.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.36	0.00	-3.80	0.00	0.00	0.00	-0.97	54.59*
-90	90	0.00	59.36	0.00	-3.80	0.00	0.00	0.00	0.00	55.56

* Bright Zone !

Segment Leq : 55.56 dBA

Results segment # 4: Weston SB (night)

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

Source height = 0.82 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.82 !        4.50 !        2.74 !         2.74

ROAD (0.00 + 57.57 + 0.00) = 57.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.79   0.00  -2.22   0.00   0.00   0.00  -3.26  54.31*
   -90     90   0.00  59.79   0.00  -2.22   0.00   0.00   0.00   0.00  57.57
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.57 dBA

Total Leq All Segments: 60.57 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 62.54
                           (NIGHT): 60.57
↟
↟
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 16:36:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr12base.te          Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  : 14563/1440  veh/TimePeriod
Medium truck volume :   872/86    veh/TimePeriod
Heavy truck volume  :   429/42    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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: Langstaff WB (day/night)
------------------------------------------------
Car traffic volume  : 14560/1181  veh/TimePeriod
Medium truck volume :   717/58    veh/TimePeriod
Heavy truck volume  :   353/29    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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 # 3: Weston NB (day/night)
------------------------------------------------
Car traffic volume  : 18556/1635  veh/TimePeriod
Medium truck volume :   986/87    veh/TimePeriod
Heavy truck volume  :    70/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
```

```
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 70.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: Weston SB (day/night)
-------------------------------------------
Car traffic volume  : 17315/1592  veh/TimePeriod
Medium truck volume :   677/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  96.00 / 96.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 70.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Langstaff EB (day)
---------------------------------------
```

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	1.50	1.44	1.44

ROAD (0.00 + 59.77 + 0.00) = 59.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.04	0.00	-3.55	0.00	0.00	0.00	-5.72	59.77

Segment Leq : 59.77 dBA

↟

Results segment # 2: Langstaff WB (day)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	1.50	1.40	1.40

ROAD (0.00 + 60.47 + 0.00) = 60.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.47	0.00	-2.04	0.00	0.00	0.00	-5.96	60.47

Segment Leq : 60.47 dBA

↟

Results segment # 3: Weston NB (day)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	1.50	1.45	1.45

ROAD (0.00 + 49.20 + 0.00) = 49.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	70	0.00	67.77	0.00	-8.61	-4.10	0.00	0.00	-5.86	49.20

Segment Leq : 49.20 dBA

Results segment # 4: Weston SB (day)

Source height = 0.72 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.72	1.50	1.44	1.44

ROAD (0.00 + 48.83 + 0.00) = 48.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	70	0.00	66.89	0.00	-8.06	-4.10	0.00	0.00	-5.89	48.83

Segment Leq : 48.83 dBA

Total Leq All Segments: 63.47 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	3.65	3.65

ROAD (0.00 + 58.43 + 0.00) = 58.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.98	0.00	-3.55	0.00	0.00	0.00	-0.43	58.00*
-90	90	0.00	61.98	0.00	-3.55	0.00	0.00	0.00	0.00	58.43

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

 * Bright Zone !

Segment Leq : 58.43 dBA

↟
Results segment # 2: Langstaff WB (night)
----------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        4.50 !        3.27 !         3.27

ROAD (0.00 + 58.55 + 0.00) = 58.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  60.60   0.00  -2.04   0.00   0.00   0.00  -0.65  57.91*
   -90     90   0.00  60.60   0.00  -2.04   0.00   0.00   0.00   0.00  58.55
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.55 dBA

↟
Results segment # 3: Weston NB (night)
--------------------------------------

Source height = 0.77 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.77 !        4.50 !        4.26 !         4.26

ROAD (0.00 + 47.51 + 0.00) = 47.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     70   0.00  60.22   0.00  -8.61  -4.10   0.00   0.00   0.00  47.51*
     0     70   0.00  60.22   0.00  -8.61  -4.10   0.00   0.00   0.00  47.51
--------------------------------------------------------------------------------
```

```
 * Bright Zone !

Segment Leq : 47.51 dBA

↟
Results segment # 4: Weston SB (night)
---------------------------------------

Source height = 0.70 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.70 !        4.50 !        4.22 !         4.22

ROAD (0.00 + 47.33 + 0.00) = 47.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     70   0.00  59.50   0.00  -8.06  -4.10   0.00   0.00   0.00  47.33*
     0     70   0.00  59.50   0.00  -8.06  -4.10   0.00   0.00   0.00  47.33
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 47.33 dBA

Total Leq All Segments: 61.83 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 63.47
                           (NIGHT): 61.83
↟
↟
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 16:37:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr12_f.te            Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Langstaff EB (day/night)
-----------------------------------------------
Car traffic volume  : 15386/1521  veh/TimePeriod
Medium truck volume :   921/91    veh/TimePeriod
Heavy truck volume  :   454/45    veh/TimePeriod
```

```
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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  :  34.00 / 34.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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: Langstaff WB (day/night)
-------------------------------------------------
Car traffic volume  : 15384/1248  veh/TimePeriod
Medium truck volume :   758/61    veh/TimePeriod
Heavy truck volume  :   373/30    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  24.00 / 24.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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 # 3: Weston NB (day/night)
```

```
-------------------------------------------
Car traffic volume  : 18408/1622  veh/TimePeriod
Medium truck volume :   978/86    veh/TimePeriod
Heavy truck volume  :    69/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 70.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

♠
Road data, segment # 4: Weston SB (day/night)
-------------------------------------------
Car traffic volume  : 17178/1579  veh/TimePeriod
Medium truck volume :   671/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  96.00 / 96.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 70.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
```

Reference angle : 0.00

Results segment # 1: Langstaff EB (day)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	1.50	1.44	1.44

ROAD (0.00 + 60.01 + 0.00) = 60.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.29	0.00	-3.55	0.00	0.00	0.00	-5.72	60.01

Segment Leq : 60.01 dBA

Results segment # 2: Langstaff WB (day)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	1.50	1.40	1.40

ROAD (0.00 + 60.71 + 0.00) = 60.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.71	0.00	-2.04	0.00	0.00	0.00	-5.96	60.71

Segment Leq : 60.71 dBA

Results segment # 3: Weston NB (day)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	1.50	1.45	1.45

ROAD (0.00 + 49.16 + 0.00) = 49.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	70	0.00	67.74	0.00	-8.61	-4.10	0.00	0.00	-5.86	49.16

Segment Leq : 49.16 dBA

↟

Results segment # 4: Weston SB (day)

Source height = 0.72 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.72	1.50	1.44	1.44

ROAD (0.00 + 48.80 + 0.00) = 48.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	70	0.00	66.86	0.00	-8.06	-4.10	0.00	0.00	-5.89	48.80

Segment Leq : 48.80 dBA

Total Leq All Segments: 63.69 dBA

↟

Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	3.65	3.65

ROAD (0.00 + 58.70 + 0.00) = 58.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	62.25	0.00	-3.55	0.00	0.00	0.00	-0.43	58.26*
-90	90	0.00	62.25	0.00	-3.55	0.00	0.00	0.00	0.00	58.70

* Bright Zone !

Segment Leq : 58.70 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.22 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.22	4.50	3.27	3.27

ROAD (0.00 + 58.75 + 0.00) = 58.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.79	0.00	-2.04	0.00	0.00	0.00	-0.65	58.10*
-90	90	0.00	60.79	0.00	-2.04	0.00	0.00	0.00	0.00	58.75

* Bright Zone !

Segment Leq : 58.75 dBA

Results segment # 3: Weston NB (night)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	4.50	4.26	4.26

ROAD (0.00 + 47.47 + 0.00) = 47.47 dBA

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     70   0.00  60.19   0.00  -8.61  -4.10   0.00   0.00   0.00  47.47*
     0     70   0.00  60.19   0.00  -8.61  -4.10   0.00   0.00   0.00  47.47
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 47.47 dBA

🠉
Results segment # 4: Weston SB (night)
---------------------------------------

Source height = 0.70 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.70 !        4.50 !        4.22 !         4.22

ROAD (0.00 + 47.31 + 0.00) = 47.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     70   0.00  59.47   0.00  -8.06  -4.10   0.00   0.00   0.00  47.31*
     0     70   0.00  59.47   0.00  -8.06  -4.10   0.00   0.00   0.00  47.31
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 47.31 dBA

Total Leq All Segments: 62.04 dBA

🠉



TOTAL Leq FROM ALL SOURCES (DAY): 63.69
                           (NIGHT): 62.04
🠉
🠉
STAMSON 5.0        NORMAL REPORT        Date: 30-11-2021 16:38:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr13base.te          Time Period: Day/Night 16/8 hours
Description:
```

```
Road data, segment # 1: Langstaff EB (day/night)
------------------------------------------------
Car traffic volume  : 14563/1440  veh/TimePeriod
Medium truck volume :   872/86    veh/TimePeriod
Heavy truck volume  :   429/42    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (day/night)
------------------------------------------------
Angle1   Angle2           : -60.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  53.00 / 53.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -60.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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

↟
Road data, segment # 2: Langstaff WB (day/night)
------------------------------------------------
Car traffic volume  : 14560/1181  veh/TimePeriod
Medium truck volume :   717/58    veh/TimePeriod
Heavy truck volume  :   353/29    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (day/night)
------------------------------------------------
Angle1   Angle2           : -60.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -60.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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
```

↟

```
Road data, segment # 3: Weston NB (day/night)
-----------------------------------------
Car traffic volume  : 18556/1635  veh/TimePeriod
Medium truck volume :   986/87    veh/TimePeriod
Heavy truck volume  :    70/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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
```

↟

```
Road data, segment # 4: Weston SB (day/night)
-----------------------------------------
Car traffic volume  : 17315/1592  veh/TimePeriod
Medium truck volume :   677/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
```

```
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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: Langstaff EB (day)
---------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 57.13 + 0.00) = 57.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60     90   0.00  69.04   0.00  -5.48  -0.79   0.00   0.00  -5.64  57.13
-------------------------------------------------------------------------------

Segment Leq : 57.13 dBA
```

↟

```
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 57.67 + 0.00) = 57.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60     90   0.00  68.47   0.00  -4.26  -0.79   0.00   0.00  -5.75  57.67
-------------------------------------------------------------------------------

Segment Leq : 57.67 dBA
```

Results segment # 3: Weston NB (day)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	1.50	1.33	1.33

ROAD (0.00 + 57.41 + 0.00) = 57.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	67.77	0.00	-4.47	0.00	0.00	0.00	-5.89	57.41

Segment Leq : 57.41 dBA

Results segment # 4: Weston SB (day)

Source height = 0.72 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.72	1.50	1.21	1.21

ROAD (0.00 + 57.95 + 0.00) = 57.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	66.89	0.00	-2.55	0.00	0.00	0.00	-6.39	57.95

Segment Leq : 57.95 dBA

Total Leq All Segments: 63.57 dBA

Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	3.89	3.89

ROAD (0.00 + 55.71 + 0.00) = 55.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	90	0.00	61.98	0.00	-5.48	-0.79	0.00	0.00	-0.23	55.48*
-60	90	0.00	61.98	0.00	-5.48	-0.79	0.00	0.00	0.00	55.71

* Bright Zone !

Segment Leq : 55.71 dBA

Results segment # 2: Langstaff WB (night)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	4.50	3.68	3.68

ROAD (0.00 + 55.54 + 0.00) = 55.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	90	0.00	60.60	0.00	-4.26	-0.79	0.00	0.00	-0.28	55.27*
-60	90	0.00	60.60	0.00	-4.26	-0.79	0.00	0.00	0.00	55.54

* Bright Zone !

Segment Leq : 55.54 dBA

Results segment # 3: Weston NB (night)

Source height = 0.77 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.77 !        4.50 !        3.61 !         3.61

ROAD (0.00 + 55.75 + 0.00) = 55.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.22   0.00  -4.47   0.00   0.00   0.00  -0.53  55.22*
   -90     90   0.00  60.22   0.00  -4.47   0.00   0.00   0.00   0.00  55.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.75 dBA

🠉
Results segment # 4: Weston SB (night)
-------------------------------------

Source height = 0.70 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.70 !        4.50 !        3.09 !         3.09

ROAD (0.00 + 56.94 + 0.00) = 56.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.50   0.00  -2.55   0.00   0.00   0.00  -1.07  55.87*
   -90     90   0.00  59.50   0.00  -2.55   0.00   0.00   0.00   0.00  56.94
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.94 dBA

Total Leq All Segments: 62.04 dBA

🠉



TOTAL Leq FROM ALL SOURCES (DAY): 63.57
                          (NIGHT): 62.04
🠉
🠉
```

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 16:39:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr13_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 15386/1521 veh/TimePeriod
Medium truck volume : 921/91 veh/TimePeriod
Heavy truck volume : 454/45 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 53.00 / 53.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -60.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 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

↟
Road data, segment # 2: Langstaff WB (day/night)

Car traffic volume : 15384/1248 veh/TimePeriod
Medium truck volume : 758/61 veh/TimePeriod
Heavy truck volume : 373/30 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.00 / 40.00 m

```
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -60.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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
```

↟

```
Road data, segment # 3: Weston NB (day/night)
-----------------------------------------
Car traffic volume  : 18408/1622  veh/TimePeriod
Medium truck volume :   978/86    veh/TimePeriod
Heavy truck volume  :    69/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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
```

↟

```
Road data, segment # 4: Weston SB (day/night)
-----------------------------------------
Car traffic volume  : 17178/1579  veh/TimePeriod
Medium truck volume :   671/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
```

```
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 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: Langstaff EB (day)
---------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.46 !         1.46

ROAD (0.00 + 57.38 + 0.00) = 57.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60     90   0.00  69.29   0.00  -5.48  -0.79   0.00   0.00  -5.63  57.38
-------------------------------------------------------------------------------

Segment Leq : 57.38 dBA
```



```
Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.23 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.43 !         1.43

ROAD (0.00 + 57.91 + 0.00) = 57.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
```

```
-------------------------------------------------------------------------------
   -60     90   0.00  68.71   0.00  -4.26  -0.79   0.00   0.00  -5.75  57.91
-------------------------------------------------------------------------------

Segment Leq : 57.91 dBA

🡅
Results segment # 3: Weston NB (day)
-----------------------------------

Source height = 0.77 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.77 !        1.50 !        1.33 !         1.33

ROAD (0.00 + 57.37 + 0.00) = 57.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.74   0.00  -4.47   0.00   0.00   0.00  -5.89  57.37
-------------------------------------------------------------------------------

Segment Leq : 57.37 dBA

🡅
Results segment # 4: Weston SB (day)
-----------------------------------

Source height = 0.72 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.72 !        1.50 !        1.21 !         1.21

ROAD (0.00 + 57.92 + 0.00) = 57.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.86   0.00  -2.55   0.00   0.00   0.00  -6.39  57.92
-------------------------------------------------------------------------------

Segment Leq : 57.92 dBA

Total Leq All Segments: 63.67 dBA
```

↟
Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	3.89	3.89

ROAD (0.00 + 55.98 + 0.00) = 55.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	90	0.00	62.25	0.00	-5.48	-0.79	0.00	0.00	-0.23	55.74*
-60	90	0.00	62.25	0.00	-5.48	-0.79	0.00	0.00	0.00	55.98

* Bright Zone !

Segment Leq : 55.98 dBA

↟
Results segment # 2: Langstaff WB (night)

Source height = 1.22 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.22	4.50	3.68	3.68

ROAD (0.00 + 55.74 + 0.00) = 55.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	90	0.00	60.79	0.00	-4.26	-0.79	0.00	0.00	-0.28	55.46*
-60	90	0.00	60.79	0.00	-4.26	-0.79	0.00	0.00	0.00	55.74

* Bright Zone !

Segment Leq : 55.74 dBA

↟
Results segment # 3: Weston NB (night)

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

Source height = 0.77 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.77 !        4.50 !        3.61 !         3.61

ROAD (0.00 + 55.72 + 0.00) = 55.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.19   0.00  -4.47   0.00   0.00   0.00  -0.53  55.19*
   -90     90   0.00  60.19   0.00  -4.47   0.00   0.00   0.00   0.00  55.72
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.72 dBA

🠉
Results segment # 4: Weston SB (night)
------------------------------------

Source height = 0.70 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.70 !        4.50 !        3.09 !         3.09

ROAD (0.00 + 56.92 + 0.00) = 56.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.47   0.00  -2.55   0.00   0.00   0.00  -1.07  55.85*
   -90     90   0.00  59.47   0.00  -2.55   0.00   0.00   0.00   0.00  56.92
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.92 dBA

Total Leq All Segments: 62.14 dBA

🠉
```

TOTAL Leq FROM ALL SOURCES (DAY): 63.67
(NIGHT): 62.14

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 16:40:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr14base.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 14563/1440 veh/TimePeriod
Medium truck volume : 872/86 veh/TimePeriod
Heavy truck volume : 429/42 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 102.00 / 102.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 7.00 / 7.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 14560/1181 veh/TimePeriod
Medium truck volume : 717/58 veh/TimePeriod
Heavy truck volume : 353/29 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  89.00 / 89.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Weston NB (day/night)
-------------------------------------------
Car traffic volume  : 18556/1635  veh/TimePeriod
Medium truck volume :   986/87    veh/TimePeriod
Heavy truck volume  :    70/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

↟
Road data, segment # 4: Weston SB (day/night)
-------------------------------------------
Car traffic volume  : 17315/1592  veh/TimePeriod
Medium truck volume :   677/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
```

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

Data for Segment # 4: Weston SB (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 52.08 + 0.00) = 52.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  69.04   0.00  -8.33  -3.01   0.00   0.00  -5.63  52.08
-------------------------------------------------------------------------------

Segment Leq : 52.08 dBA

Results segment # 2: Langstaff WB (day)
---------------------------------------

Source height = 1.23 m

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

```
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.23 !        1.50 !        1.48 !         1.48

ROAD (0.00 + 52.08 + 0.00) = 52.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.47   0.00  -7.73  -3.01   0.00   0.00  -5.65  52.08
-------------------------------------------------------------------------------

Segment Leq : 52.08 dBA

🠝
Results segment # 3: Weston NB (day)
-----------------------------------

Source height = 0.77 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.77 !        1.50 !        1.26 !         1.26

ROAD (0.00 + 57.59 + 0.00) = 57.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.77   0.00  -4.26   0.00   0.00   0.00  -5.92  57.59
-------------------------------------------------------------------------------

Segment Leq : 57.59 dBA

🠝
Results segment # 4: Weston SB (day)
-----------------------------------

Source height = 0.72 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.72 !        1.50 !        1.15 !         1.15

ROAD (0.00 + 57.62 + 0.00) = 57.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.89   0.00  -2.86   0.00   0.00   0.00  -6.41  57.62
```

Segment Leq : 57.62 dBA

Total Leq All Segments: 61.69 dBA

↟
Results segment # 1: Langstaff EB (night)

Source height = 1.28 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.28	4.50	4.28	4.28

ROAD (0.00 + 50.65 + 0.00) = 50.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.98	0.00	-8.33	-3.01	0.00	0.00	-0.22	50.43*
0	90	0.00	61.98	0.00	-8.33	-3.01	0.00	0.00	0.00	50.65

* Bright Zone !

Segment Leq : 50.65 dBA

↟
Results segment # 2: Langstaff WB (night)

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	4.50	4.24	4.24

ROAD (0.00 + 49.85 + 0.00) = 49.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	60.60	0.00	-7.73	-3.01	0.00	0.00	-0.22	49.63*
0	90	0.00	60.60	0.00	-7.73	-3.01	0.00	0.00	0.00	49.85

* Bright Zone !

Segment Leq : 49.85 dBA

↟
Results segment # 3: Weston NB (night)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	4.50	3.29	3.29

ROAD (0.00 + 55.97 + 0.00) = 55.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.22	0.00	-4.26	0.00	0.00	0.00	-1.05	54.91*
-90	90	0.00	60.22	0.00	-4.26	0.00	0.00	0.00	0.00	55.97

* Bright Zone !

Segment Leq : 55.97 dBA

↟
Results segment # 4: Weston SB (night)

Source height = 0.70 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.70	4.50	2.80	2.80

ROAD (0.00 + 56.63 + 0.00) = 56.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.50	0.00	-2.86	0.00	0.00	0.00	-3.20	53.44*
-90	90	0.00	59.50	0.00	-2.86	0.00	0.00	0.00	0.00	56.63

* Bright Zone !

Segment Leq : 56.63 dBA

Total Leq All Segments: 60.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.69
(NIGHT): 60.29

STAMSON 5.0 NORMAL REPORT Date: 30-11-2021 16:40:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: nr14_f.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 15386/1521 veh/TimePeriod
Medium truck volume : 921/91 veh/TimePeriod
Heavy truck volume : 454/45 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Langstaff EB (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 : 102.00 / 102.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 7.00 / 7.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

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

Car traffic volume : 15384/1248 veh/TimePeriod
Medium truck volume : 758/61 veh/TimePeriod

```
Heavy truck volume  :   373/30    veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Langstaff WB (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  :  89.00 / 89.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 3: Weston NB (day/night)
-----------------------------------------------
Car traffic volume  : 18408/1622  veh/TimePeriod
Medium truck volume :   978/86    veh/TimePeriod
Heavy truck volume  :    69/6     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Weston NB (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Weston SB (day/night)
-----------------------------------------
Car traffic volume  : 17178/1579  veh/TimePeriod
Medium truck volume :   671/62    veh/TimePeriod
Heavy truck volume  :    48/4     veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: Weston SB (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  29.00 / 29.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

🠉
Results segment # 1: Langstaff EB (day)
---------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        1.50 !        1.49 !         1.49

ROAD (0.00 + 52.32 + 0.00) = 52.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  69.29   0.00  -8.33  -3.01   0.00   0.00  -5.63  52.32
-------------------------------------------------------------------------------

Segment Leq : 52.32 dBA

🠉
Results segment # 2: Langstaff WB (day)
---------------------------------------
```

Source height = 1.23 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.23	1.50	1.48	1.48

ROAD (0.00 + 52.32 + 0.00) = 52.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.71	0.00	-7.73	-3.01	0.00	0.00	-5.65	52.32

Segment Leq : 52.32 dBA

Results segment # 3: Weston NB (day)

Source height = 0.77 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.77	1.50	1.26	1.26

ROAD (0.00 + 57.55 + 0.00) = 57.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	67.74	0.00	-4.26	0.00	0.00	0.00	-5.93	57.55

Segment Leq : 57.55 dBA

Results segment # 4: Weston SB (day)

Source height = 0.72 m

Barrier height for grazing incidence

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

```
       0.72 !        1.50 !        1.15 !         1.15

ROAD (0.00 + 57.58 + 0.00) = 57.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.86   0.00  -2.86   0.00   0.00   0.00  -6.41  57.58
-------------------------------------------------------------------------------

Segment Leq : 57.58 dBA

Total Leq All Segments: 61.71 dBA

🠉
Results segment # 1: Langstaff EB (night)
------------------------------------------

Source height = 1.28 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.28 !        4.50 !        4.28 !         4.28

ROAD (0.00 + 50.91 + 0.00) = 50.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  62.25   0.00  -8.33  -3.01   0.00   0.00  -0.22  50.70*
     0     90   0.00  62.25   0.00  -8.33  -3.01   0.00   0.00   0.00  50.91
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.91 dBA

🠉
Results segment # 2: Langstaff WB (night)
------------------------------------------

Source height = 1.22 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.22 !        4.50 !        4.24 !         4.24

ROAD (0.00 + 50.05 + 0.00) = 50.05 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     90   0.00  60.79   0.00  -7.73  -3.01   0.00   0.00  -0.22  49.83*
     0     90   0.00  60.79   0.00  -7.73  -3.01   0.00   0.00   0.00  50.05
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.05 dBA

Results segment # 3: Weston NB (night)
-------------------------------------

Source height = 0.77 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.77 !        4.50 !        3.29 !         3.29

ROAD (0.00 + 55.93 + 0.00) = 55.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  60.19   0.00  -4.26   0.00   0.00   0.00  -1.05  54.88*
   -90     90   0.00  60.19   0.00  -4.26   0.00   0.00   0.00   0.00  55.93
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.93 dBA

Results segment # 4: Weston SB (night)
-------------------------------------

Source height = 0.70 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.70 !        4.50 !        2.80 !         2.80

ROAD (0.00 + 56.61 + 0.00) = 56.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
```

```
   -90     90   0.00  59.47   0.00  -2.86   0.00   0.00   0.00  -3.19  53.42*
   -90     90   0.00  59.47   0.00  -2.86   0.00   0.00   0.00   0.00  56.61
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.61 dBA

Total Leq All Segments: 60.31 dBA

♠



TOTAL Leq FROM ALL SOURCES (DAY): 61.71
                           (NIGHT): 60.31
♠
♠
```