S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS

# Environmental Noise Assessment Report

## 206 & 210 MAIN STREET EAST

TOWN OF GRIMSBY

LOSANI HOMES (1998) LTD.

SEPTEMBER 2026

SLA File: 26024

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# 1.0 INTRODUCTION AND BACKGROUND

## 1.1 OVERVIEW

S. Llewellyn & Associates Limited has been retained by Losani Homes (1998) Ltd. to provide an Environmental Noise Assessment for the proposed development located at 206 & 210 Main Street East in the Town of Grimsby (see Figure 1.0 for location plan). The proposed development is bound by Main Street East to the north and existing residential lands to the south, east and west. The proposed development consists of 6 single-family dwellings.

This Environmental Noise Assessment Report will evaluate the road noise impact on the subject lands from forecasted traffic volumes travelling along Main Street East. Please refer to the Engineering Plans prepared by S. Llewellyn & Associates Limited for additional information.

## 1.2 BACKGROUND INFORMATION

The following documents were referenced in the preparation of this report:

Ref. 1: *NPC-300: Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning,* Ministry of Environment (2013).

Ref. 2: *ORNAMENT – Ontario Road Noise Analysis Method for Environment and Transportation, Technical Document,* Ministry of Environment (October 1989).

Ref. 3: *Environmental Noise Assessment in Land Use Planning*, Ministry of Environment (November 1999).

Ref. 4: *Traffic Engineering*, William R. McShane & Roger P. Roess (1990).

*Ref. 5: Guidelines for New Development in Proximity to Railway Operations (Report),* Federation of Canadian Municipalities and the Railway Association of Canada, (May 2013)




**Figure 1.0 – Location Plan**

## 2.0 NOISE SOURCES

The subject property consists of vacant lands. The proposed development will consist of six single-family dwellings. Review of existing background information, aerial photography and mapping was completed to identify any additional noise sources.

### 2.1 Road Noise

Based on review of aerial mapping, the main road traffic noise source with an impact on the subject site is the road traffic noise from Main Street East.

### 2.2 Rail Noise

As per Section 3.4 of the Guidelines for New Development in Proximity to Railway Operations report (Ref. 5), the minimum influence offset for a principal main line for noise is 300m. Since there is not a railway located within 300m of the proposed development, the effects of the noise generated from railways are not considered acoustically significant.

## 3.0 CRITERIA

The report and analysis have been completed based on the Niagara Region requirements and Ministry of Environment Publication NPC: 300 (Ref. 1).

### 3.1 Noise Levels for Outdoor Living Areas

The recommended outdoor daytime noise levels are taken from Publication NPC-300, Table C-1, "Sound Level Limit for Outdoor Living Areas, Road and Rail" and are summarized in Table 3.1.

**Table 3.1 – Outdoor Living Area Sound Level Limit (Daytime period)**

| Usage | Between Hours | Road and/or Rail Noise Levels |
|---|---|---|
| Outdoor Amenity Area | 07:00 to 23:00 | 55 dBa $L_{eq}$ |

$L_{eq}$ – Equivalent Sound Level

Table 3.2 summarizes the noise control measures required for various conditions for the Outdoor Living Areas as per Publication NPC-300, Section C7.1, and "Road Noise Control Measures".

**Table 3.2 – Required Noise Control Measures for Outdoor Living Areas**

| Daytime (07:00 – 23:00) | Exceeds Objective By | Noise Control Measures |
|---|---|---|
| ≤ 55 dBa | 0 dBa | • No requirements or conditions |
| >55 to ≤ 60 dBa | >0 to 5 dBa | • Noise control measures to reduce noise levels to 55 dBa and/or<br>• Noise Warning Clause Type A |
| >60 dBa | >5 dBa | • Noise control measures to reduce noise levels to 55 dBa and/or<br>• Noise Warning Clause Type B |

### 3.2 Noise Levels for Indoor Living Areas

The recommended indoor noise levels are given in Table C-2: *Indoor Sound Level Limit – Road and Rail* as found in Publication NPC-300 and are summarized for road traffic noise in Table 3.3.

| **Table 3.3 – Indoor Living Area Sound Level Limit (Daytime & Nighttime period)** | | |
|---|---|---|
| **Usage** | **Between Hours** | **Road Noise Levels** |
| Indoor Living Area (Living/Dining Room, Den) | 07:00 to 23:00 | 45 dBa $L_{eq}$ |
| Indoor Living Area (Sleeping Quarters) | 23:00 to 07:00 | 40 dBa $L_{eq}$ |
| $L_{eq}$ – Equivalent Sound Level | | |

Tables 3.4 and 3.5 summarize the ventilation and building components requirements respectively as outlined in Publication NPC-300, Section C7.1, "Road Noise Control Measures".

| **Table 3.4 – Ventilation Requirements for Indoor Living Areas (Road Traffic)** | | | |
|---|---|---|---|
| **Daytime [A] (07:00 – 23:00)** | **Nighttime [A] (23:00 – 07:00)** | **Exceeds Objective By** | **Noise Control Measures** |
| ≤ 55 dBa | ≤ 50 dBa | 0 dBa | • No requirements or conditions |
| >55 to ≤ 65 dBa | >50 to ≤ 60 dBa | >0 to 10 dBa | • Provisions for air conditioning<br>• Noise Warning Clause Type C |
| > 65 dBa | > 60 dBa | >10 dBa | • Central A/C or other ventilation system installed prior to occupancy<br>• Noise Warning Clause Type D |
| [A] Outdoor noise levels measured at the plane of window | | | |

| **Table 3.5– Building Component Requirements for Indoor Living Areas (Road Traffic)** | | |
|---|---|---|
| **Daytime [A] (07:00 – 23:00)** | **Nighttime [A] (23:00 – 07:00)** | **Noise Control Measures** |
| ≤ 65 dBa | ≤ 60 dBa | • No requirements or conditions |
| > 65 dBa | > 60 dBa | • Design of building components including windows, walls and doors to maintain sound level limits as set out in Table C-2 of Publication NPC-300 |
| [A] Outdoor noise levels measured at the plane of window | | |

### 3.3 Calculation Parameters

As noted above, the allowable level for noise measured at the outdoor plane of the window, between 07:00 and 23:00 (daytime) is 55 dBa and 50 dBa between 23:00 to 07:00 (nighttime) to achieve allowable indoor noise levels. Daytime and nighttime noise levels 56 to 65 dBa and 51 to 60 dBa respectively will require the provisions for central air conditioning system and the registration of noise warning clauses on the title of each unit. Daytime noise levels exceeding 65 dBa and nighttime noise levels exceeding 60 dBa require the installation of central air conditioning or an approved equivalent ventilation system, the registration of noise warning clause on title to each unit and the analysis of the building components to determine any necessary acoustic treatments.

As previously mentioned, the proposed development is subject to road traffic noise from Main Street East, located approximately 23.6m north of the proposed development. The elevation of the centreline of the lane on Main Street East was established as approximately 97.00m based on topographic survey provided by A.T. McLaren Ltd. dated July 16, 2026. The intermittent ground surface was modelled as absorptive.

The calculations have been completed at two points of assessment (Receivers A and B). Receiver A is located at the north face of the building to calculate noise levels for the indoor living areas. Receiver B is located in the rear yard to calculate noise levels for the outdoor living areas. Refer to the Noise Assessment Plan in Appendix A.

Calculations for Receiver A were analyzed for the second floor at an elevation of 4.5m from the ground level for daytime and nighttime outdoor noise levels. Calculations for Receiver B were analyzed 1.5m above the ground floor and 3.0m away from the building for daytime noise levels. See Appendix C for the detailed calculation sheets.

## 4.0 ANALYSIS PROCEDURES

### 4.1 Road Traffic Data

The noise source considered for the purpose of acoustical impact on the proposed development is Main Street East, which runs east/west, approximately 23.6m north of the proposed development. The posted speed limit is 40 km/hr.

Traffic data was provided on the Niagara Region website (https://niagaraopendata.ca/dataset/regional-road-traffic-volumes, accessed September 08, 2026). Traffic volumes for this assessment were the Average Annual Daily Traffic (AADT) recorded at Station I.D. 610013, located on Main Street East (Regional Road 81) between Maple Avenue and Park Road South. The most recent available AADT is for 2024, with a volume of 11,100 vehicles per day (vpd).

Niagara Region criteria dictate traffic volumes be projected to a 20-year horizon or 2046. A review of the available historic data indicated an AADT of 11,100 vpd in 2024 and 11,500 vpd in 2014. Given these values indicate a negative growth in traffic from 2014 to 2024, a 2.0% growth rate was used to conservatively project traffic volumes to calculate the $AADT_{2046}$. Using the $AADT_{2024}$ of 11,100 vpd, the resulting $AADT_{2046}$ was 17,160 vpd based on a 2.0% annual growth projected to 20 years. Refer to Appendix C for traffic projection calculations.

Based on a previous noise study prepared in the area (Preliminary Environmental Noise Assessment Report, 141-149 Main Street East, Grimsby, Ontario (Project Number: 20007) by S. Llewellyn and Associates Limited), the $AADT_{2046}$ was broken down based on a traffic composition of 95% passenger cars, 3% medium trucks and 2% heavy trucks.

Day-time and night-time volumes were calculated based on 24-hour volume breakdown into day-time volume (over 16 hrs) and night-time volume (over 8 hrs). These volumes are obtained by multiplying the $AADT_{2046}$ by the fraction of traffic expected during these periods. As Main Street East is a Regional Road, the fractions are 90% day-time and 10% night-time as per the ORNAMENT guidelines.

### 4.2 Calculation Methods

Road traffic noise was calculated using the Stamson (version 5.03) computer program from the MOE utilizing the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT). Daytime and nighttime noise levels were calculated based on the projected $AADT_{2046}$ volumes separated into a daytime volume (over 16 hrs) and nighttime volume (over 8 hrs) obtained from the Stamson program.

As previously stated, the elevation of the road was based on elevations taken from the topographic survey provided by A.T. McLaren Ltd. dated July 16, 2026. The source to receiver distance is defined as the distance from the receiver to the centerline of Main Street East. Noise calculations are attached in Appendix C and the 2046 projected traffic volumes and composition are summarized in Table 4.1.

**Table 4.1 – 2046 Projected Traffic Volume & Composition Summary for Main Street East**

| Main Street East | Passenger Vehicles (95%) | Medium Trucks & Buses (3%) | Heavy Trucks (2%) | **Total Vehicles** |
|---|---|---|---|---|
| Daytime Volumes [B] | 14,672 | 463 | 309 | **15,444** |
| Nighttime Volumes [B] | 1,631 | 51 | 34 | **1,716** |

[A] $AADT_{2046}$ determined based on growth rate of 2.0% and calculated in the Stamson program
[B] Daytime Volume = 90% of volume, Nighttime Volume = 10% of volume

## 5.0 ANALYSIS

### 5.1 Noise Level Calculations

Noise levels were calculated at Receivers A and B to determine the attenuation requirements for outdoor living areas, building ventilation and/or modified building component requirements for indoor daytime living and nighttime sleeping areas.

### 5.2 Outdoor Living Areas

Noise levels were calculated at the rear yard of the proposed dwellings at Receiver B at an elevation of 1.5m above the proposed grade for the outdoor living areas. Table 5.1 summarizes the attenuation requirements and un-attenuated noise levels during the daytime (07:00 – 23:00), for the outdoor living area at Receiver B.

| **Table 5.1 – Un-attenuated Road Traffic Sound Levels for Outdoor Living Areas (Daytime)** | | | | |
|---|---|---|---|---|
| **Receiver** | **Elevation** | **Un-attenuated Noise Levels** | **MOE Criteria** | **Potential Noise Attenuation Measure** |
| B | 1.5m | 49.3 dBa | ≤ 55 dBa | • No requirements or conditions |

As per Table 5.1, the daytime noise levels do not exceed the MOE Outdoor Living Area criteria of 55 dBa. Therefore, no further noise attenuation measures are required for the outdoor amenity areas.

### 5.3 Indoor Living Areas

Indoor noise levels for living and sleeping quarters at Receiver A were calculated at 4.5m above the proposed grade at the plane of the window.

#### 5.3.1 Ventilation Requirements

Calculated noise levels at Receiver A are summarized in Tables 5.2 and 5.3, in regards to the MOE criteria for noise levels at the plane of the window for daytime indoor living areas and nighttime sleeping areas. The ventilation requirements are summarized below based on the calculated un-attenuated noise levels.

| **Table 5.2 – Un-attenuated Road Traffic Sound Levels for Indoor Living Areas vs MOE Ventilation Requirements (Daytime)** | | | | |
|---|---|---|---|---|
| **Receiver** | **Elevation** | **Un-attenuated Noise Levels** | **MOE Criteria** | **Potential Noise Attenuation Measure** |
| A | 4.5m | 59.8 dBa | >55 to ≤ 65 dBa | • Provisions for air conditioning<br>• Noise Warning Clause Type C |

| **Table 5.3 – Un-attenuated Road Traffic Sound Levels for Indoor Living Areas vs MOE Ventilation Requirements (Nighttime)** | | | | |
|---|---|---|---|---|
| **Receiver** | **Elevation** | **Un-attenuated Noise Levels** | **MOE Criteria** | **Potential Noise Attenuation Measure** |
| A | 4.5m | 53.2 dBa | >50 to ≤ 60 dBa | • Provisions for air conditioning<br>• Noise Warning Clause Type C |

As per Table 5.2 and 5.3, the daytime and nighttime noise levels exceed the MOE Indoor Living Area criteria of 55 dBa and 50 dBa respectively. Therefore, provisions for air conditioning are to be made and a Noise Warning Clause Type C is to be included in agreements that are registered on title for the proposed dwellings.

### 5.3.2 Building Components

As shown in Table 5.4 and 5.5, calculated un-attenuated daytime and nighttime noise levels do not exceed the MOE criteria of 65 dBa and 60 dBa respectively for modified building components. Therefore, the proposed dwellings do not require modified building components or Sound Transmission Class (STC) calculations.

**Table 5.4 – Un-attenuated Road Traffic Sound Levels for Indoor Living Areas vs MOE Building Component Requirements (Daytime)**

| Receiver | Elevation | Un-attenuated Noise Levels | MOE Criteria | Potential Noise Attenuation Measure |
|---|---|---|---|---|
| A | 4.5m | 59.8 dBa | ≤ 65 dBa | • No requirements or conditions |

**Table 5.5 – Un-attenuated Road Traffic Sound Levels for Indoor Living Areas vs MOE Building Component Requirements (Nighttime)**

| Receiver | Elevation | Un-attenuated Noise Levels | MOE Criteria | Potential Noise Attenuation Measure |
|---|---|---|---|---|
| A | 4.5m | 53.2 dBa | ≤ 60 dBa | • No requirements or conditions |

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis, the following conclusions can be made for the subject site:

- No outdoor attenuation measures are required for the proposed dwellings, since daytime outdoor noise levels do not exceed the MOE Outdoor Living Area criteria of 55 dBa.
- Provisions for air conditioning and a Noise Warning Clause Type C are to be included in agreements that are registered on title for the proposed dwellings since indoor daytime and nighttime noise levels exceed the MOE Indoor Living Area criteria of 55 dBa and 50 dBa respectively. As per Publication NPC-300, Noise Warning Clause Type C states, “This dwelling unit has been designed with the provision for adding central air conditioning at the occupant’s discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment”.
- No modified building components are required for the proposed dwellings, since indoor daytime and nighttime noise levels do not exceed the MOE Indoor Living Area criteria of 65 dBa and 60 dBa respectively.

We trust the information enclosed herein is satisfactory. Should you have any questions please do not hesitate to contact our office.

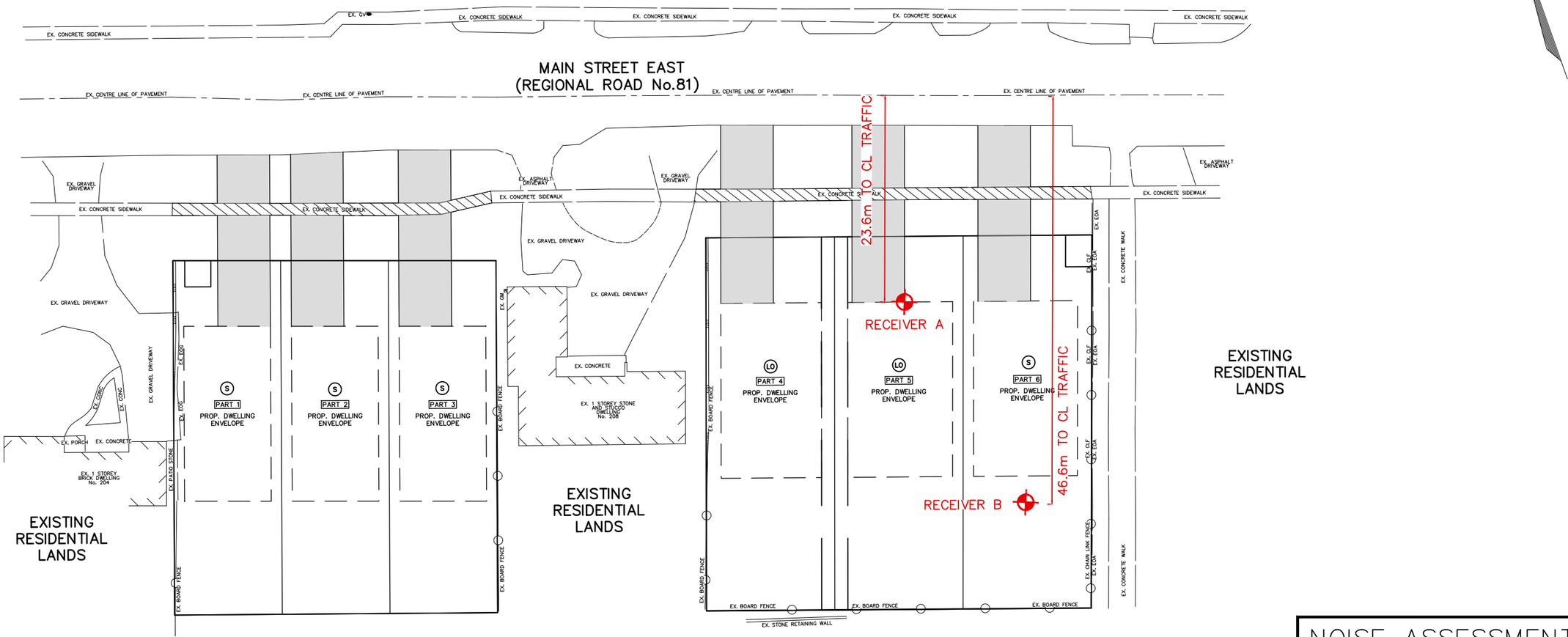
Prepared by:

**S. LLEWELLYN & ASSOCIATES LIMITED**




S. Nelson, P.Eng.

# APPENDIX A
# NOISE ASSESSMENT PLAN




# NOISE ASSESSMENT PLAN

SCALE: 1:500

PROJECT: 206 & 210 MAIN STREET EAST, GRIMSBY
PROJECT No.: 26024

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# APPENDIX B
# ROAD TRAFFIC DATA

Traffic data from the Niagara Region website (https://niagaraopendata.ca/dataset/regional-road-traffic-volumes, accessed September 08, 2026).

| StationID | Reg_Rd_No | From_St | To_St | Length_Km | Count_Yr | AADT | SADT | WADT | Prev_Yr | Prev_Count | SHAPE_Length |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 610001 | 81 | Regional Boundary | REG. RD. 10 (Casablanca Blvd.) | 3.2 | 2024 | 6600 | 6900 | | 2020 | 5700 | 3076.00989 |
| 610002 | 10 | REG. RD. 40 (South Service Rd.) | REG. RD. 512 (Livingston Ave.) | 0.6 | 2024 | 11100 | 11400 | | 2020 | 10500 | 1283.488605 |
| 610003 | 81 | REG. RD. 10 (Casablanca Blvd.) | Kerman Avenue | 1.8 | 2024 | 7100 | 7700 | | 2020 | 10500 | 1689.440292 |
| 610004 | 512 | Kerman Avenue | REG. RD. 81 (Main St.W.) | 0.8 | 2024 | 9000 | 9100 | | 2020 | 9900 | 970.962334 |
| 610006 | 81 | REG. RD. 512 (Livingston Ave.) | REG. RD. 12 (Mountain St.) | 0.2 | 2024 | 12000 | 11700 | | 2020 | 12900 | 187.2330605 |
| 610008 | 12 | Elm Street | Ridge Road E. | 1 | 2024 | 9400 | 9700 | | 2020 | 8200 | 1016.629764 |
| 610013 | 81 | Maple Avenue | Park Road S. | 2 | 2024 | 11100 | 10900 | | 2020 | 12500 | 2373.691803 |
| 610014 | 81 | REG. RD. 14 (Bartlett Ave.) | Thirty Road | 2.1 | 2024 | 11300 | 11700 | | 2020 | 9600 | 2723.788795 |
| 610017 | 73 | Regional Boundary | Woolverton Road | 3.1 | 2024 | 2700 | 2700 | | 2020 | 2300 | 2944.770106 |
| 610018 | 73 | Woolverton Road | REG. RD. 12 (Mountain Rd.) | 3.2 | 2024 | 3100 | 3600 | | 2020 | 2700 | 3282.129595 |
| 610020 | 12 | REG. RD. 73 (Mud St.) | REG. RD. 20 (Highway 20) | 3.2 | 2024 | 6400 | 6300 | | 2020 | 5500 | 3274.253786 |
| 610021 | 12 | Ridge Road E. | REG. RD. 73 (Mud St.) | 4.2 | 2024 | 7300 | 7600 | | 2020 | 6500 | 4298.018747 |
| 610022 | 73 | REG. RD. 12 (Mountain Rd.) | Park Road S. | 2.4 | 2024 | 3700 | 4600 | | 2020 | 3300 | 2482.391567 |
| 610025 | 14 | REG. RD. 73 (Mud St. E.) | REG. RD. 20 (West St.) | 4.4 | 2024 | 3600 | 3900 | | 2020 | 4300 | 4406.227593 |
| 610027 | 14 | Convenient Street | REG. RD. 14 (Townline Rd.) | 0.8 | 2024 | 7000 | 6600 | | 2020 | 7500 | 857.1768763 |
| 610028 | 14 | Port Davidson Road | REG. RD. 65 (Bismark Rd.) | 7.2 | 2024 | 3200 | 3100 | | 2020 | 3300 | 7509.895654 |
| 610030 | 65 | REG. RD. 14 (Smithville Rd.) | Port Davidson Road | 5 | 2024 | 5600 | 4300 | | 2020 | 4900 | 5174.279802 |
| 610032 | 65 | Regional Boundary (Westbrook Rd.) | REG. RD. 2 (Caistorville Rd.) | 1.4 | 2024 | 6300 | 5800 | | 2020 | 5900 | 1459.104312 |
| 610033 | 65 | REG. RD. 2 (Caistorville Rd.) | Caistor Centre Road | 5.8 | 2024 | 4200 | 3900 | | 2020 | 3700 | 6075.484696 |
| 610034 | 65 | Caistor Centre Road | REG. RD. 14 (Smithville Rd.) | 3.9 | 2024 | 4700 | 4000 | | 2020 | 3900 | 3847.094957 |
| 610035 | 2 | REG. RD. 65 (Bismark Rd.) | REG. RD. 9 (York Rd.) | 5 | 2024 | 2000 | 2000 | | 2017 | 2300 | 5122.620898 |
| 610036 | 9 | Regional Boundary (Westbrook Rd.) | REG. RD. 2 (Caistorville Rd.) | 3.2 | 2024 | 1000 | 800 | | 2020 | 700 | 3395.992168 |
| 610037 | 2 | REG. RD. 9 (York Rd.) | Regional Boundary (Indian Line) | 1.8 | 2024 | 2700 | 2600 | | 2017 | 3000 | 1782.859924 |
| 610038 | 14 | REG. RD. 65 (Bismark Rd.) | Regional Boundary | 6.1 | 2024 | 2600 | 2300 | | 2020 | 2100 | 6010.964594 |
| 610040 | 63 | REG. RD. 45 | Port Davidson Road | 1 | 2024 | 3400 | 3100 | | 2020 | 2500 | 1267.711196 |
| 610041 | 45 | REG. RD. 63 (Canborough Rd.) | REG. RD. 7 (Marshagan Rd.) | 3.4 | 2024 | 1300 | 1200 | | 2020 | 1300 | 3470.215905 |
| 610042 | 15 | REG. RD. 63 (Canborough Rd.) | Regional Boundary (Townline Rd.) | 0.5 | 2024 | 2800 | 2700 | | 2020 | 2500 | 508.8570731 |
| 610043 | 63 | Port Davidson Road | REG. RD. 27 (Wellandport Rd.) | 6.3 | 2024 | 2100 | 2000 | | 2020 | 1800 | 6367.801338 |
| 610044 | 7 | REG. RD. 45 (Creek Rd.) | Regional Boundary | 15.3 | 2024 | 300 | 300 | | 2020 | 400 | 1512.001858 |
| 610045 | 45 | REG. RD. 7 (Marshagan Rd.) | REG. RD. 27 | 4.7 | 2024 | 400 | 400 | | 2020 | 500 | 4836.174736 |
| 610046 | 4 | REG. RD. 27 | King's Hwy 3 | 6.4 | 2024 | 2700 | 2600 | | 2020 | 2600 | 6677.902343 |
| 610047 | 27 | REG. RD. 63 (Canborough Rd.) | REG. RD. 45 | 1 | 2024 | 4700 | 3500 | | 2020 | 2600 | 961.3668293 |
| 610048 | 27 | REG. RD. 65 (Bismark Rd.) | REG. RD. 63 (Canborough Rd.) | 4.8 | 2024 | 5500 | 4700 | | 2020 | 4100 | 4570.083041 |
| 610049 | 65 | Port Davidson Road | REG. RD. 27 (Wellandport Rd.) | 4.2 | 2024 | 4900 | 4700 | | 2020 | 3900 | 4224.639899 |
| 610051 | 69 | REG. RD. 20 (Highway 20) | St. Ann's Road | 1.3 | 2024 | 1300 | 1400 | | 2020 | 1200 | 1252.857709 |
| 610053 | 73 | REG. RD. 14 (Thirty Rd.) | REG. RD. 18 (Mountain Rd.) | 3.7 | 2024 | 3500 | 3600 | | 2020 | 3100 | 3618.577973 |
| 610054 | 18 | REG. RD. 81 (King St.) | REG. RD. 73 (Fly Rd.) | 3.7 | 2024 | 7400 | 7700 | | 2020 | 6300 | 3682.576304 |
| 610055 | 73 | REG. RD. 18 (Mountain Rd.) | Campden Road | 4.2 | 2024 | 3400 | 3900 | | 2020 | 2900 | 4230.92641 |
| 610056 | 81 | Thirty Road | REG. RD. 18 (Ontario St.) | 2 | 2024 | 10000 | 9400 | | 2020 | 6900 | 2434.873386 |
| 610057 | 81 | REG. RD. 18 (Mountain St.) | Merritt Road | 3.5 | 2024 | 6700 | 6900 | | 2020 | 6400 | 3415.324997 |
| 610058 | 18 | Greenlane Road | REG. RD. 81 (King St.) | 2.6 | 2020 | 12800 | 12400 | 15000 | 2017 | 13400 | 1690.707437 |
| 610059 | 81 | Merritt Road | REG. RD. 24 (Victoria Ave.) | 3.5 | 2024 | 6600 | 6600 | | 2020 | 6400 | 3641.522592 |
| 610060 | 81 | REG. RD. 24 (Victoria Ave.) | Nineteenth Street | 2.7 | 2023 | 6400 | 7200 | | 2019 | 6400 | 2493.036353 |
| 610061 | 81 | Nineteenth Street | REG. RD. 26 (Jordan Rd.) | 0.5 | 2023 | 6400 | 7000 | | 2019 | 5500 | 952.478128 |

Traffic data from the Niagara Region website (https://niagaraopendata.ca/dataset/regional-road-traffic-volumes, accessed September 08, 2026).

| StationID | Reg_Rd_No | From_St | To_St | Length_Km | Count_Yr | AADT | SADT | WADT | Prev_Yr | Prev_Count | SHAPE_Length |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 610001 | 81 | Regional Boundary | REG. RD. 10 (Casablanca Blvd.) | 3.2 | 2020 | 5700 | 5900 | 6700 | 2017 | 7000 | 3076.00989 |
| 610002 | 10 | REG. RD. 40 (South Service Rd.) | REG. RD. 512 (Livingston Ave.) | 0.6 | 2020 | 10500 | 11100 | 11700 | 2017 | 12000 | 423.509196 |
| 610003 | 81 | REG. RD. 10 (Casablanca Blvd.) | Kerman Avenue | 1.8 | 2020 | 10500 | 11100 | 7600 | 2017 | 7600 | 1689.453546 |
| 610004 | 512 | Kerman Avenue | REG. RD. 81 (Main St.W.) | 0.8 | 2020 | 9900 | 10500 | 10900 | 2017 | 10900 | 970.962334 |
| 610006 | 81 | REG. RD. 512 (Livingston Ave.) | REG. RD. 12 (Mountain St.) | 0.2 | 2020 | 12900 | 11600 | 13300 | 2017 | 12900 | 187.2330605 |
| 610008 | 12 | Elm Street | Ridge Road E. | 1 | 2020 | 8200 | 8800 | 9200 | 2017 | 9100 | 477.2755804 |
| 610013 | 81 | Maple Avenue | Park Road S. | 2 | 2020 | 12500 | 12700 | 13400 | 2017 | 13300 | 2373.691803 |
| 610014 | 81 | REG. RD. 14 (Bartlett Ave.) | Thirty Road | 2.1 | 2020 | 9600 | 9900 | 11200 | 2017 | 11600 | 2647.430538 |
| 610017 | 73 | Regional Boundary | Woolverton Road | 3.1 | 2020 | 2300 | 2400 | 2700 | 2017 | 2800 | 2944.770106 |
| 610018 | 73 | Woolverton Road | REG. RD. 12 (Mountain Rd.) | 3.2 | 2020 | 2700 | 2700 | 3200 | 2017 | 3400 | 3282.129595 |
| 610020 | 12 | REG. RD. 73 (Mud St.) | REG. RD. 20 (Highway 20) | 3.2 | 2020 | 5500 | 5500 | 4200 | 2017 | 4800 | 3274.253786 |
| 610021 | 12 | Ridge Road E. | REG. RD. 73 (Mud St.) | 4.2 | 2020 | 6500 | 6700 | 6100 | 2017 | 7800 | 4837.372931 |
| 610022 | 73 | REG. RD. 12 (Mountain Rd.) | Park Road S. | 2.4 | 2020 | 3300 | 3400 | 3600 | 2017 | 3900 | 2482.391567 |
| 610025 | 14 | REG. RD. 73 (Mud St. E.) | REG. RD. 20 (West St.) | 4.4 | 2020 | 4300 | 4000 | 3600 | 2017 | 4000 | 4406.227593 |
| 610027 | 14 | Convenient Street | REG. RD. 14 (Townline Rd.) | 0.8 | 2020 | 7500 | 7300 | 7100 | 2017 | 7000 | 857.1768763 |
| 610028 | 14 | Port Davidson Road | REG. RD. 65 (Bismark Rd.) | 7.2 | 2020 | 3300 | 3600 | 3000 | 2017 | 3100 | 7509.895654 |
| 610030 | 65 | REG. RD. 14 (Smithville Rd.) | Port Davidson Road | 5 | 2020 | 4900 | 4400 | 4400 | 2017 | 4400 | 5174.279802 |
| 610032 | 65 | Regional Boundary (Westbrook Rd.) | REG. RD. 2 (Caistorville Rd.) | 1.4 | 2020 | 5900 | 6800 | 5800 | 2017 | 5600 | 1459.104312 |
| 610033 | 65 | REG. RD. 2 (Caistorville Rd.) | Caistor Centre Road | 5.8 | 2020 | 3700 | 4400 | 3200 | 2017 | 3600 | 6075.484696 |
| 610034 | 65 | Caistor Centre Road | REG. RD. 14 (Smithville Rd.) | 3.9 | 2020 | 3900 | 4600 | 3700 | 2017 | 4300 | 3847.094957 |
| 610035 | 2 | REG. RD. 65 (Bismark Rd.) | REG. RD. 9 (York Rd.) | 5 | 2017 | 2300 | 2300 | 2200 | 2014 | 2500 | 5122.620898 |
| 610036 | 9 | Regional Boundary (Westbrook Rd.) | REG. RD. 2 (Caistorville Rd.) | 3.2 | 2020 | 700 | 700 | 600 | 2017 | 700 | 3396.068935 |
| 610037 | 2 | REG. RD. 9 (York Rd.) | Regional Boundary (Indian Line) | 1.8 | 2017 | 3000 | 3200 | 2700 | 2014 | 2000 | 1782.859924 |
| 610038 | 14 | REG. RD. 65 (Bismark Rd.) | Regional Boundary | 6.1 | 2020 | 2100 | 2300 | 1700 | 2017 | 1900 | 6012.687275 |
| 610040 | 63 | REG. RD. 45 | Port Davidson Road | 1 | 2020 | 2500 | 2700 | 2500 | 2017 | 2700 | 1267.711196 |
| 610041 | 45 | REG. RD. 63 (Canborough Rd.) | REG. RD. 7 (Marshagan Rd.) | 3.4 | 2020 | 1300 | 1500 | 1200 | 2017 | 1000 | 3470.215905 |
| 610042 | 15 | REG. RD. 63 (Canborough Rd.) | Regional Boundary (Townline Rd.) | 0.5 | 2020 | 2500 | 2700 | 2600 | 2017 | 2700 | 509.364458 |
| 610043 | 63 | Port Davidson Road | REG. RD. 27 (Wellandport Rd.) | 6.3 | 2020 | 1800 | 2700 | 1100 | 2017 | 1500 | 6367.801338 |
| 610044 | 7 | REG. RD. 45 (Creek Rd.) | Regional Boundary | 15.3 | 2020 | 400 | 500 | 400 | 2017 | 500 | 1512.001858 |
| 610045 | 45 | REG. RD. 7 (Marshagan Rd.) | REG. RD. 27 | 4.7 | 2020 | 500 | 600 | 300 | 2017 | 500 | 4836.174736 |
| 610046 | 4 | REG. RD. 27 | King's Hwy 3 | 6.4 | 2020 | 2600 | 3000 | 2300 | 2017 | 2600 | 6677.902343 |
| 610047 | 27 | REG. RD. 63 (Canborough Rd.) | REG. RD. 45 | 1 | 2020 | 2600 | 2800 | 2200 | 2017 | 2500 | 961.3668293 |
| 610048 | 27 | REG. RD. 65 (Bismark Rd.) | REG. RD. 63 (Canborough Rd.) | 4.8 | 2020 | 4100 | 4700 | 3800 | 2017 | 4100 | 4570.083041 |
| 610049 | 65 | Port Davidson Road | REG. RD. 27 (Wellandport Rd.) | 4.2 | 2020 | 3900 | 4800 | 3200 | 2017 | 3600 | 4224.639899 |
| 610051 | 69 | REG. RD. 20 (Highway 20) | St. Ann's Road | 1.3 | 2020 | 1200 | 1300 | 1700 | 2017 | 1700 | 1252.857709 |
| 610053 | 73 | REG. RD. 14 (Thirty Rd.) | REG. RD. 18 (Mountain Rd.) | 3.7 | 2020 | 3100 | 3100 | 2800 | 2017 | 3000 | 3618.577973 |
| 610054 | 18 | REG. RD. 81 (King St.) | REG. RD. 73 (Fly Rd.) | 3.7 | 2020 | 6300 | 6400 | 5800 | 2017 | 5700 | 3682.842216 |
| 610055 | 73 | REG. RD. 18 (Mountain Rd.) | Campden Road | 4.2 | 2020 | 2900 | 3200 | 2700 | 2017 | 2900 | 4230.92641 |
| 610056 | 81 | Thirty Road | REG. RD. 18 (Ontario St.) | 2 | 2020 | 6900 | 8400 | 9600 | 2017 | 9500 | 2434.873386 |
| 610057 | 81 | REG. RD. 18 (Mountain St.) | Merritt Road | 3.5 | 2020 | 6400 | 6800 | 7000 | 2017 | 7100 | 3415.324997 |
| 610058 | 18 | Greenlane Road | REG. RD. 81 (King St.) | 2.6 | 2020 | 12800 | 12400 | 15000 | 2017 | 13400 | 1690.707437 |
| 610059 | 81 | Merritt Road | REG. RD. 24 (Victoria Ave.) | 3.5 | 2020 | 6400 | 6900 | 6200 | 2017 | 6300 | 3641.522592 |
| 610060 | 81 | REG. RD. 24 (Victoria Ave.) | Nineteenth Street | 2.7 | 2019 | 6400 | 7300 | 5500 | 2016 | 5500 | 2493.036353 |
| 610061 | 81 | Nineteenth Street | REG. RD. 26 (Jordan Rd.) | 0.5 | 2019 | 5500 | 6800 | 4500 | 2016 | 4100 | 952.478128 |

Traffic data from the Niagara Region website (https://niagaraopendata.ca/dataset/regional-road-traffic-volumes, accessed September 08, 2026).

| StationID | Reg_Rd_No | From_St | To_St | Length_Km | Count_Yr | AADT | SADT | WADT | Prev_Yr | Prev_Count | SHAPE_Leng |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 610001 | 081 | Regional Boundary | REG. RD. 10 (Casablanca Blvd.) | 3.2 | 2017 | 7000 | 7500 | 6700 | 2014 | 6500 | 3076.00989 |
| 610002 | 010 | REG. RD. 40 (South Service Rd.) | REG. RD. 512 (Livingston Ave.) | 0.6 | 2017 | 12000 | 12400 | 11700 | 2014 | 11100 | 423.509196 |
| 610003 | 081 | REG. RD. 10 (Casablanca Blvd.) | Kerman Avenue | 1.8 | 2017 | 7600 | 7500 | 7600 | 2014 | 6800 | 1689.453546 |
| 610004 | 512 | Kerman Avenue | REG. RD. 81 (Main St.W.) | 0.8 | 2017 | 10900 | 10700 | 10900 | 2014 | 10300 | 970.962334 |
| 610006 | 081 | REG. RD. 512 (Livingston Ave.) | REG. RD. 12 (Mountain St.) | 0.2 | 2017 | 12900 | 12000 | 13300 | 2014 | 11900 | 187.2330605 |
| 610008 | 012 | Elm Street | Ridge Road E. | 1 | 2017 | 9100 | 8800 | 9200 | 2014 | 8400 | 1016.629764 |
| 610013 | 081 | Maple Avenue | Park Road S. | 2 | 2017 | 13300 | 12700 | 13400 | 2014 | 11500 | 2373.691803 |
| 610014 | 081 | REG. RD. 14 (Bartlett Ave.) | Thirty Road | 2.1 | 2017 | 11600 | 12000 | 11200 | 2014 | 10600 | 2647.430538 |
| 610017 | 073 | Regional Boundary | Woolverton Road | 3.1 | 2017 | 2800 | 2800 | 2700 | 2014 | 2000 | 2944.770106 |
| 610018 | 073 | Woolverton Road | REG. RD. 12 (Mountain Rd.) | 3.2 | 2017 | 3400 | 3800 | 3200 | 2014 | 2300 | 3282.129595 |
| 610020 | 012 | REG. RD. 73 (Mud St.) | REG. RD. 20 (Highway 20) | 3.2 | 2017 | 4800 | 6000 | 4200 | 2014 | 4600 | 3274.253786 |
| 610021 | 012 | Ridge Road E. | REG. RD. 73 (Mud St.) | 4.2 | 2017 | 6400 | 6700 | 6100 | 2014 | 6400 | 4298.018747 |
| 610022 | 073 | REG. RD. 12 (Mountain Rd.) | Park Road S. | 2.4 | 2017 | 3900 | 4300 | 3600 | 2014 | 2200 | 2482.391567 |
| 610025 | 014 | REG. RD. 73 (Mud St. E.) | Young Street | 2.2 | 2017 | 4000 | 4600 | 3600 | 2014 | 4100 | 2158.6598 |
| 610027 | 014 | Convenient Street | REG. RD. 14 (Townline Rd.) | 0.8 | 2017 | 7000 | 6800 | 7100 | 2014 | 4100 | 857.1768763 |
| 610028 | 014 | Port Davidson Road | REG. RD. 65 (Bismark Rd.) | 7.2 | 2017 | 3100 | 3200 | 3000 | 2014 | 2100 | 7509.895654 |
| 610030 | 065 | REG. RD. 14 (Smithville Rd.) | Port Davidson Road | 5 | 2017 | 4400 | 4200 | 4400 | 2014 | 3100 | 5174.279802 |
| 610032 | 065 | Regional Boundary (Westbrook Rd.) | REG. RD. 2 (Caistorville Rd.) | 1.4 | 2017 | 5600 | 5200 | 5800 | 2014 | 4700 | 1459.104312 |
| 610033 | 065 | REG. RD. 2 (Caistorville Rd.) | Caistor Centre Road | 5.8 | 2017 | 3600 | 4100 | 3200 | 2014 | 2900 | 6075.484696 |
| 610034 | 065 | Caistor Centre Road | REG. RD. 14 (Smithville Rd.) | 3.9 | 2017 | 4300 | 5400 | 3700 | 2014 | 3100 | 3847.094957 |
| 610035 | 002 | REG. RD. 65 (Bismark Rd.) | REG. RD. 9 (York Rd.) | 5 | 2017 | 2300 | 2300 | 2200 | 2014 | 2500 | 5122.620898 |
| 610036 | 009 | Regional Boundary (Westbrook Rd.) | REG. RD. 2 (Caistorville Rd.) | 3.2 | 2017 | 700 | 800 | 600 | 2014 | 600 | 3396.068935 |
| 610037 | 002 | REG. RD. 9 (York Rd.) | Regional Boundary (Indian Line) | 1.8 | 2017 | 3000 | 3200 | 2700 | 2014 | 2000 | 1782.859924 |
| 610038 | 014 | REG. RD. 65 (Bismark Rd.) | Regional Boundary | 6.1 | 2017 | 1900 | 2100 | 1700 | 2014 | 1700 | 6012.687275 |
| 610040 | 063 | REG. RD. 45 | Port Davidson Road | 1 | 2017 | 2700 | 3000 | 2500 | 2014 | 3600 | 1267.711196 |
| 610041 | 045 | REG. RD. 63 (Canborough Rd.) | REG. RD. 7 (Marshagan Rd.) | 3.4 | 2017 | 1000 | 500 | 1200 | 2014 | 700 | 3470.215905 |
| 610042 | 015 | REG. RD. 63 (Canborough Rd.) | Regional Boundary (Townline Rd.) | 0.5 | 2017 | 2700 | 2700 | 2600 | 2014 | 2300 | 509.364458 |
| 610043 | 063 | Port Davidson Road | REG. RD. 27 (Wellandport Rd.) | 6.3 | 2017 | 1500 | 2000 | 1100 | 2014 | 1700 | 6367.801338 |
| 610044 | 007 | REG. RD. 45 (Creek Rd.) | Regional Boundary | 15.3 | 2017 | 500 | 600 | 400 | 2014 | 500 | 1512.001858 |
| 610045 | 045 | REG. RD. 7 (Marshagan Rd.) | REG. RD. 27 | 4.7 | 2017 | 500 | 500 | 300 | 2014 | 500 | 4836.174736 |
| 610046 | 004 | REG. RD. 27 | King's Hwy 3 | 6.4 | 2017 | 2600 | 3000 | 2300 | 2014 | 2500 | 6677.902343 |
| 610047 | 027 | REG. RD. 63 (Canborough Rd.) | REG. RD. 45 | 1 | 2017 | 2500 | 2700 | 2200 | 2014 | 3000 | 961.3668293 |
| 610048 | 027 | REG. RD. 65 (Bismark Rd.) | REG. RD. 63 (Canborough Rd.) | 4.8 | 2017 | 4100 | 4400 | 3800 | 2014 | 3400 | 4570.083041 |
| 610049 | 065 | Port Davidson Road | REG. RD. 27 (Wellandport Rd.) | 4.2 | 2017 | 3600 | 4200 | 3200 | 2016 | 3000 | 4224.639899 |
| 610051 | 069 | REG. RD. 20 (Highway 20) | St. Ann's Road | 1.3 | 2017 | 1700 | 1500 | 1700 | 2014 | 1300 | 1252.857709 |
| 610053 | 073 | REG. RD. 14 (Thirty Rd.) | REG. RD. 18 (Mountain Rd.) | 3.7 | 2017 | 3000 | 3000 | 2800 | 2014 | 2700 | 3618.577973 |
| 610054 | 018 | REG. RD. 81 (King St.) | Hillside Drive | 1.5 | 2017 | 5700 | 5500 | 5800 | 2014 | 4800 | 1485.374737 |
| 610055 | 073 | REG. RD. 18 (Mountain Rd.) | Campden Road | 4.2 | 2017 | 2900 | 3000 | 2700 | 2014 | 2800 | 4230.92641 |
| 610056 | 081 | Thirty Road | REG. RD. 18 (Ontario St.) | 2 | 2017 | 9500 | 9100 | 9600 | 2014 | 7700 | 2434.873386 |
| 610057 | 081 | REG. RD. 18 (Mountain St.) | Merritt Road | 3.5 | 2017 | 7100 | 7100 | 7000 | 2014 | 5400 | 3415.324997 |
| 610058 | 018 | Greenlane Road | REG. RD. 81 (King St.) | 2.6 | 2017 | 14700 | 14000 | 15000 | 2014 | 14700 | 1690.707437 |
| 610059 | 081 | Merritt Road | REG. RD. 24 (Victoria Ave.) | 3.5 | 2017 | 6300 | 6400 | 6200 | 2014 | 5700 | 3641.522592 |
| 610060 | 081 | REG. RD. 24 (Victoria Ave.) | Nineteenth Street | 2.7 | 2016 | 5800 | 6000 | 5600 | 2014 | 5300 | 2493.036353 |
| 610061 | 081 | Nineteenth Street | REG. RD. 26 (Jordan Rd.) | 0.5 | 2016 | 3700 | 3900 | 3600 | 2014 | 3300 | 952.478128 |

# APPENDIX C
# NOISE CALCULATIONS (FROM STAMSON)

STAMSON 5.0 NORMAL REPORT Date: 08-09-2026 14:20:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: reca.te Time Period: Day/Night 16/8 hours
Description: NOISE LEVELS AT RECEIVER A

Road data, segment # 1: MAIN ST E (day/night)
---
Car traffic volume : 14672/1630 veh/TimePeriod *
Medium truck volume : 463/51 veh/TimePeriod *
Heavy truck volume : 309/34 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 11100
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: MAIN ST E (day/night)
---
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 23.60 / 23.60 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: MAIN ST E (day)
---

Source height = 1.19 m

ROAD (0.00 + 59.75 + 0.00) = 59.75 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.58 | 64.17 | 0.00 | -3.11 | -1.32 | 0.00 | 0.00 | 0.00 | 59.75 |

Segment Leq : 59.75 dBA

Total Leq All Segments: 59.75 dBA

↟
Results segment # 1: MAIN ST E (night)
---

Source height = 1.19 m

ROAD (0.00 + 53.19 + 0.00) = 53.19 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.58 | 57.61 | 0.00 | -3.11 | -1.32 | 0.00 | 0.00 | 0.00 | 53.19 |

Segment Leq : 53.19 dBA

Total Leq All Segments: 53.19 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 59.75
(NIGHT): 53.19

↟
↟

STAMSON 5.0 NORMAL REPORT Date: 08-09-2026 14:18:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: recb.te Time Period: Day/Night 16/8 hours
Description: NOISE LEVELS AT RECEIVER B

Road data, segment # 1: MAIN ST_BLDG (day/night)
---
Car traffic volume : 14672/1630 veh/TimePeriod *
Medium truck volume : 463/51 veh/TimePeriod *
Heavy truck volume : 309/34 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 11100
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: MAIN ST_BLDG (day/night)
---
Angle1 Angle2 : -90.00 deg 30.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 46.60 / 46.60 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 30.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 97.00 m
Receiver elevation : 97.30 m
Barrier elevation : 97.30 m
Reference angle : 0.00



Road data, segment # 2: MAIN ST (day/night)
---
Car traffic volume : 14672/1630 veh/TimePeriod *
Medium truck volume : 463/51 veh/TimePeriod *
Heavy truck volume : 309/34 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %

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

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

    24 hr Traffic Volume (AADT or SADT):  11100
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  22.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: MAIN ST (day/night)
-----------------------------------------
Angle1   Angle2           :  30.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  46.60 / 46.60  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

↟
Results segment # 1: MAIN ST_BLDG (day)
---------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.46 !        98.76

ROAD (0.00 + 38.13 + 0.00) = 38.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     30   0.31  64.17   0.00  -6.45  -2.36   0.00   0.00 -17.24  38.13
-------------------------------------------------------------------------------

Segment Leq : 38.13 dBA

↟
Results segment # 2: MAIN ST (day)
----------------------------------

Source height = 1.19 m

ROAD (0.00 + 48.92 + 0.00) = 48.92 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    30     90   0.66  64.17   0.00  -8.17  -7.08   0.00   0.00   0.00  48.92
-------------------------------------------------------------------------------

Segment Leq : 48.92 dBA

Total Leq All Segments: 49.27 dBA

↟
Results segment # 1: MAIN ST_BLDG (night)
-----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.46 !        98.76

ROAD (0.00 + 31.56 + 0.00) = 31.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     30   0.31  57.61   0.00  -6.45  -2.36   0.00   0.00 -17.25  31.56
-------------------------------------------------------------------------------

Segment Leq : 31.56 dBA

↟
Results segment # 2: MAIN ST (night)
------------------------------------

Source height = 1.19 m

ROAD (0.00 + 42.36 + 0.00) = 42.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    30     90   0.66  57.61   0.00  -8.17  -7.08   0.00   0.00   0.00  42.36
-------------------------------------------------------------------------------

Segment Leq : 42.36 dBA

Total Leq All Segments: 42.71 dBA

↟
```

TOTAL Leq FROM ALL SOURCES (DAY): 49.27
(NIGHT): 42.71