City of Mississauga

Creditview Road Class EA Study
Noise Assessment

Prepared by:

AECOM
5080 Commerce Boulevard 905 238 0007 tel
Mississauga, ON, Canada L4W 4P2 905 238 0038 fax
www.aecom.com

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AECOM: 2012-01-06

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Revision Log

Revision #	Revised By	Date	Issue / Revision Description
0	ARO	July, 2015	Draft Issue
1	ARO	August, 2015	Incorporating City of Mississauga comments
2	ARO	November, 2015	Incorporating additional City of Mississauga requirements

AECOM Signatures

Report Prepared By:

Alan Oldfield, MEng, CEng(UK), P.Eng.
Senior Acoustic Engineer

Report Reviewed By:

James Au, P.Eng., INCE
Acoustic Engineer

Executive Summary

The City of Mississauga is conducting a Class Environmental Assessment (Class EA) Study 'Schedule C', including preliminary design for the section of Creditview Road from Bancroft Drive to Old Creditview Road. Roadway, intersection, and multi-use trail improvements are proposed for Creditview Road between Bancroft Drive and Old Creditview Road, in Mississauga, Ontario (the Project). A noise assessment has been prepared as part of the Class EA for the Project.

The purpose of this traffic noise study is to evaluate the noise impacts that would result due to the improvements to the roadway, with respect to all applicable provincial and municipal noise guidelines.

Several alternative roadway configuration options were considered by the City and AECOM in order to address existing and future traffic demands. The preferred alternative includes implementing three roundabouts and providing improved facilities for pedestrians and cyclists, whilst maintaining Creditview Road as two lanes between Bancroft Drive and Argentia Road. This preferred alternative is expected to support traffic operations to the Year 2031 and potentially beyond. This study evaluates noise impacts based on the preferred alternative, with projected traffic volume data for the year 2031.

If and when additional capacity is required, community consultation at that stage will take place prior to the implementation of the long-term solution, which includes two-lane roundabouts at Kenninghall Boulevard and Falconer Drive and widening Creditview Road to four lanes between Bancroft Drive and Argentia Road.

The noise impacts due to the preferred alternative are predicted to be less than 5 dB at all of the assessed locations. As such, noise mitigation investigations are not required according to the Ontario Ministry of Transportation (MTO)/Ontario Ministry of the Environment and Climate Change (MOECC) Protocol. However, noise levels are predicted to be greater than the City's threshold for noise barrier installation at most of the assessed points of reception adjacent to the roadway. Noise barriers are recommended to meet the City's policy (*Noise Attenuation Barriers on Major Roadways*, Policy No. 09-03-03).

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1. Introduction

The City of Mississauga is conducting a Class Environmental Assessment (Class EA) Study 'Schedule C', including preliminary design for the section of Creditview Road from Bancroft Drive to Old Creditview Road. Roadway, intersection, and multi-use trail improvements are proposed for Creditview Road between Bancroft Drive and Old Creditview Road, in Mississauga, Ontario (the Project). A noise assessment has been prepared as part of the Class EA for the Project.

Several alternative roadway configuration options were considered by the City and AECOM in order to address existing and future traffic demands. The preferred alternative design for the Project includes the following key elements:

- Maintaining Creditview Road as 2 lanes from Bancroft Drive to Argentia Road;
- Widening Creditview Road to 4 lanes from Argentia Road to Old Creditview Road;
- Maintaining Bancroft Drive and Old Creditview Road as signalized intersections;
- Proposing 1-lane roundabouts at Kenninghall Boulevard and Falconer Drive;
- Proposing a 2-lane roundabout at Argentia Road;
- Implementing a continuous multi-use trail along the west side of the corridor; and,
- Implementing a continuous sidewalk along the east side of the corridor.

The preferred alternative design is expected to support traffic operations to the Year 2031 and potentially beyond. This study evaluates noise impacts based on the preferred alternative, based on projected traffic volume data for the year 2031.

If and when additional capacity is required, community consultation at that stage will take place prior to the implementation of the long-term solution, which includes two-lane roundabouts at Kenninghall Boulevard and Falconer Drive and widening Creditview Road to four lanes between Bancroft Drive and Argentia Road.

The purpose of the traffic noise study was to evaluate the noise impacts that would result from the preferred alternative roadway improvements, with respect to all applicable provincial and municipal noise guidelines.

A traffic vibration assessment is not included in this report because the rubber tires and suspension systems of road vehicles provides vibration isolation and impacts would not be expected from operating on a continuous road surface.

A glossary of technical terms and acronyms is provided in at the end of this report.

The overall project study area is shown on Figure 1 (provided in the Figures section at the end of this report). Copies of the City's zoning maps for this area are provided in Appendix A.

2. Noise Guidelines

2.1 Provincial Traffic Noise Guidelines

Creditview Road is classified as a major collector road within the City of Mississauga. This traffic noise assessment has been completed in accordance with the Ontario Ministry of Transportation (MTO)/Ontario Ministry of the Environment and Climate Change (MOECC) document *A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments* (The MTO/MOECC Protocol). The MOECC relies on this guideline during the review of municipal road expansion EA's.

2.1.1 Traffic Noise Level Criteria

Under the MTO/MOECC Protocol, noise mitigation requirements are assessed based on traffic noise impacts typically 10 years post construction. Overall traffic noise level assessment is based on A-weighted 16-hour equivalent traffic noise levels between 07:00 hours and 23:00 hours ($L_{eq, 16hr}$ expressed in A-weighted decibels, dBA). The noise impact is defined as the change in noise level above ambient within the outdoor living area of noise sensitive areas. The future ambient noise level is typically taken as the traffic noise levels with no roadway improvements. The future "With Project" noise levels are taken as the traffic noise levels with the roadway improvements implemented.

Under the MTO/MOECC Protocol, noise mitigation investigations are required where noise impacts are predicted to be greater than 5 dB. Any proposed noise mitigation measures should achieve a minimum noise reduction of 5 dB; and reduce traffic noise levels to the objective outdoor sound level of 55 dBA $L_{eq, 16hr}$ or the future ambient (whichever is greater).

Table 1 summarizes the MTO/MOECC Protocol noise impact criteria and noise mitigation objectives.

Table 1: MTO/MOECC Protocol Noise Mitigation Criteria and Objectives

Increase Above Ambient Sound Level	Mitigation Effort
0-5 dBA	• None
>5 dBA	• Investigate noise control measures within the right-of-way. • If project cost is not significantly affected, introduce noise control measures within the right-of-way. • Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers. • Mitigate to the objective outdoor sound level (the greater of 55 dBA $L_{eq,16hr}$ or the future ambient), as administratively, economically, and technically feasible.

Table 2 provides an indication of the typical perceived response to changes in sound level above ambient.

Table 2: Perceived Impact of Increased Sound Levels[1]

Increase Above Ambient Sound Level	Perception	Perceived Impact
0 to 3 dBA	Potentially Perceptible	Minor
3 to 5 dBA	Perceptible	Low
5 to 10 dBA	Up to twice as loud	Medium
Greater than 10 dBA	Twice as loud or greater	High

2.1.2 Noise Sensitive Areas

Noise impacts are assessed in the Outdoor Living Area (OLA) of a Noise Sensitive Land-Use/Area (NSA).

Land uses designated as noise sensitive are defined in the MTO document *Quality and Standards Directive A-1* (QST-A-1) as follows:

- Private homes such as single family residences
- Townhouses

[1] *Adapted from "*Engineering Noise Control, Theory and Practice*" 4th edition, David A. Bies and Colin H. Hansen, 2009*

- Multiple unit buildings, such as apartment buildings with OLAs for use by all occupants
- Hospitals, nursing homes for the aged, where there are OLAs for the patients

Land uses that do not qualify as NSAs under QST-A-1 consist of the following:

- Apartment balconies above ground floor
- Educational facilities (except dormitories with OLAs)
- Churches
- Cemeteries
- Parks and picnic areas which are not inherently part of a NSA
- Daycare centres
- All commercial and industrial areas

2.2 Municipal Noise Control Requirements

The City of Mississauga Noise Control *By-Law 360-79, amended 2008* (the By-Law) includes requirements for controlling unusual or unnecessary noise which may disturb or annoy residents. The By-Law does not address typical road traffic noise.

The City of Mississauga Policy No. 09-03-03, *Noise Attenuation Barriers on Major Roadways*, has been considered as part of this traffic noise assessment. The Installation Criteria for new noise barriers are as follows:

- The noise level must be greater than 60 dBA (L_{eq} daytime). (L_{eq} means "equivalent sound level" and daytime means 7:00 a.m. to 11:00 p.m. L_{eq} daytime means daytime average.)
- The residential area must be adjacent to arterial and major collector roads, as designated in the Official Plan. Retrofit or replacements will not be considered adjacent to freeways or railway tracks, as they are not under the jurisdiction of the City.
- Barriers must be installed on a complete block to ensure their effectiveness.

A copy of Policy No. 09-03-03 is provided in Appendix B.

In addition to the above installation criteria, the City of Mississauga has confirmed that their current standard practice is to require mitigation to attenuate noise levels to 60 dBA (L_{eq} daytime) in the backyard mid façade of residential areas.

3. Traffic Noise Impact Assessment

3.1 Points of Reception

The study area encompasses mostly detached housing. Ten Points of Reception (PORs) were selected for assessment and are considered representative of the OLAs of the most noise-sensitive land uses within the study area. Table 3 provides descriptions of the assessed PORs. Drawings of the preferred alternative that include the POR locations are provided in Appendix C.

Table 3: Existing Noise Sensitive Receptors

Receptor ID	Description
POR1	OLA of 1515 Hollywell Avenue, west side of Creditview Road, approximately 140 metres north of Bancroft intersection.
POR1b	OLA of 59 Kenninghall Boulevard, west side of Creditview Road, approximately 68 metres south of Kenninghall intersection.

Receptor ID	Description
POR2	OLA of 61 Kenninghall Crescent, east side of Creditview Road, south side of Kenninghall intersection.
POR3	OLA of 2 Steen Drive, east side of Creditview Road, north side of Kenninghall intersection.
POR4	OLA of 8 Lisbon Mews, west side of Creditview Road, approximately 138 metres north of Kenninghall intersection.
POR4b	OLA of 16 Steen Drive, east side of Creditview Road, approximately 73 metres south of Rivergate intersection.
POR5	OLA of 6433 Charing Drive, west side of Creditview Road, south side of Falconer intersection.
POR6	OLA of 1516 Oran Court, west side of Creditview Road, approximately 176 metres south of Argentia intersection.
POR7	OLA of 6650 Falconer Drive, west side of Creditview Road, south side of Argentia intersection.
POR8	OLA of 1341 Spring Garden Court, east side of Creditview Road, north side of Old Creditview Road intersection.

3.2 Traffic Noise Modelling

3.2.1 Methodology

Traffic noise levels were predicted using STAMSON software version 5.04. STAMSON implements the MOECC approved *Ontario Road Noise Analysis Method for Environment and Transportation* (ORNAMENT) prediction method. As per the MTO/MOECC Protocol, OLA locations were modelled using PORs located 3 metres from the building façade of the NSA. In line with other MOECC and MTO noise guidelines, the outdoor PORs were modelled at a height of 1.5 metres above ground level.

Drawings of the preferred alternative are provided in Appendix C. Traffic volume and speed data, and STAMSON traffic noise level calculation inputs are provided in Appendix D.

A new City noise wall is to be constructed in 2015 as part of a separate City initiative. This future noise wall has been included in the noise predictions as well as the existing noise walls along Creditview Road. The future noise wall is located along the east side of Creditview Road adjacent to residential properties between Britannia Road West and the Credit River – as shown in the City of Mississauga's drawing included in Appendix E and on the plans in Appendix C labelled as '2015 Proposed Noise Barrier'.

3.2.2 Assumptions

The following assumptions were made in order to complete the traffic noise predictions:

- Based on previous traffic noise assessments completed by AECOM, peak hour traffic data is assumed to be 10% of the Annual Average Daily Traffic (AADT) data.
- Daytime traffic is assumed to account for 90% of the AADT volume; night-time traffic accounts for 10% of the AADT volume, which is considered typical for local arterial/major collector roads.
- The City of Mississauga provided direction to use a 7% truck percentage for the assessment. A 4:3 split of heavy to medium trucks has been assumed.
- The surface of the centre island of roundabouts is assumed to be soft landscaped (turfed or otherwise planted), as opposed to paved.

3.3 Results

Table 4 presents the predicted future ambient and "With Project" traffic noise levels, as well as the resulting noise impacts at the assessed receptors. The perception of the noise impact and the requirement for noise mitigation investigation is also included in Table 4.

Table 4: Noise Assessment Results

POR ID	Predicted Year 2031 Traffic Noise Level ($L_{eq,16hr}$, dBA)		Outdoor Objective Sound Level ($L_{eq,16hr}$, dBA)	Predicted Noise Impact		MTO/MOECC Protocol Mitigation Investigation Requirement (Yes/No)	City of Mississauga Policy Mitigation Investigation Requirement (Yes/No)
	Ambient	With Project		Change (dB)	Perception	>5 dB impact	> 60 dBA
R01	58.83	59.69	58.83	**0.87**	Minor	No	No [1]
R01b	66.29	66.70	66.29	**0.41**	Minor	No	**Yes**
R02	64.58	66.90	64.58	**2.32**	Minor	No	**Yes**
R03	64.68	66.99	64.68	**2.32**	Minor	No	**Yes**
R04	64.13	64.10	64.13	**-0.03**	None	No	**Yes**
R04b	62.14	62.14	62.14	**0.00**	None	No	**Yes**
R05	67.91	68.49	67.91	**0.58**	Minor	No	**Yes**
R06	65.03	65.14	65.03	**0.12**	Minor	No	**Yes**
R07	64.00	65.68	64.00	**1.69**	Minor	No	**Yes**
R08	56.75	56.77	56.75	**0.02**	Minor	No	No [1]

Note to Table 4: 1. Noise barrier currently exists at this location and is already taken into account in noise predictions – no further mitigation investigation warranted.

As indicated in Section 2.1, the outdoor objective sound level is taken as 55 dBA $L_{eq, 16hr}$ or the future ambient (whichever is greater).

4. Noise Mitigation

The noise impacts due to the preferred alternative are predicted to be less than 5 dB at all of the assessed locations. As per the MTO/MOECC Protocol, noise mitigation investigations are not required at these locations. However, noise levels are predicted to be greater than the City's 60 dBA threshold for noise barrier installation at most of the assessed locations. Where noise barriers do not exist and are not currently proposed to be installed at these locations, new noise barriers are recommended to comply with the City's policy.

The recommended noise barriers are shown on the plans in Appendix C; labelled as 'New Noise Barrier', and are presented in Table 5.

Table 5: Noise Assessment Results – with Noise Barriers

POR ID	Noise Barrier Dimensions (m)		Predicted Year 2031 Traffic Noise Level ($L_{eq,16hr}$, dBA)		Noise Barrier Sound Reduction (dB)
	Height	Length	No Barrier	With Barrier	
R01b	3	200	66.70	58.85	7.85
R02 (rear yard)	2	45	64.37	59.76	4.61
R03	2.5	42	66.99	58.41	8.58
R04	2	286	64.10	58.80	5.30
R04b	2	165	62.14	57.63	4.51
R05	3.5	94 +132 m adjacent to 6730 Falconer Dr.	68.49	58.42	10.07
R06	2.5	152	65.14	59.26	5.89
R07	2	100	65.68	58.86	6.83

Noise barriers should be designed and constructed in accordance with the requirements of CAN/CSA-Z107.9-00(R2004), *Standard for Certification of Noise Barriers*.

If constructed of wood, the barriers shall use overlapped infill panels or bevelled edge panels dressed both sides to ensure a consistent solid face without any holes or penetrations.

Noise mitigation recommendations at this stage of the project are preliminary in nature and should be reviewed during the detailed design phase of this project, particularly if the proposed alignments, traffic volumes or speeds are modified.

5. Construction Noise and Vibration

Construction activities undertaken during the project should conform to the City of Mississauga Noise Control *By-Law 360-79, amended 2008* (the By-Law).

The By-Law defines general prohibitions for activities listed in Schedule 1, including the prohibition of "*the operation of any item of construction equipment in a Quiet Zone, Residential or Rural Zone without effective muffling devices in good working order and in constant operation*."

Schedule 2 of the By-Law defines prohibitions for activities by time and zone type. Table 6 summarizes the construction-related prohibitions from the By-Law for residential areas.

Table 6: By-Law 360-79 Construction Activity Prohibitions by Time and Zone Type

Activity	Prohibited Period of Time in Residential Areas
The operation of any equipment in connection with construction	All day Sunday and Statutory Holidays; 19:00 hrs. one day to 07:00 hrs. next day

Exemptions from the By-Law should be sought for any construction activities proposed within time periods described above. Part 7 of the By-Law describes the process for seeking an exemption. A copy of the By-Law is provided in Appendix F. The By-Law definitions for *Construction* and *Construction Equipment* are included in the Glossary section appended to this report.

Additionally, contractors should be required to minimize idling of construction equipment and maintain equipment in good working order to reduce noise from the construction activities. Factors affecting construction activities such as time of day, proximity and size of equipment, and type of operation, should be considered.

As per the MTO/MOECC Protocol, construction noise constraints should be incorporated into the contract documents. In addition, the contractor should be required to comply with the construction equipment sound level limits outlined in the MOECC noise pollution control guideline NPC-115.

In addition, it is recommended that a construction noise complaint process be implemented, which could follow the guidance provided in the MTO's document QST-A-1.

Vibration during construction may be perceptible inside buildings, particularly when vibratory rollers are being used. The threshold of perceptibility is significantly lower than the level of vibration that could cause building damage. No building damage, either cosmetic or structural, is expected to occur during construction.

6. Conclusions and Recommendations

The noise impacts due to the preferred alternative are predicted to be minor or negligible at all assessed locations. As per the MTO/MOECC Protocol, noise mitigation investigations are not required. However, noise levels are predicted to be greater than the City's 60 dBA threshold for noise barrier installation at most assessed locations. Where noise barriers do not exist and are not currently proposed to be installed at these assessed locations, new noise barriers are recommended to comply with the City's policy.

Noise impacts during construction will be controlled by following municipal and provincial guidelines wherever possible. The effects related to increased noise from construction activities will cease upon completion of construction.

7. References

Bies, David A. and Hansen, Colin H., “Engineering Noise Control, Theory and Practice”, 4th edition, Spon Press, 2009.

City of Mississauga “Noise Attenuation Barriers on Major Roadways”, Policy No. 09-03-03, April 2011.

City of Mississauga Noise Control By-Law 360-79, amended 2008.

Ontario Ministry of the Environment, *Model Municipal Noise Control By-Law*, incorporating NPC-115, *Construction Equipment*, Queens Printer for Ontario. August 1978.

Ontario Ministry of the Environment, “Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)”, October 1989.

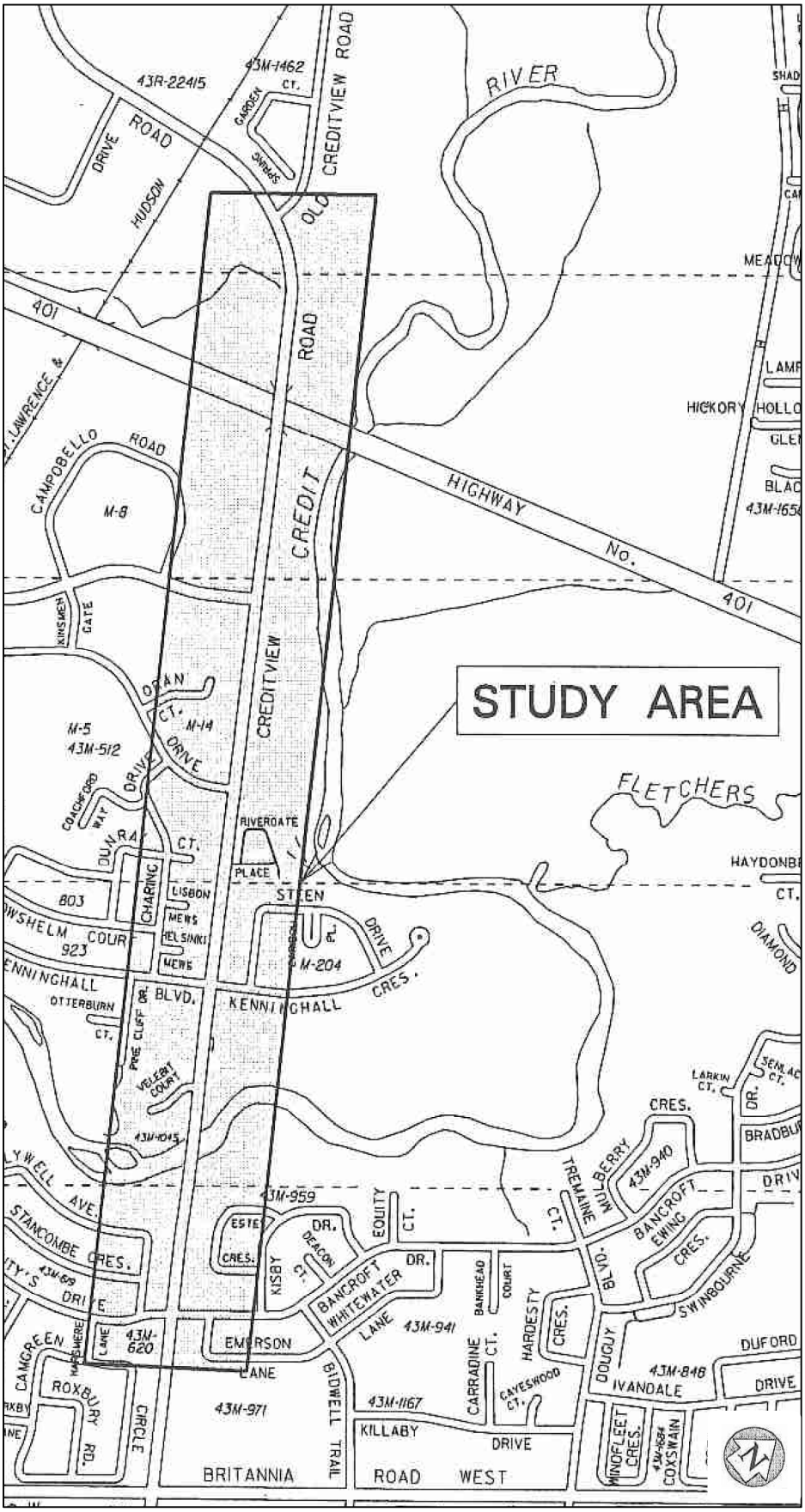
Ontario Ministry of the Environment, “Environmental Noise Guideline Publication NPC-300: Stationary and Transportation Sources - Approval and Planning”, August 2013.

Ontario Ministry of Transportation, “Provincial Highways Quality and Standards Directive A-1”, February 1992.

Ontario Ministry of Transportation/Ontario Ministry of the Environment, “A Protocol for Dealing with Noise Concerns during the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments”, February 1996.

Figures

Figure 1: Project Study Area



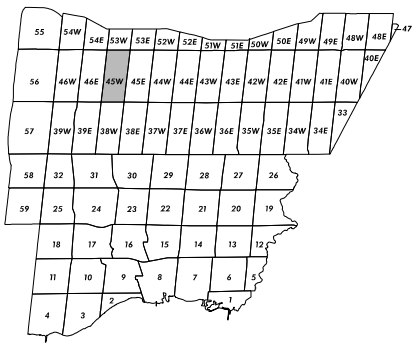
Glossary

Construction *(as defined under the City of Mississauga By-Law 360-79)*	Includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting, equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith.
Construction Equipment *(as defined under the City of Mississauga By-Law 360-79)*	Means any equipment or device designed and intended for use in construction, or material handling, including but not limited to, air compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, excavators, trenchers, cranes, derricks, loaders, scrapers, pavers, generators, off-highway haulers or trucks, ditchers, compactors and rollers, pumps, concrete mixers, graders, or other material handling equipment.
Decibel (dB or dBA)	The standard unit of measurement for sound levels. When describing sound pressure levels, this is the ratio between the sound pressure under consideration and a reference pressure level. Unless otherwise noted, decibel values relate to a reference pressure of 2×10^{-5} Pascals.
dBA (A-Weighting Network)	A frequency weighting network intended to approximate the relative response of the healthy human ear to sounds of different frequencies. Overall sound levels calculated or measured using the A-weighting network are indicated by dBA rather than dB.
$L_{eq,T}$ ***(Equivalent sound level)***	The constant sound pressure level which, in the time period "T", has the same sound energy as the time-varying sound.
Noise Impact	The difference between "With Project" sound levels and "No Build" / ambient sound levels at a noise sensitive receptor.
Noise Sensitive Land-Use/Area (NSA)	Locations were excessive noise may disrupt the lives or activities of occupants/residents or in general where excessive noise would interfere with the intended use of the location under consideration.
Outdoor Living Area (OLA)	An area at ground level, adjacent to a NSA and accommodating outdoor living activities. This area may be situated on any side of the NSA. Where unknown, the side closest to the highway should be assumed. Paved areas for multiple dwelling residential units may not be defined as an OLA.
Point of Reception (POR) *or* ***Receiver/Receptor***	A stationary position, at which sound levels are specified, measured or predicted.

Residential Zone *(as defined under the City of Mississauga By-Law 360-79)*	Means any area containing dwellings which are normally used for human habitation.
Sound Pressure	The instantaneous difference between the actual pressure and the average barometric pressure at a given location.

Appendices

Appendix A: City of Mississauga Zoning Maps



– Greenbelt Overlay

Zoning Notation Example:
R4–12 = R4–Exception 12

0 100 200
METRES

MAP 45W

Schedule "B" To
By–law No. 0225–2007

Revised: 2010 December 31

Produced by Transportation and Works Department, Geomatics Section

Technical Revisions: 2015 January 31

45W

44W

MISSISSAUGA

0 100 200
METRES

– By–law 5500

– Greenbelt Overlay

Zoning Notation Example:
R4–12 = R4–Exception 12

MAP 45E

Schedule "B" To
By–law No. 0225–2007

Revised: 2010 January 01

Produced by Transportation and Works Department, Geomatics Section

Technical Revisions: 2015 January 31

Appendix B: City of Mississauga Noise Barrier Policy

Corporate Policy and Procedure

Policy No.	09-03-03
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Effective Date	2011 04 13
Supersedes	2009 03 11

TAB: ENVIRONMENT AND CONSERVATION

SECTION: NOISE POLLUTION AND CONTROL

SUBJECT: NOISE ATTENUATION BARRIERS ON MAJOR ROADWAYS

POLICY STATEMENT

The City of Mississauga endeavours to ensure that noise attenuation barriers are constructed where necessary, and that any such barriers are maintained in good condition, both in structure and appearance.

PURPOSE

This policy identifies responsibilities for construction and maintenance of noise attenuation barriers and is divided into four categories:

- noise attenuation barriers in existence at the time of approval of this policy that are to be replaced, as part of a replacement program;
- noise attenuation barriers to be constructed after approval of this policy, as part of new development;
- new noise barriers to be constructed after approval of this policy, where none currently exist, as part of a retrofit program; and
- noise attenuation barriers to be constructed after approval of this policy, as part of a capital works project.

SCOPE

This policy applies to noise attenuation barriers which are or will be installed adjacent to municipal highways which are under the jurisdiction of the City of Mississauga.

LEGISLATIVE AUTHORITY

This policy complies with the *Municipal Act, 2001*, Ontario Regulation 586/06, the Local Improvement Charges – Priority Lien Status, and the City of Mississauga's Property Standards By-law. Should any of these be amended so that this policy no longer complies, the particular Act, Regulation, or By-law will

take precedence.

Installation Criteria

Installation of new noise attenuation barriers is subject to the following:

- The noise level must be greater than 60 dBA (Leq daytime). (Leq means "equivalent sound level" and daytime means 7:00 a.m. to 11:00 p.m. Leq daytime means daytime average.)
- The residential area must be adjacent to arterial and major collector roads, as designated in the Official Plan. Retrofit or replacements will not be considered adjacent to freeways or railway tracks, as they are not under the jurisdiction of the City.
- Barriers must be installed on a complete block to ensure their effectiveness.

REPLACEMENT PROGRAM CATEGORY – EXISTING BARRIERS

Should a noise attenuation barrier on private property require replacement, the City will construct a new noise attenuation barrier which will be situated, whenever possible, wholly on City property. The costs of construction of the new barrier will be 100 percent City funded. Ongoing maintenance and any future replacements of the noise attenuation barrier will be the responsibility of the City.

The replacement of deteriorated noise attenuation barriers will be determined based on priority, primarily according to the level of deterioration of the barriers. Priority listing will be reviewed annually and locations presented to Council for replacement approval.

Maintenance of noise existing attenuation barriers situated on private property will remain the responsibility of the property owner until such time as the City replaces the barrier and reinstalls it on City property. The Property Standards By-law establishes requirements of property owners with respect to the maintenance of their property. The City will ensure that noise

attenuation barriers which are situated on private property are maintained to an acceptable level through enforcement of this by-law.

RETROFIT PROGRAM CATEGORY – NEW BARRIERS

The City may install noise barriers along major collector or arterial roads in areas where such barriers were not previously installed. These installations may be initiated by the City or requested by private property owners by means of a petition. Installations will be dependant on the installation criteria in this policy being met.

The noise attenuation barrier will be situated on City property whenever possible. The costs of construction of the barrier will be shared on a 50/50 basis with the abutting private property owner. The necessary barrier end returns will be included in the overall estimated cost and the landowners will be assessed on the basis of their rear lot frontage. There will be no adjustments for irregular lot sizes. Ongoing maintenance and any future replacements of the noise attenuation barrier will be the responsibility of the City.

Petition Required

A petition supporting the installation of a noise barrier and signed by the number of landowners as required under Ontario Regulation 586/06, *Municipal Act, 2001,* must be filed with the City Clerk.

Property owners wishing to oppose the installation of a noise barrier which was initiated by the City must file a petition with the City Clerk.

CAPITAL WORKS PROJECT CATEGORY

Noise barriers may be constructed by the City in conjunction with a road widening project if no noise attenuation barriers exist, and the proposed additional lanes of traffic are found to adversely affect the daytime noise level beyond the established criteria (refer to the "Installation Criteria" section of this policy for the applicable criteria.). If the installation criteria are satisfied, the

City may elect to pre-install a noise attenuation barrier up to three years prior to the scheduled road widening.

Noise attenuation barriers may be constructed by the City at 100% City cost, on arterial roads as part of a significant capital improvement project, such as improvements at major intersections, transit priority and/or related infrastructure improvements, and major asphalt resurfacing or reconstruction, where no road widening is being undertaken. The noise attenuation barriers must be installed where none currently exist and meet the criteria as outlined in the "Installation Criteria" section of this policy.

The cost of construction will be included in the project costs. The noise attenuation barriers will be situated on City property. Ongoing maintenance and future replacements will be the responsibility of the City.

NEW DEVELOPMENT CATEGORY

Servicing Agreements for new developments which require the construction of a noise attenuation barrier will specify that the noise attenuation barrier be situated on City property. Costs of construction will be the responsibility of the developer. Ongoing maintenance and any future replacements of the noise attenuation barrier will be the responsibility of the City.

REFERENCE:

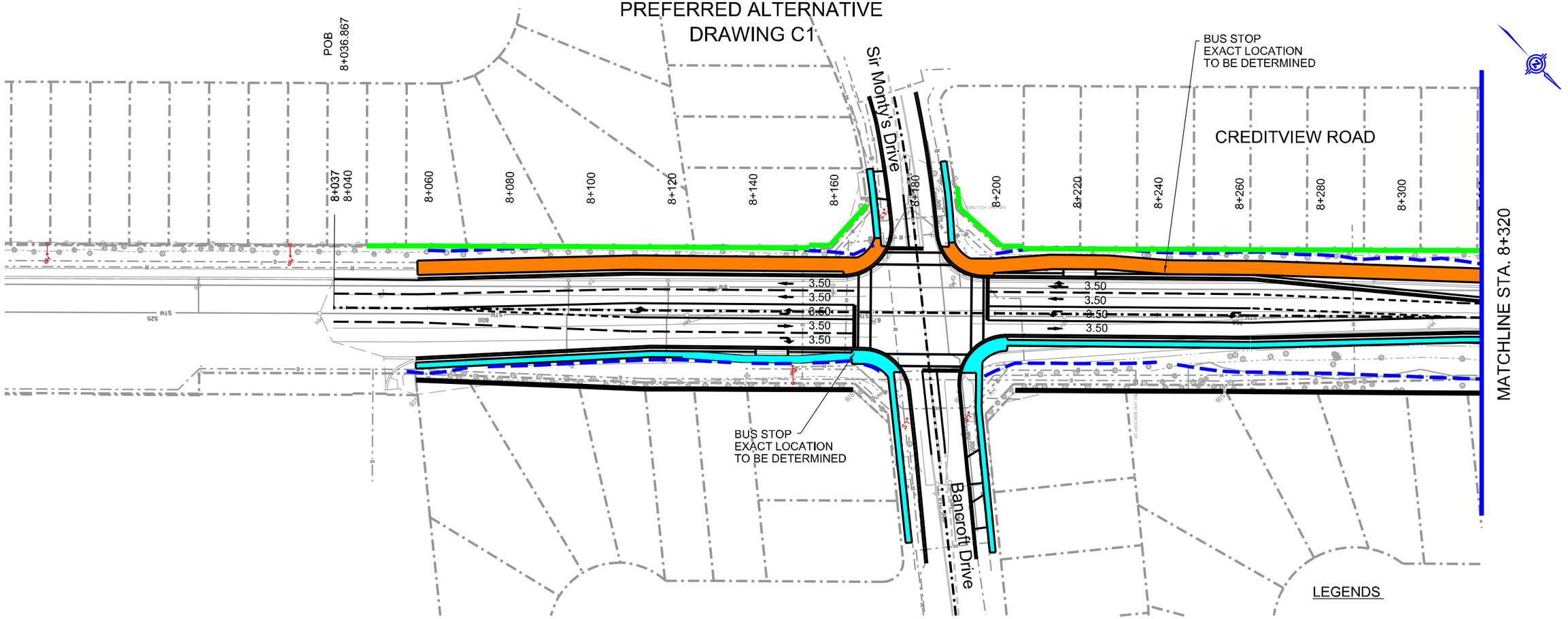
OW-192-88 – 1988 05 24
OW-114-92 – 1992 04 27
GC-0169-2005 – 2005 03 30
2007 08 23 Housekeeping amendment– to update Ont. Regulation 119/03 to Ont. Regulation 586/06)
GC-0067-2009 – 2009 03 11 – construction of noise barriers without road widening
GC-0166-2011 – 2011 04 13 – change in cost sharing to 100% City for replacement of deteriorated barriers

LAST REVIEW DATE: April, 2011

CONTACT: For more information, contact the Transportation and Works Department, Transportation and Infrastructure Planning Division.

Appendix C: Preferred Alternative Drawings

PREFERRED ALTERNATIVE
DRAWING C1



LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

CONSULTANTS

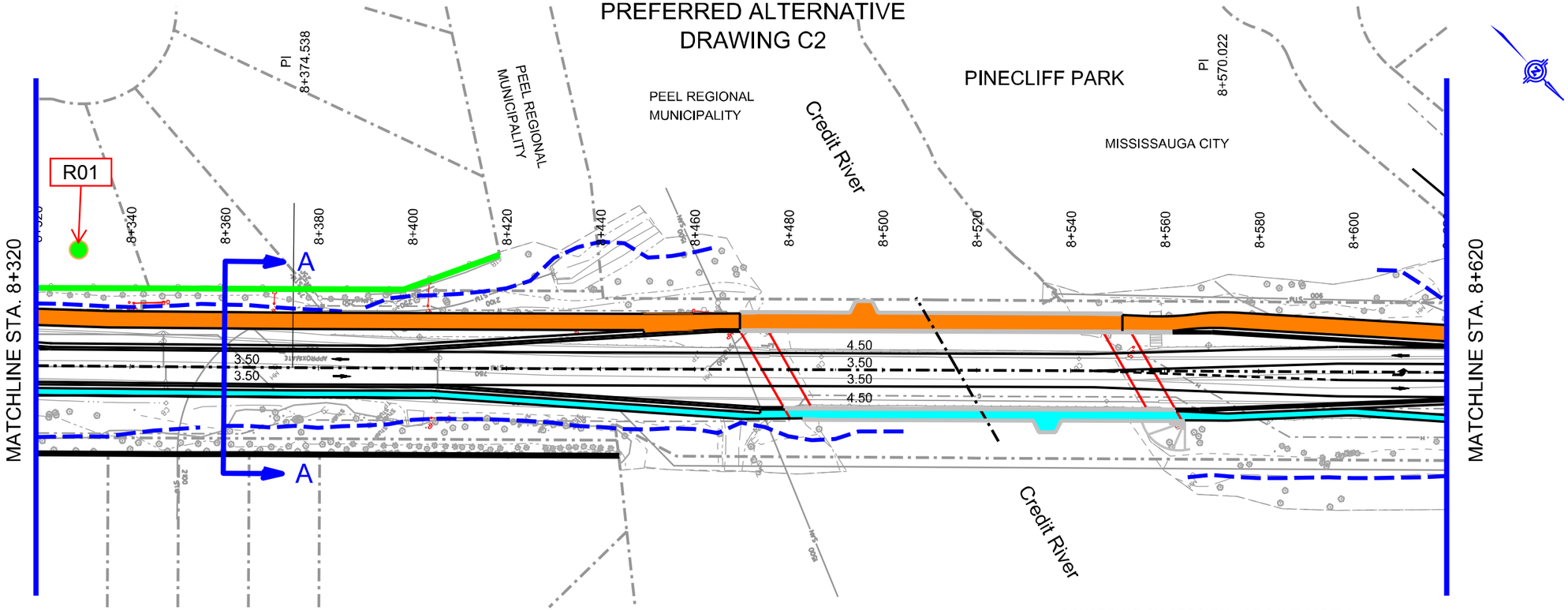
AECOM

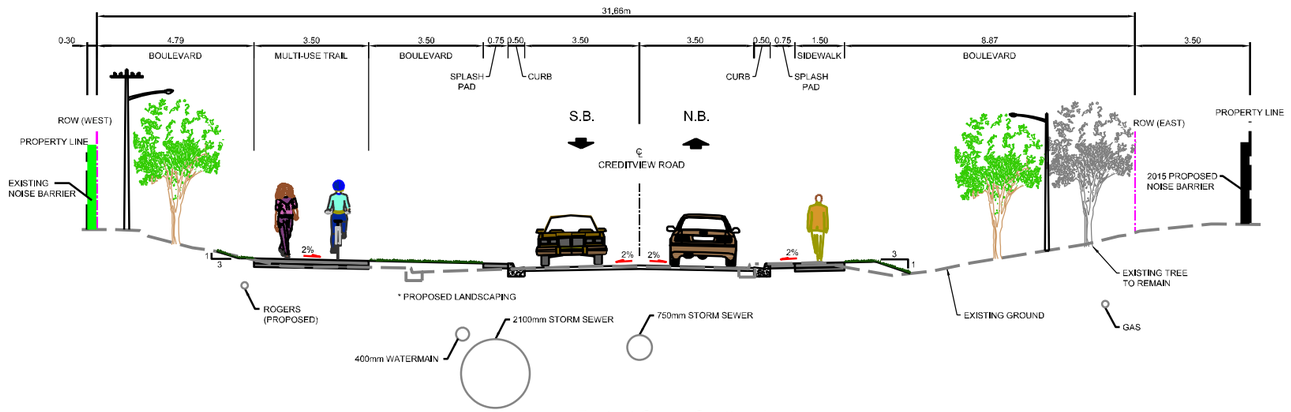
MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 8+037 TO STA. 8+320

DESIGN		DRAWN		CHECKED		CONTRACT No.
SCALE :	15 0 30			DRAWING NUMBER		SHEET
DATE :						

PREFERRED ALTERNATIVE
DRAWING C2





Typical Cross-Section A - A
Station 8+360
N.T.S.

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

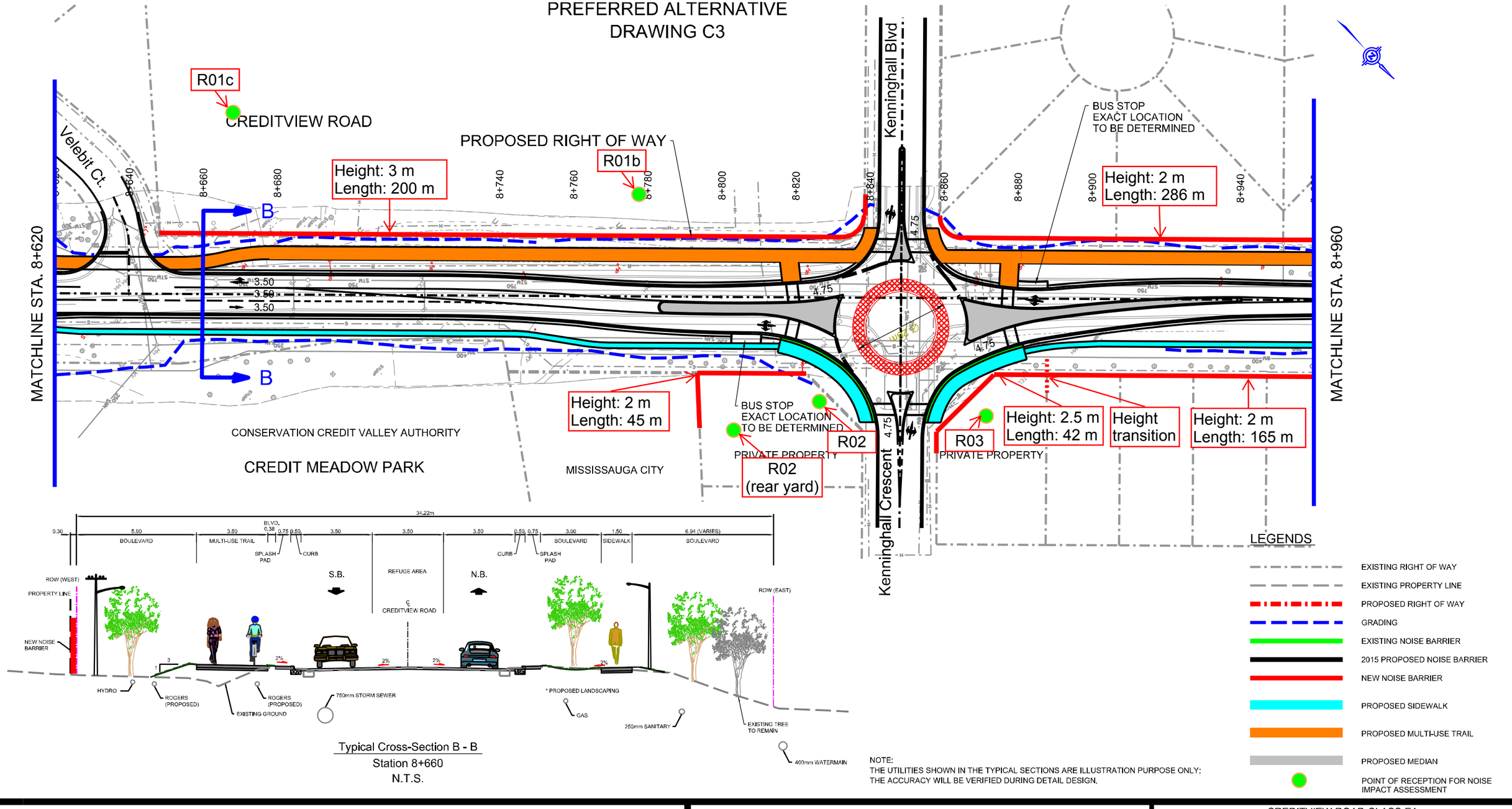
AECOM
CONSULTANTS

MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 8+320 TO STA. 8+620

DESIGN		DRAWN		CHECKED		CONTRACT No.	
SCALE :	15 0 30			DRAWING NUMBER			SHEET
DATE :							

PREFERRED ALTERNATIVE
DRAWING C3



Typical Cross-Section B - B
Station 8+660
N.T.S.

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

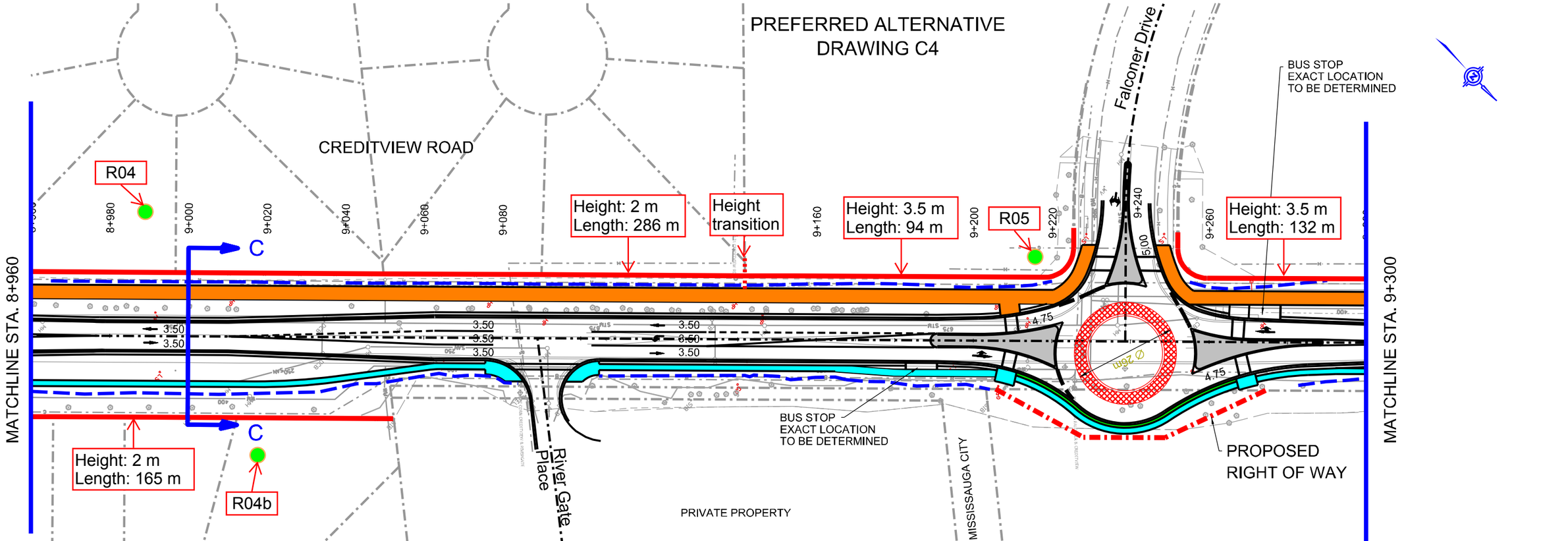
AECOM
CONSULTANTS

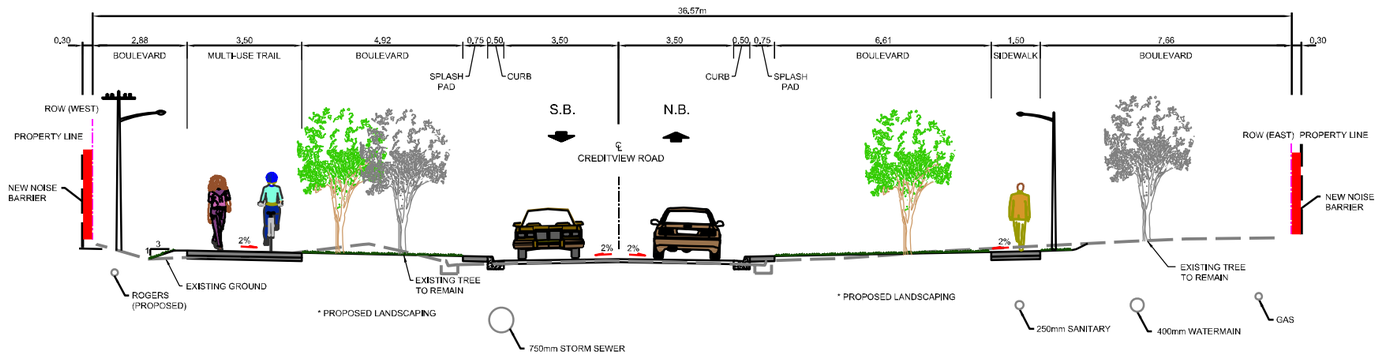
MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 8+620 TO STA. 8+960

DESIGN	S. M.	DRAWN	B. S.	CHECKED	S. M.	CONTRACT No.
SCALE :	15 0 30			DRAWING NUMBER		SHEET
DATE :						

PREFERRED ALTERNATIVE
DRAWING C4





Typical Cross-Section C - C
Station 9+000
N.T.S.

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

LEGENDS

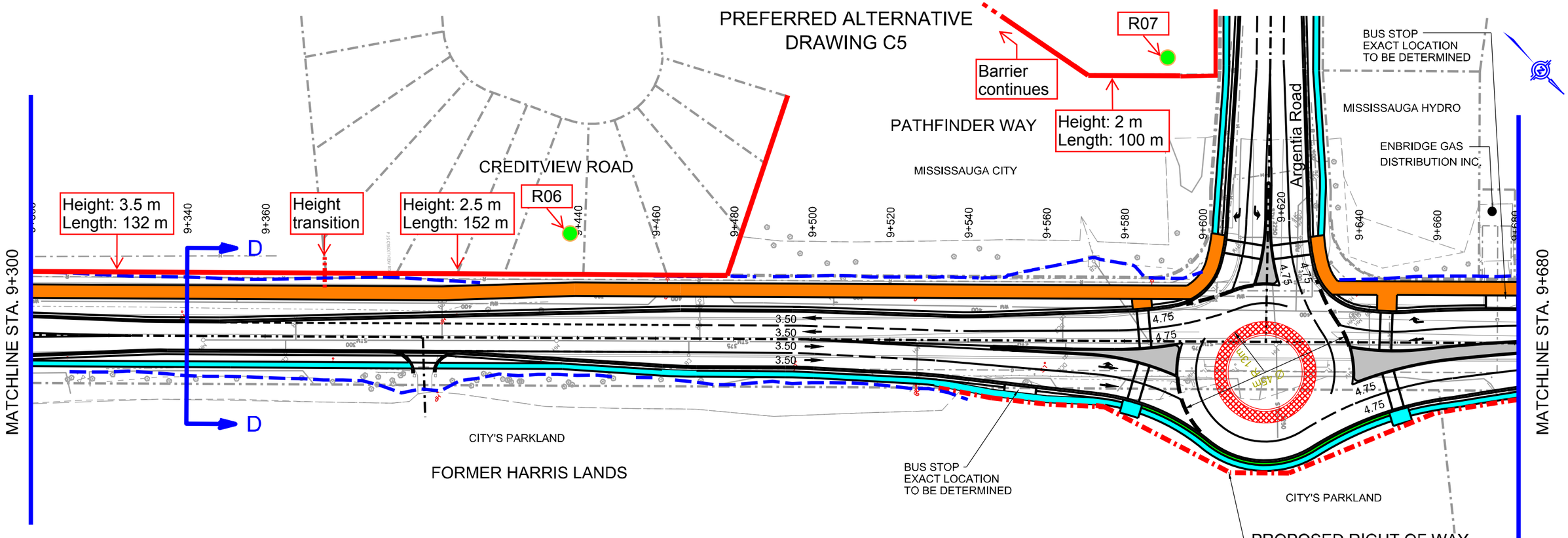
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

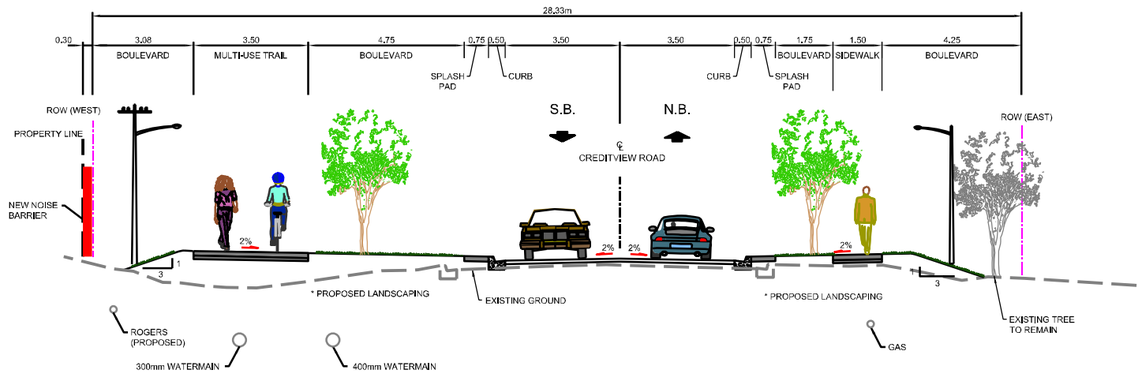
CONSULTANTS
AECOM

MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 8+960 TO STA. 9+300

DESIGN		DRAWN		CHECKED		CONTRACT No.	
SCALE :	15 0 30			DRAWING NUMBER			SHEET
DATE :							





Typical Cross-Section D - D
Station 9+340
N.T.S.

LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

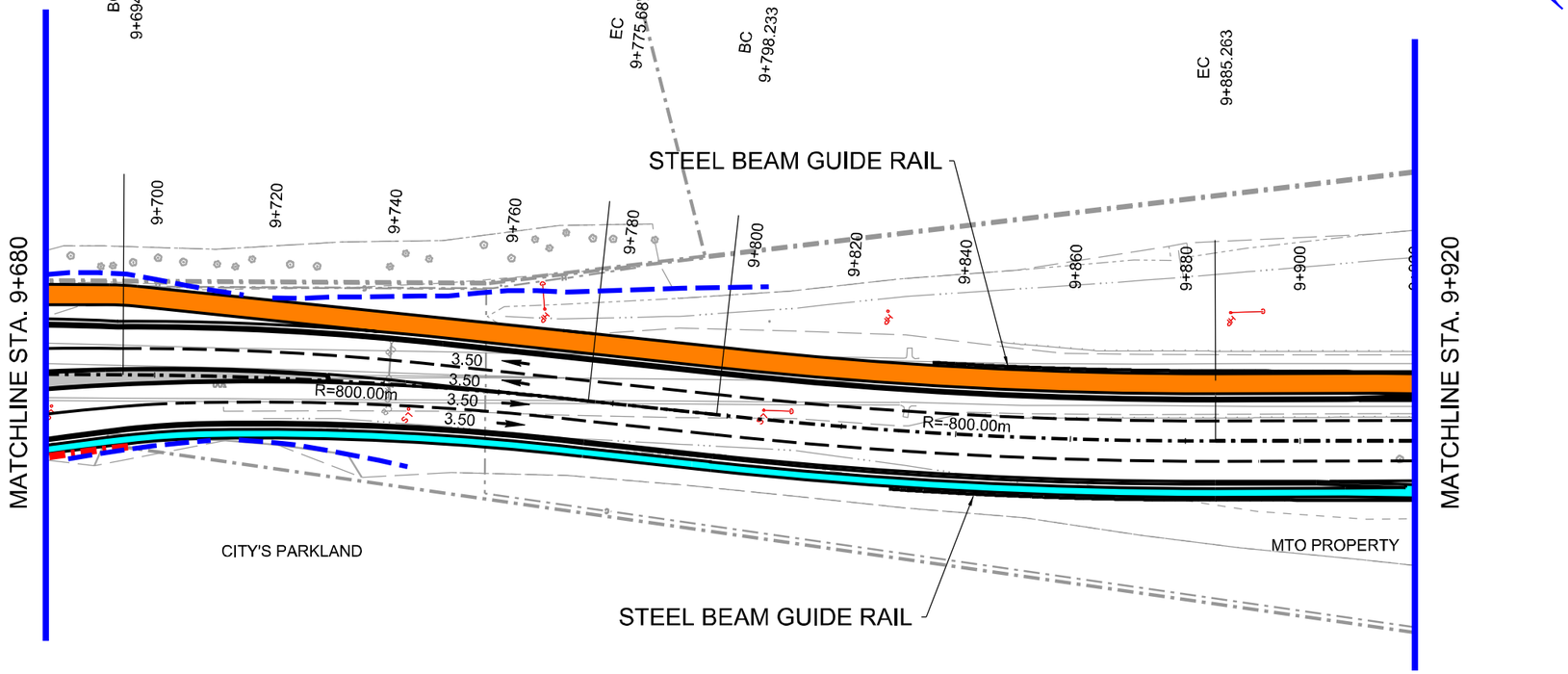
AECOM
CONSULTANTS

MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 9+300 TO STA. 9+680

DESIGN		DRAWN		CHECKED		CONTRACT No.
SCALE :	15 0 30			DRAWING NUMBER		SHEET
DATE :						

PREFERRED ALTERNATIVE
DRAWING C6



LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

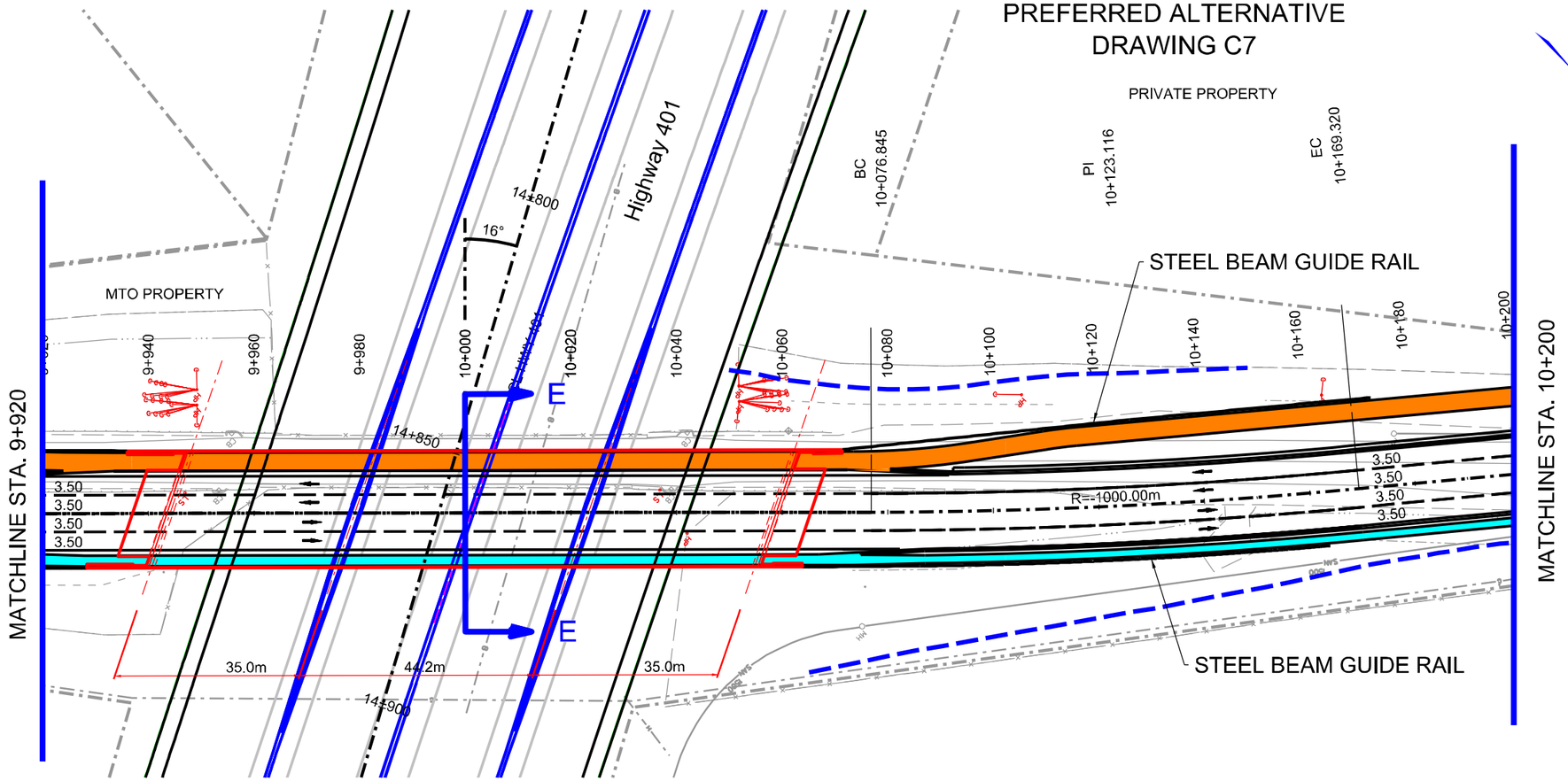
CONSULTANTS AECOM

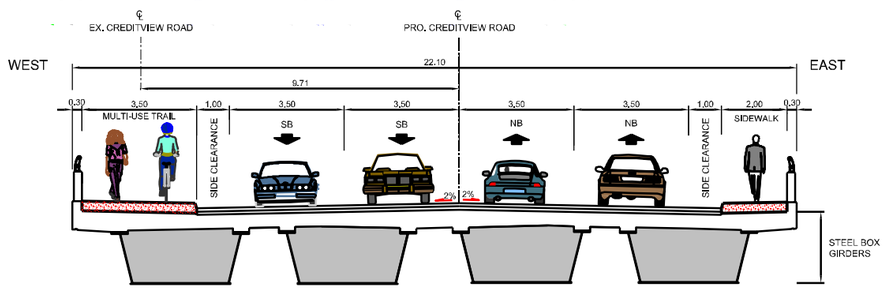
MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 9+680 TO STA. 9+920

DESIGN		DRAWN		CHECKED		CONTRACT No.
SCALE :	15 0 30			DRAWING NUMBER		SHEET
DATE :						

PREFERRED ALTERNATIVE
DRAWING C7





Typical Cross-Section E - E
Station 10+000
N.T.S.

LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

NOTE:
THE UTILITIES SHOWN IN THE TYPICAL SECTIONS ARE ILLUSTRATION PURPOSE ONLY;
THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

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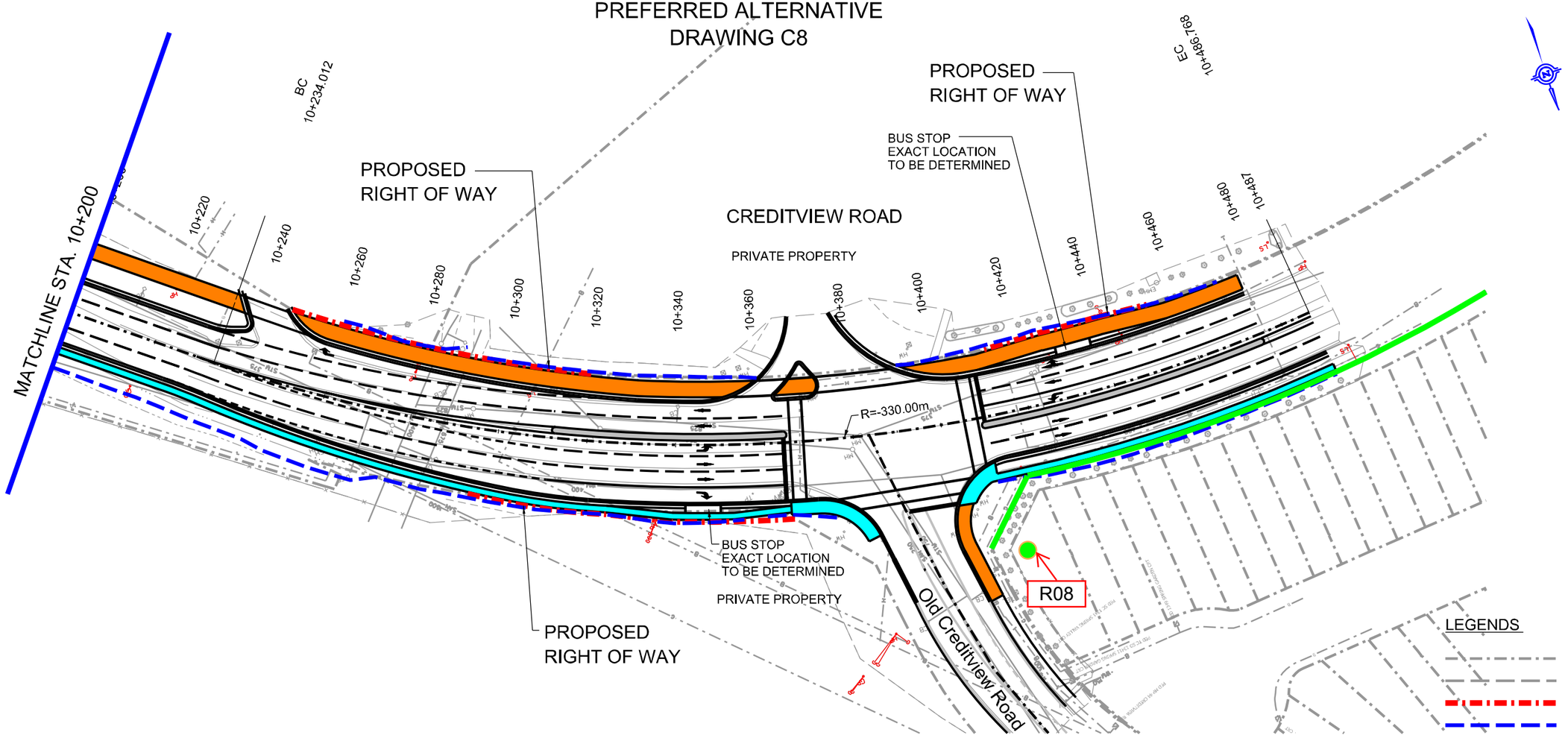
CONSULTANTS

MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 9+920 TO STA. 10+200

DESIGN		DRAWN		CHECKED		CONTRACT No.
SCALE :	15 0 30			DRAWING NUMBER		SHEET
DATE :						

PREFERRED ALTERNATIVE
DRAWING C8



LEGENDS

- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- GRADING
- EXISTING NOISE BARRIER
- 2015 PROPOSED NOISE BARRIER
- NEW NOISE BARRIER
- PROPOSED SIDEWALK
- PROPOSED MULTI-USE TRAIL
- PROPOSED MEDIAN
- POINT OF RECEPTION FOR NOISE IMPACT ASSESSMENT

NOTE:
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THE ACCURACY WILL BE VERIFIED DURING DETAIL DESIGN.

AECOM
CONSULTANTS

MISSISSAUGA

CREDITVIEW ROAD CLASS EA
PLAN / CROSS SECTIONS
PREFERRED ALTERNATIVE
PLAN - STA. 10+200 TO STA. 10+487

DESIGN		DRAWN		CHECKED		CONTRACT No.
SCALE :	15 0 30			DRAWING NUMBER		SHEET
DATE :						

Appendix D: Traffic Data and STAMSON Traffic Noise Calculation Inputs and Outputs

STAMSON INPUTS AND OUTPUTS

PROJECT NAME: Creditview Road | PAGE 1 OF 5

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE DRAWING: Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) | DATE: November 6, 2015

		Ambient/No Project																		With Project																	
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)
R01	CredNB_b	-90	60	2	-	-	-	1	1.5	25.5	-90	60	2.4	8	-1.1	163.5	164.6	164.8	54.52																			
Elevation changes negligible	CredNB_a	60	90	2	-	-	-	1	1.5	25.5	60	90	2.4	8	-0.1	164.5	164.6	164.8	48.09		-90	90	2	-	-	-	1	1.5	26.3	-90	90	2.4	8	-0.1	164.5	164.6	164.8	56.36	
Existing noise barrier	CredSB_c																				-90	25	2	-	-	-	1	1.5	22.6	-90	25	2.4	8	-0.1	164.5	164.6	164.8	55.13	
	CredSB_b	-90	60	2	-	-	-	1	1.5	20.6	-90	60	2.4	8	-1.1	163.5	164.6	164.8	55.21		25	75	2	-	-	-	1	1.5	23.1	25	75	2.4	8	-0.1	164.5	164.6	164.8	51.33	
	CredSB_a	60	90	2	-	-	-	1	1.5	20.6	60	90	2.4	8	-0.1	164.5	164.6	164.8	49.25		75	90	2	-	-	-	1	1.5	19.3	75	90	2.4	8	-0.1	164.5	164.6	164.8	45.77	
	Total																		58.83																		59.69	
	Impact																																				**Impact**	0.87	
R01b	CredNB_d																				-90	-60	1	-	-	-	1	1.5	48.9	-	-	-	-	0.5	164.5	164	-	48.73	
Elevation changes negligible	CredNB_c																				-45	-25	1	-	-	-	1	1.5	77.4	-	-	-	-	0.3	164.3	164	-	47.18	
	CredNB_b	-90	-70	1	-	-	-	1	1.5	30.8	-	-	-	-	0.5	164.5	164	-	49.17		-80	-70	1	-	-	-	1	1.5	15.2	-	-	-	-	0	164	164	-	52.51	
	CredNB_a	-70	90	1	-	-	-	1	1.5	30.8	-	-	-	-	-1	163	164	-	62.2		-45	90	1	-	-	-	1	1.5	33.4	-	-	-	-	-1	163	164	-	60.99	
	CredSB_d																				-90	-80	1	-	-	-	1	1.5	25.2	-	-	-	-	0.5	164.5	164	-	44.81	
	CredSB_c																				-75	-70	1	-	-	-	1	1.5	25.7	-	-	-	-	0.3	164.3	164	-	45.43	
	CredSB_b	-90	-70	1	-	-	-	1	1.5	24.4	-	-	-	-	0.5	164.5	164	-	50.02		-60	40	1	-	-	-	1	1.5	32.5	-	-	-	-	0.3	164.3	164	-	60.38	
	CredSB_a	-70	90	1	-	-	-	1	1.5	24.4	-	-	-	-	-1	163	164	-	63.77		-50	90	1	-	-	-	1	1.5	26	-	-	-	-	-1	163	164	-	62.84	
	KennBlW	-90	20	2	-	-	-	1	1.5	70.7	-90	-30	6	27	0.6	164.6	164	164.8	37.88		-90	15	2	-	-	-	1	1.5	70.7	-90	-30	6	27	0.6	164.6	164	164.8	37.47	
	KennCrW	20	90	2	-	-	-	1	1.5	70.7	45	90	6	27	-0.4	163.6	164	163	36.27		20	90	2	-	-	-	1	1.5	70.7	45	90	6	27	-0.4	163.6	164	163	36.61	
	KennBlE_a	-90	20	2	-	-	-	1	1.5	66.6	-90	-30	6	27	0.6	164.6	164	164.8	43.26		-90	10	2	-	-	-	1	1.5	66.6	-90	-30	6	27	0.6	164.6	164	164.8	42.39	
	KennBlE_b																				-20	-10	1	-	-	-	1	1.5	61.3	-	-	-	-	0.3	164.3	164	-	36.42	
	KennCrE	20	90	2	-	-	-	1	1.5	66.6	45	90	6	27	-0.4	163.6	164	163	30.41		20	90	2	-	-	-	1	1.5	66.6	45	90	6	27	-0.4	163.6	164	163	30.41	
	Total																		66.29																		66.70	
	Impact																																				**Impact**	0.41	
R01c	CredNB_b	-90	20	3	-	-	-	1	1.5	54.1	-	-	-	-	-4.2	160.8	165	-	56.74		-90	20	3	-	-	-	1	1.5	54.1	-	-	-	-	-4.2	160.8	165	-	56.74	
	CredNB_a	20	90	3	-	-	-	1	1.5	54.1	-	-	-	-	-4	161	165	-	54.07		20	90	3	-	-	-	1	1.5	54.1	-	-	-	-	-4	161	165	-	54.07	
	CredSB_b	-90	20	3	-	-	-	1	1.5	47.8	-	-	-	-	-4.3	160.7	165	-	57.48		-90	20	3	-	-	-	1	1.5	47.8	-	-	-	-	-4.3	160.7	165	-	57.48	
	CredSB_a	20	90	3	-	-	-	1	1.5	47.8	-	-	-	-	-4	161	165	-	54.82		20	90	3	-	-	-	1	1.5	47.8	-	-	-	-	-4	161	165	-	54.82	
	VelebitE&W	-30	45	3	-	-	-	1	1.5	30.7	-	-	-	-	-4	161	165	-	35.67		-30	45	3	-	-	-	1	1.5	30.7	-	-	-	-	-4	161	165	-	35.67	
	Total																		62.03																		62.03	
	Impact																																				**Impact**	0.00	

STAMSON INPUTS AND OUTPUTS

PROJECT NAME: Creditview Road | PAGE 2 OF 5

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE DRAWING: Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) | DATE: November 6, 2015

		Ambient/No Project																			Intermediate - Roundabout Design #1																			
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)
R02	CredNB_a	-90	45	1	-	-	-	1	1.5	32.6	-	-	-	-	-0.1	163.5	163.6	-	61.17		-90	-30	1	-	-	-	1	1.5	27.8	-	-	-	-	-0.1	163.5	163.6	-	57.52	
Elevation changes negligible	CredNB_b	45	90	1	-	-	-	1	1.5	32.6	-	-	-	-	0.9	164.5	163.6	-	54.5		-45	0	1	-	-	-	1	1.5	22.7	-	-	-	-	-0.1	163.5	163.6	-	59.74	
	CredNB_c																				-15	45	1	-	-	-	1	1.5	21.7	-	-	-	-	-0.1	163.5	163.6	-	61.38	
	CredNB_d																				-60	-45	1	-	-	-	1	1.5	17.8	-	-	-	-	0.4	164	163.6	-	55.68	
	CredNB_e																				60	90	1	-	-	-	1	1.5	19	-	-	-	-	0.9	164.5	163.6	-	55.54	
	CredSB_a	-90	45	1	-	-	-	1	1.5	39.3	-	-	-	-	-0.1	163.5	163.6	-	59.71		-90	-10	1	-	-	-	1	1.5	37.3	-	-	-	-	-0.1	163.5	163.6	-	57.17	
	CredSB_b	45	90	1	-	-	-	1	1.5	39.3	-	-	-	-	0.9	164.5	163.6	-	52.33		0	45	1	-	-	-	1	1.5	37.7	-	-	-	-	-0.1	163.5	163.6	-	55.97	
	CredSB_c																				0	10	1	-	-	-	1	1.5	51.7	-	-	-	-	0.4	164	163.6	-	46.83	
	CredSB_d																				45	90	1	-	-	-	1	1.5	37.8	-	-	-	-	0.9	164.5	163.6	-	52.61	
	KennBlW	-90	-60	1	-	-	-	1	1.5	24.9	-	-	-	-	0.9	164.5	163.6	-	38.71		-90	-60	1	-	-	-	1	1.5	26	-	-	-	-	0.9	164.5	163.6	-	38.4	
	KennCrW	-60	90	1	-	-	-	1	1.5	24.9	-	-	-	-	-0.3	163.3	163.6	-	50.21		-10	90	1	-	-	-	1	1.5	26	-	-	-	-	-0.3	163.3	163.6	-	47.92	
	KennBlE	-90	-60	1	-	-	-	1	1.5	20.9	-	-	-	-	0.9	164.5	163.6	-	44.94		-90	-60	1	-	-	-	1	1.5	18.9	-	-	-	-	0.9	164.5	163.6	-	45.67	
	KennCrE_a	-60	90	1	-	-	-	1	1.5	20.9	-	-	-	-	-0.3	163.3	163.6	-	44.88		-20	20	1	-	-	-	1	1.5	18	-	-	-	-	0.4	164	163.6	-	41.24	
	KennCrE_b																				-10	90	1	-	-	-	1	1.5	18.9	-	-	-	-	-0.3	163.3	163.6	-	43.64	
	Total																		64.58																		66.90	
	Impact																																					**Impact**	2.32	
R02R	CredNB_a	-90	50	2	-	-	-	1	1.5	27.8	20	50	6	7	-0.6	163	163.6	163.6	61.32		-90	0	1	-	-	-	1	1.5	23.8	-	-	-	-	-0.1	163.5	163.6	-	61.26	
Elevation changes negligible	CredNB_b	50	90	2	-	-	-	1	1.5	27.8	50	90	6	7	0.9	164.5	163.6	163.6	44.7		-15	35	2	-	-	-	1	1.5	23.3	0	35	6	8	-0.1	163.5	163.6	163.6	55.17	
Rear Yard Receiver	CredNB_c																				25	60	2	-	-	-	1	1.5	25.7	25	60	6	6	-0.1	163.5	163.6	163.6	39.26	
	CredNB_d																				-55	-40	2	-	-	-	1	1.5	35.2	-55	-40	6	4	0.4	164	163.6	163.6	33.51	
	CredNB_e																				75	90	2	-	-	-	1	1.5	15.1	75	90	6	3.5	0.9	164.5	163.6	163.6	43.98	
	CredSB_a	-90	50	2	-	-	-	1	1.5	34.6	20	50	6	7	-0.6	163	163.6	163.6	59.63		-90	20	1	-	-	-	1	1.5	32.8	-	-	-	-	-0.1	163.5	163.6	-	59.99	
	CredSB_b	50	90	2	-	-	-	1	1.5	34.6	50	90	6	7	0.9	164.5	163.6	163.6	42.78		30	60	2	-	-	-	1	1.5	29.8	30	60	6	7	-0.1	163.5	163.6	163.6	38.28	
	CredSB_c																				20	35	2	-	-	-	1	1.5	55.7	20	35	6	6.5	0.4	164	163.6	163.6	30.86	
	CredSB_d																				60	90	2	-	-	-	1	1.5	33	60	90	6	7.5	0.9	164.5	163.6	163.6	42.4	
	KennBlW	-90	-40	2	-	-	-	1	1.5	42.4	-70	-40	6	3	0.9	164.5	163.6	163.6	32.31		-90	-45	2	-	-	-	1	1.5	43.5	-70	-45	6	3	0.9	164.5	163.6	163.6	32.08	
	KennCrW	-40	90	2	-	-	-	1	1.5	42.4	-40	70	6	3	-0.3	163.3	163.6	163.6	34.47		-5	90	2	-	-	-	1	1.5	43.5	-5	70	6	3	-0.3	163.3	163.6	163.6	34	
	KennBlE	-90	-40	2	-	-	-	1	1.5	38.3	-70	-40	6	3	0.9	164.5	163.6	163.6	37.99		-90	-50	2	-	-	-	1	1.5	36.2	-70	-50	6	3	0.9	164.5	163.6	163.6	38.31	
	KennCrE_a	-40	90	2	-	-	mou	1	1.5	38.3	-40	70	6	3	-0.3	163.3	163.6	163.6	28.58		0	30	2	-	-	-	1	1.5	32.7	0	30	6	3.4	0.4	164	163.6	163.6	16.89	
	KennCrE_b																				5	90	2	-	-	-	1	1.5	36.2	5	70	6	3	-0.3	163.3	163.6	163.6	28.61	
	Total																		63.68																		64.37	
	Impact																																					**Impact**	0.69	

STAMSON INPUTS AND OUTPUTS

PROJECT NAME: Creditview Road | PAGE 3 OF 5

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE DRAWING: Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) | DATE: November 6, 2015

		Ambient/No Project																			Intermediate - Roundabout Design #1																			
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)
R03	CredNB_a	-90	-30	1	-	-	-	1	1.5	31.9	-	-	-	-	0.3	164	163.7	-	56.53		-90	-60	1	-	-	-	1	1.5	25.7	-	-	-	-	0.3	164	163.7	-	53.27	
Elevation changes negligible	CredNB_b	-30	90	1	-	-	-	1	1.5	31.9	-	-	-	-	0.8	164.5	163.7	-	60.86		60	70	1	-	-	-	1	1.5	15.8	-	-	-	-	0.3	164	163.7	-	53.65	
	CredNB_c																				-45	45	1	-	-	-	1	1.5	20.5	-	-	-	-	0.3	164	163.7	-	63.58	
	CredNB_d																				15	90	1	-	-	-	1	1.5	24.1	-	-	-	-	0.8	164.5	163.7	-	60.12	
	CredSB_a	-90	-30	1	-	-	-	1	1.5	38.8	-	-	-	-	0.3	164	163.7	-	55.01		-90	-45	1	-	-	-	1	1.5	35.9	-	-	-	-	0.3	164	163.7	-	53.71	
	CredSB_b	-30	90	1	-	-	-	1	1.5	38.8	-	-	-	-	0.8	164.5	163.7	-	58.62		-20	0	1	-	-	-	1	1.5	51.3	-	-	-	-	0.3	164	163.7	-	50.47	
	CredSB_c																				-45	-30	1	-	-	-	1	1.5	34.7	-	-	-	-	0.8	164.5	163.7	-	50.81	
	CredSB_d																				-5	90	1	-	-	-	1	1.5	37.7	-	-	-	-	0.8	164.5	163.7	-	57.53	
	KennCrW_a	-90	60	1	-	-	-	1	1.5	19.4	-	-	-	-	-0.4	163.3	163.7	-	52.01		-90	0	1	-	-	-	1	1.5	18	-	-	-	-	-0.4	163.3	163.7	-	49.95	
	KennCrW_b																				-15	30	1	-	-	-	1	1.5	18.1	-	-	-	-	0.3	164	163.7	-	48.28	
	KennBlW	60	90	1	-	-	-	1	1.5	19.4	-	-	-	-	0.8	164.5	163.7	-	40.51		60	90	1	-	-	-	1	1.5	18	-	-	-	-	0.8	164.5	163.7	-	41.05	
	KennCrE	-90	60	1	-	-	-	1	1.5	23.5	-	-	-	-	-0.4	163.3	163.7	-	44.04		-90	15	1	-	-	-	1	1.5	25.4	-	-	-	-	-0.4	163.3	163.7	-	41.78	
	KennBlE	60	90	1	-	-	-	1	1.5	23.5	-	-	-	-	0.8	164.5	163.7	-	44.1		60	90	1	-	-	-	1	1.5	25.4	-	-	-	-	0.8	164.5	163.7	-	43.54	
	Total																		64.68																		66.99	
	Impact																																				**Impact**	2.32	
R04	CredNB	-90	90	1	-	-	-	1	1.5	34.8	-	-	-	-	-0.5	166	166.5	-	61.02		-90	90	1	-	-	-	1	1.5	34.7	-	-	-	-	-0.5	166	166.5	-	61.04	
Elevation changes negligible	CredSB	-90	90	1	-	-	-	1	1.5	30.2	-	-	-	-	-0.5	166	166.5	-	61.22		-90	90	1	-	-	-	1	1.5	30.5	-	-	-	-	-0.5	166	166.5	-	61.14	
	Total																		64.13																		64.10	
	Impact																																				**Impact**	-0.03	
R04b	CredNB_a	-90	60	1	-	-	-	1	1.5	41.3	-	-	-	-	-0.65	165.75	166.4	-	59.37		-90	60	1	-	-	-	1	1.5	41.3	-	-	-	-	-0.65	165.75	166.4	-	59.37	
Elevation changes negligible	CredNB_b	60	90	1	-	-	-	1	1.5	41.3	-	-	-	-	0.6	167	166.4	-	49.97		60	90	1	-	-	-	1	1.5	41.3	-	-	-	-	0.6	167	166.4	-	49.97	
	CredSB_a	-90	60	1	-	-	-	1	1.5	45.8	-	-	-	-	-0.65	165.75	166.4	-	57.8		-90	60	1	-	-	-	1	1.5	45.8	-	-	-	-	-0.65	165.75	166.4	-	57.8	
	CredSB_b	60	90	1	-	-	-	1	1.5	45.8	-	-	-	-	0.6	167	166.4	-	48.35		60	90	1	-	-	-	1	1.5	45.8	-	-	-	-	0.6	167	166.4	-	48.35	
	RivergE&W	-30	45	1	-	1	60	1	1.5	72.9	-	-	-	-	0.5	166.9	166.4	-	29.5		-30	45	1	-	-	-	1	1.5	72.9	-	-	-	-	0.5	166.9	166.4	-	29.5	
	Total																		62.14																		62.14	
	Impact																																				**Impact**	0.00	

STAMSON INPUTS AND OUTPUTS

PROJECT NAME: Creditview Road | PAGE 4 OF 5

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE DRAWING: Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) | DATE: November 6, 2015

		Ambient/No Project																			Intermediate - Roundabout Design #1																			
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)
R05	CredNB_e																		0		-90	-75	1	-	-	-	1	1.5	24.7	-	-	-	-	0.6	170	169.4	-	48.65	
Elevation changes negligible	CredNB_d																		0		-60	-45	1	-	-	-	1	1.5	39	-	-	-	-	0.6	170	169.4	-	49.98	
	CredNB_c																		0		-30	0	1	-	-	-	1	1.5	44.9	-	-	-	-	0.1	169.5	169.4	-	53.35	
	CredNB_b	-90	-45	1	-	-	-	1	1.5	24.8	-	-	-	-	0.6	170	169.4	-	56.42		-60	-10	1	-	-	-	1	1.5	25.8	-	-	-	-	0.1	169.5	169.4	-	59.02	
	CredNB_a	-45	90	1	-	-	-	1	1.5	24.8	-	-	-	-	-0.4	169	169.4	-	63.26		20	90	1	-	-	-	1	1.5	24.7	-	-	-	-	-0.4	169	169.4	-	59.52	
	CredSB_d																		0		-90	-60	1	-	-	-	1	1.5	17.1	-	-	-	-	0.1	169.5	169.4	-	55.16	
	CredSB_c																		0		50	60	1	-	-	-	1	1.5	18.8	-	-	-	-	0.1	169.5	169.4	-	52.22	
	CredSB_b	-90	-45	1	-	-	-	1	1.5	18.3	-	-	-	-	0.6	170	169.4	-	57.52		-60	30	1	-	-	-	1	1.5	15.8	-	-	-	-	0.1	169.5	169.4	-	64.50	
	CredSB_a	-45	90	1	-	-	-	1	1.5	18.3	-	-	-	-	-0.4	169	169.4	-	64.58		15	90	1	-	-	-	1	1.5	17.8	-	-	-	-	-0.4	169	169.4	-	61.45	
	FalconerW_a	-90	45	1	-	-	-	1	1.5	26.8	-	-	-	-	0.1	169.5	169.4	-	46.26		-90	0	1	-	-	-	1	1.5	26.6	-	-	-	-	0.1	169.5	169.4	-	44.13	
	FalconerW_b																		0		15	30	1	-	-	-	1	1.5	26.1	-	-	-	-	0.1	169.5	169.4	-	37.71	
	FalconerE_a	-90	45	1	-	-	-	1	1.5	19	-	-	-	-	0.1	169.5	169.4	-	51.7		-90	0	1	-	-	-	1	1.5	18.4	-	-	-	-	0.1	169.5	169.4	-	49.76	
	FalconerE_b																		0		-45	30	1	-	-	-	1	1.5	15	-	-	-	-	0.1	169.5	169.4	-	51.66	
	Total																		67.91																			68.49	
	Impact																																					**Impact**	0.58	
R06	CredNB	-90	90	1	-	-	-	1	1.5	30.4	-	-	-	-	-0.5	170.4	170.9	-	61.94		-90	90	1	-	-	-	1	1.5	30.4	-	-	-	-	-0.5	170.4	170.9	-	61.94	
Elevation changes negligible	CredSB	-90	90	1	-	-	-	1	1.5	25.6	-	-	-	-	-0.5	170.4	170.9	-	62.09		-90	90	1	-	-	-	1	1.5	24.8	-	-	-	-	-0.5	170.4	170.9	-	62.32	
	Total																		65.03																			65.14	
	Impact																																					**Impact**	0.12	
R07	CredNB_f																				-90	-30	1	-	-	-	1	1.5	82.3					0	169	169	-	47.99	
Elevation changes negligible	CredNB_e																				-5	15	1	-	-	-	1	1.5	96.7	-	-	-	-	0	169	169	-	44.34	
	CredNB_d																				-30	-10	1	-	-	-	1	1.5	91.3	-	-	-	-	0	169	169	-	45.73	
	CredNB_c																				-60	-50	1	-	-	-	1	1.5	52.8	-	-	-	-	0	169	169	-	45.26	
	CredNB_b	-90	-20	1	-	-	-	1	1.5	70.9	-	-	-	-	0	169	169	-	50.09		-30	-5	1	-	-	-	1	1.5	78.7	-	-	-	-	-0.5	168.5	169	-	47.8	
	CredNB_a	-20	90	1	-	-	-	1	1.5	70.9	-	-	-	-	-0.5	168.5	169	-	53.98		15	90	1	-	-	-	1	1.5	77.2	-	-	-	-	-0.5	168.5	169	-	51.06	
	CredSB_d																				-90	-40	1	-	-	-	1	1.5	65.5	-	-	-	-	0	169	169	-	48.46	
	CredSB_c																				-40	-15	1	-	-	-	1	1.5	49.6	-	-	-	-	0	169	169	-	49.84	
	CredSB_b	-90	-20	1	-	-	-	1	1.5	64	-	-	-	-	0	169	169	-	50.89		-5	15	1	-	-	-	1	1.5	62.3	-	-	-	-	-0.5	168.5	169	-	47.56	
	CredSB_a	-20	90	1	-	-	-	1	1.5	64	-	-	-	-	-0.5	168.5	169	-	53.63		0	90	1	-	-	-	1	1.5	64.1	-	-	-	-	-0.5	168.5	169	-	52.46	
	ArgentiaW_a	-90	60	1	-	-	-	1	1.5	28.9	-	-	-	-	0	169	169	-	58.86		-90	45	1	-	-	-	1	1.5	21.8	-	-	-	-	0	169	169	-	62	
	ArgentiaW_b																				60	75	1	-	-	-	1	1.5	29.7	-	-	-	-	0	169	169	-	48.49	
	ArgentiaE_a	-90	60	1	-	-	-	1	1.5	21.6	-	-	-	-	0	169	169	-	60.15		-90	70	1	-	-	-	1	1.5	21.6	-	-	-	-	0	169	169	-	60.95	
	ArgentiaE_b																				45	60	1	-	-	-	1	1.5	33.7	-	-	-	-	0	169	169	-	47.18	
	Total																		64.00																			65.68	
	Impact																																					**Impact**	1.69	

PROJECT NAME: Creditview Road | PAGE 5 OF 5

STAMSON INPUTS AND OUTPUTS

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE DRAWING: Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) | DATE: November 6, 2015

		Ambient/No Project																		Intermediate - Roundabout Design #1																	
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barrier θ1	Barrier θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) (dBA)	Leq (Night) (dBA)
R08	CredNB_a	-90	-45	2	-	-	-	1	1.5	24.3	-90	-45	2.4	9.1	-1.25	169	170.25	170.4	48.06		-90	-45	2	-	-	-	1	1.5	22.9	-90	-45	2.4	9.1	-1.25	169	170.25	170.4	48.31	
Elevation changes negligible	CredNB_b	-45	45	2	-	-	-	1	1.5	29.8	-45	45	2.4	6.9	-0.25	170	170.25	170.4	50.52		-45	45	2	-	-	-	1	1.5	28.4	-45	45	2.4	6.9	-0.25	170	170.25	170.4	50.78	
Existing noise barrier	CredNB_c	60	90	2	-	-	-	1	1.5	23.5	60	90	2.4	12.7	0.5	170.75	170.25	170.6	47.17		60	90	2	-	-	-	1	1.5	22.6	60	90	2.4	12.7	0.5	170.75	170.25	170.6	47.4	
	CredSB_a	-90	-45	2	-	-	-	1	1.5	32.1	-90	-45	2.4	9.1	-1.25	169	170.25	170.4	46.69		-90	-45	2	-	-	-	1	1.5	33.9	-90	-45	2.4	9.1	-1.25	169	170.25	170.4	46.41	
	CredSB_b	-30	45	2	-	-	-	1	1.5	37.3	-30	45	2.4	6.9	-0.25	170	170.25	170.4	48.26		-30	45	2	-	-	-	1	1.5	39.4	-30	45	2.4	6.9	-0.25	170	170.25	170.4	47.95	
	CredSB_c	60	90	2	-	-	-	1	1.5	29.2	60	90	2.4	12.7	0.5	170.75	170.25	170.6	45.63		60	90	2	-	-	-	1	1.5	31.4	60	90	2.4	12.7	0.5	170.75	170.25	170.6	45.18	
	OldCE_a	-90	-5	2	-	-	-	1	1.5	24.1	-90	-5	2.4	2.3	-0.75	169.5	170.25	170.4	42.84		-90	-5	2	-	-	-	1	1.5	24.1	-90	-5	2.4	2.3	-0.75	169.5	170.25	170.4	42.84	
	OldCE_b	-15	60	2	-	-	-	1	1.5	23.2	-15	60	2.4	2.1	-1.05	169.2	170.25	170.4	40.99		-15	60	2	-	-	-	1	1.5	23.2	-15	60	2.4	2.1	-1.05	169.2	170.25	170.4	40.99	
	OldCW_a	-90	-5	2	-	-	-	1	1.5	16.8	-90	-5	2.4	2.3	-0.75	169.5	170.25	170.4	45.63		-90	-5	2	-	-	-	1	1.5	16.8	-90	-5	2.4	2.3	-0.75	169.5	170.25	170.4	45.63	
	OldCW_b	-20	60	2	-	-	-	1	1.5	15.6	-20	60	2.4	2.1	-1.05	169.2	170.25	170.4	44.04		-20	60	2	-	-	-	1	1.5	15.6	-20	60	2.4	2.1	-1.05	169.2	170.25	170.4	44.04	
	Total																		56.75																		56.77	
	Impact																																				**Impact**	0.02	

Notes to tables:

Topo: 1 = Flat/gentle slope; no barrier

2 = Flat/gentle slope; with barrier

3 = Elevated; no barrier

4 = Elevated; with barrier

Woods: 0 = No woods or < 30 metres

No. Rows: 0 = No houses

1 = 1 row of houses between source and receiver

Density: Note, consider as barrier if density is >95%

Ground Surface Type: 1 = Intermediate ground surface absorptive

PROJECT NAME: Creditview Road | PAGE 1 OF 3

Mitigation Analysis

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE DRAWING: Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) | DATE: November 6, 2015

		With Project, Unmitigated																		Mitigated																	
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barr θ1	Barr θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) or Leq(1hr) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barr θ1	Barr θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) or Leq(1hr) (dBA)	Leq (Night) (dBA)
R01c	CredNB_b	-90	20	3	-	-	-	1	1.5	54.1	-	-	-	-	-4.2	160.8	165	-	56.74		-90	20	4	-	-	-	1	1.5	54.1	-90	20	3	34.7	-4.2	160.8	165	161	52.93	
Mit adjacent to Creditview Rd	CredNB_a	20	90	3	-	-	-	1	1.5	54.1	-	-	-	-	-4	161	165	-	54.07		20	90	3	-	-	-	1	1.5	54.1	-	-	-	-	-4	161	165	-	54.07	
	CredSB_b	-90	20	3	-	-	-	1	1.5	47.8	-	-	-	-	-4.3	160.7	165	-	57.48		-90	20	4	-	-	-	1	1.5	47.8	-90	20	3	34.7	-4.3	160.7	165	161	52.86	
	CredSB_a	20	90	3	-	-	-	1	1.5	47.8	-	-	-	-	-4	161	165	-	54.82		20	90	3	-	-	-	1	1.5	47.8	-	-	-	-	-4	161	165	-	54.82	
	VelebitE&W	-30	45	3	-	-	-	1	1.5	30.7	-	-	-	-	-4	161	165	-	35.67		-30	45	3	-	-	-	1	1.5	30.7	-	-	-	-	-4	161	165	-	35.67	
	Total																		62.03																		59.79	
	Impact																													Barrier only adjacent to Creditview Rd						**Barrier Insertion Loss Performance**		-2.24	
R01b	CredNB_d	-90	-60	1	-	-	-	1	1.5	48.9	-	-	-	-	0.5	164.5	164	-	48.73		-90	-60	2	-	-	-	1	1.5	48.9	-90	-60	3	11.5	-0.5	164.5	165	165	44.03	
Mit adjacent to Creditview Rd	CredNB_c	-45	-25	1	-	-	-	1	1.5	77.4	-	-	-	-	0.3	164.3	164	-	47.18		-45	-25	2	-	-	-	1	1.5	77.4	-45	-25	3	11.5	-0.7	164.3	165	165	39.6	
	CredNB_b	-80	-70	1	-	-	-	1	1.5	15.2	-	-	-	-	0	164	164	-	52.51		-80	-70	2	-	-	-	1	1.5	15.2	-80	-70	3	11.5	-1	164	165	165	42.21	
	CredNB_a	-45	90	1	-	-	-	1	1.5	33.4	-	-	-	-	-1	163	164	-	60.99		-45	90	2	-	-	-	1	1.5	33.4	-45	90	3	11.5	-2	163	165	164	54.12	
	CredSB_d	-90	-80	1	-	-	-	1	1.5	25.2	-	-	-	-	0.5	164.5	164	-	44.81		-90	-80	2	-	-	-	1	1.5	25.2	-90	-80	3	11.5	-0.5	164.5	165	165	41.06	
	CredSB_c	-75	-70	1	-	-	-	1	1.5	25.7	-	-	-	-	0.3	164.3	164	-	45.43		-75	-70	2	-	-	-	1	1.5	25.7	-75	-70	3	11.5	-0.7	164.3	165	165	38.55	
	CredSB_b	-60	40	1	-	-	-	1	1.5	32.5	-	-	-	-	0.3	164.3	164	-	60.38		-60	40	2	-	-	-	1	1.5	32.5	-60	40	3	11.5	-0.7	164.3	165	165	50.46	
	CredSB_a	-50	90	1	-	-	-	1	1.5	26	-	-	-	-	-1	163	164	-	62.84		-50	90	2	-	-	-	1	1.5	26	-50	90	3	11.5	-2	163	165	164	54.73	
	KennBlW	-90	15	2	-	-	-	1	1.5	70.7	-90	-30	6	27	0.6	164.6	164	164.8	37.47		-90	15	2	-	-	-	1	1.5	70.7	-90	-30	6	27	-0.4	164.6	165	164.8	37.47	
	KennCrW	20	90	2	-	-	-	1	1.5	70.7	45	90	6	27	-0.4	163.6	164	163	36.61		20	90	2	-	-	-	1	1.5	70.7	45	90	6	27	-1.4	163.6	165	163	36.61	
	KennBlE_a	-90	10	2	-	-	-	1	1.5	66.6	-90	-30	6	27	0.6	164.6	164	164.8	42.39		-90	10	2	-	-	-	1	1.5	66.6	-90	-30	6	27	-0.4	164.6	165	164.8	42.39	
	KennBlE_b	-20	-10	1	-	-	-	1	1.5	61.3	-	-	-	-	0.3	164.3	164	-	36.42		-20	-10	2	-	-	-	1	1.5	61.3	-20	-10	3	11.5	-0.7	164.3	165	165	27.75	
	KennCrE	20	90	2	-	-	-	1	1.5	66.6	45	90	6	27	-0.4	163.6	164	163	30.41		20	90	2	-	-	-	1	1.5	66.6	45	90	6	27	-1.4	163.6	165	163	30.41	
	Total																		66.70																		58.85	
	Impact																																				**Barrier Insertion Loss Performance**		-7.85	
R02R	CredNB_a	-90	0	1	-	-	-	1	1.5	23.8	-	-	-	-	-0.1	163.5	163.6	-	61.26		-90	0	2	-	-	-	1	1.5	23.8	-70	0	2	10	-0.1	163.5	163.6	163.6	56.54	
Elevation changes negligible	CredNB_b	-15	35	2	-	-	-	1	1.5	23.3	0	35	6	8	-0.1	163.5	163.6	163.6	55.17		-15	0	2	-	-	-	1	1.5	23.3	-15	0	2	10	-0.1	163.5	163.6	163.6	48.91	
	CredNB_c																				0	35	2	-	-	-	1	1.5	23.3	0	35	6	8	-0.1	163.5	163.6	163.6	38.14	
	CredNB_d	25	60	2	-	-	-	1	1.5	25.7	25	60	6	6	-0.1	163.5	163.6	163.6	39.26		25	60	2	-	-	-	1	1.5	25.7	25	60	6	6	-0.1	163.5	163.6	163.6	39.26	
	CredNB_e	-55	-40	2	-	-	-	1	1.5	35.2	-55	-40	6	4	0.4	164	163.6	163.6	33.51		-55	-40	2	-	-	-	1	1.5	35.2	-55	-40	6	4	0.4	164	163.6	163.6	33.51	
	CredNB_f	75	90	2	-	-	-	1	1.5	15.1	75	90	6	3.5	0.9	164.5	163.6	163.6	43.98		75	90	2	-	-	-	1	1.5	15.1	75	90	6	3.5	0.9	164.5	163.6	163.6	43.98	
	CredSB_a	-90	20	1	-	-	-	1	1.5	32.8	-	-	-	-	-0.1	163.5	163.6	-	59.99		-90	20	1	-	-	-	1	1.5	32.8	-70	20	2	10	-0.1	163.5	163.6	163.6	55.3	
	CredSB_b	30	60	2	-	-	-	1	1.5	29.8	30	60	6	7	-0.1	163.5	163.6	163.6	38.28		30	60	2	-	-	-	1	1.5	29.8	30	60	6	7	-0.1	163.5	163.6	163.6	38.28	
	CredSB_c	20	35	2	-	-	-	1	1.5	55.7	20	35	6	6.5	0.4	164	163.6	163.6	30.86		20	35	2	-	-	-	1	1.5	55.7	20	35	6	6.5	0.4	164	163.6	163.6	30.86	
	CredSB_d	60	90	2	-	-	-	1	1.5	33	60	90	6	7.5	0.9	164.5	163.6	163.6	42.4		60	90	2	-	-	-	1	1.5	33	60	90	6	7.5	0.9	164.5	163.6	163.6	42.4	
	KennBlW	-90	-45	2	-	-	-	1	1.5	43.5	-70	-45	6	3	0.9	164.5	163.6	163.6	32.08		-90	-45	2	-	-	-	1	1.5	43.5	-70	-45	6	3	0.9	164.5	163.6	163.6	32.08	
	KennCrW	-5	90	2	-	-	-	1	1.5	43.5	-5	70	6	3	-0.3	163.3	163.6	163.6	34		-5	90	2	-	-	-	1	1.5	43.5	-5	70	6	3	-0.3	163.3	163.6	163.6	34	
	KennBlE	-90	-50	2	-	-	-	1	1.5	36.2	-70	-50	6	3	0.9	164.5	163.6	163.6	38.31		-90	-50	2	-	-	-	1	1.5	36.2	-70	-50	6	3	0.9	164.5	163.6	163.6	38.31	
	KennCrE_a	0	30	2	-	-	-	1	1.5	32.7	0	30	6	3.4	0.4	164	163.6	163.6	16.89		0	30	2	-	-	-	1	1.5	32.7	0	30	6	3.4	0.4	164	163.6	163.6	16.89	
	KennCrE_b	5	90	2	-	-	-	1	1.5	36.2	5	70	6	3	-0.3	163.3	163.6	163.6	28.61		5	90	2	-	-	-	1	1.5	36.2	5	70	6	3	-0.3	163.3	163.6	163.6	28.61	
	Total																		64.37																		59.76	
	Impact																																				**Barrier Insertion Loss Performance**		-4.61	

Mitigation Analysis

60304588 ENGINEER ARO

Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) DATE November 6, 2015

		With Project, Unmitigated																			Mitigated																	
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barr θ1	Barr θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) or Leq(1hr) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barr θ1	Barr θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) or Leq(1hr) (dBA)	Leq (Night) (dBA)
R03	CredNB_a	-90	-60	1	-	-	-	1	1.5	25.7	-	-	-	-	0.3	164	163.7	-	53.27		-90	-60	2	-	-	-	1	1.5	25.7	-90	-60	2.5	15.1	0.3	164	163.7	164	48.21	
Elevation changes negligible	CredNB_b	60	70	1	-	-	-	1	1.5	15.8	-	-	-	-	0.3	164	163.7	-	53.65		60	70	2	-	-	-	1	1.5	15.8	60	70	2.5	15.1	0.3	164	163.7	164	42.09	
	CredNB_c	-45	45	1	-	-	-	1	1.5	20.5	-	-	-	-	0.3	164	163.7	-	63.58		-45	45	2	-	-	-	1	1.5	20.5	-45	45	2.5	15.1	0.3	164	163.7	164	53.92	
	CredNB_d	15	90	1	-	-	-	1	1.5	24.1	-	-	-	-	0.8	164.5	163.7	-	60.12		15	90	2	-	-	-	1	1.5	24.1	15	90	2.5	15.1	0.8	164.5	163.7	165	51.18	
	CredSB_a	-90	-45	1	-	-	-	1	1.5	35.9	-	-	-	-	0.3	164	163.7	-	53.71		-90	-45	2	-	-	-	1	1.5	35.9	-90	-45	2.5	15.1	0.3	164	163.7	164	48.51	
	CredSB_b	-20	0	1	-	-	-	1	1.5	51.3	-	-	-	-	0.3	164	163.7	-	50.47		-20	0	2	-	-	-	1	1.5	51.3	-20	0	2.5	15.1	0.3	164	163.7	164	43.37	
	CredSB_c	-45	-30	1	-	-	-	1	1.5	34.7	-	-	-	-	0.8	164.5	163.7	-	50.81		-45	-30	2	-	-	-	1	1.5	34.7	-45	-30	2.5	15.1	0.8	164.5	163.7	164	44.47	
	CredSB_d	-5	90	1	-	-	-	1	1.5	37.7	-	-	-	-	0.8	164.5	163.7	-	57.53		-5	90	2	-	-	-	1	1.5	37.7	-5	90	2.5	15.1	0.8	164.5	163.7	165	49.12	
	KennCrW_a	-90	0	1	-	-	-	1	1.5	18	-	-	-	-	-0.4	163.3	163.7	-	49.95		-90	0	2	-	-	-	1	1.5	18	-90	0	2.5	11.6	-0.4	163.3	163.7	164	40.31	
	KennCrW_b	-15	30	1	-	-	-	1	1.5	18.1	-	-	-	-	0.3	164	163.7	-	48.28		-15	30	2	-	-	-	1	1.5	18.1	-15	30	2.5	11.6	0.3	164	163.7	164	38.25	
	KennBW	60	90	1	-	-	-	1	1.5	18	-	-	-	-	0.8	164.5	163.7	-	41.05		60	90	2	-	-	-	1	1.5	18	60	90	2.5	11.6	0.8	164.5	163.7	164	36.01	
	KennCrE	-90	15	1	-	-	-	1	1.5	25.4	-	-	-	-	-0.4	163.3	163.7	-	41.78		-90	15	2	-	-	-	1	1.5	25.4	-90	15	2.5	11.6	-0.4	163.3	163.7	164	33.42	
	KennBlE	60	90	1	-	-	-	1	1.5	25.4	-	-	-	-	0.8	164.5	163.7	-	43.54		60	90	2	-	-	-	1	1.5	25.4	60	90	2.5	11.6	0.8	164.5	163.7	164	38.81	
	Total																		66.99																		58.41	
	Impact																																					**Barrier Insertion Loss Performance**	-8.58	
R04	CredNB	-90	90	1	-	-	-	1	1.5	34.7	-	-	-	-	-0.5	166	166.5	-	61.04		-90	90	2	-	-	-	1	1.5	34.7	-90	90	2	16.4	-0.5	166	166.5	166.4	55.87	
Elevation changes negligible	CredSB	-90	90	1	-	-	-	1	1.5	30.5	-	-	-	-	-0.5	166	166.5	-	61.14		-90	90	2	-	-	-	1	1.5	30.5	-90	90	2	16.4	-0.5	166	166.5	166.4	55.71	
	Total																		64.10																		58.80	
	Impact																																					**Barrier Insertion Loss Performance**	-5.30	
R04b	CredNB_a	-90	60	1	-	-	-	1	1.5	41.3	-	-	-	-	-0.65	165.75	166.4	-	59.37		-90	60	2	-	-	-	1	1.5	41.3	-90	60	2	22.9	-0.65	165.75	166.4	166.4	53.73	
Elevation changes negligible	CredNB_b	60	90	1	-	-	-	1	1.5	41.3	-	-	-	-	0.6	167	166.4	-	49.97		60	90	1	-	-	-	1	1.5	41.3	-	-	-	-	0.6	167	166.4	-	49.97	
	CredSB_a	-90	60	1	-	-	-	1	1.5	45.8	-	-	-	-	-0.65	165.75	166.4	-	57.8		-90	60	2	-	-	-	1	1.5	45.8	-90	60	2	22.9	-0.65	165.75	166.4	166.4	52.43	
	CredSB_b	60	90	1	-	-	-	1	1.5	45.8	-	-	-	-	0.6	167	166.4	-	48.35		60	90	1	-	-	-	1	1.5	45.8	-	-	-	-	0.6	167	166.4	-	48.35	
	RivergE&W	-30	45	1	-	-	-	1	1.5	72.9	-	-	-	-	0.5	166.9	166.4	-	29.5		-30	45	1	-	-	-	1	1.5	72.9	-	-	-	-	0.5	166.9	166.4	-	29.5	
	Total																		62.14																		57.63	
	Impact																																					**Barrier Insertion Loss Performance**	-4.51	
R05	CredNB_e	-90	-75	1	-	-	-	1	1.5	24.7	-	-	-	-	0.6	170	169.4	-	48.65		-90	-75	2	-	-	-	1	1.5	24.7	-90	-75	3.5	5.2	0.6	170	169.4	169	44.42	
Elevation changes negligible	CredNB_d	-60	-45	1	-	-	-	1	1.5	39	-	-	-	-	0.6	170	169.4	-	49.98		-60	-45	2	-	-	-	1	1.5	39	-60	-45	3.5	5.2	0.6	170	169.4	169	41.19	
	CredNB_c	-30	0	1	-	-	-	1	1.5	44.9	-	-	-	-	0.1	169.5	169.4	-	53.35		-30	0	2	-	-	-	1	1.5	44.9	-30	0	3.5	5.2	0.1	169.5	169.4	169	42.39	
	CredNB_b	-60	-10	1	-	-	-	1	1.5	25.8	-	-	-	-	0.1	169.5	169.4	-	59.02		-60	-10	2	-	-	-	1	1.5	25.8	-60	-10	3.5	5.2	0.1	169.5	169.4	169	48.14	
	CredNB_a	20	90	1	-	-	-	1	1.5	24.7	-	-	-	-	-0.4	169	169.4	-	59.52		20	90	2	-	-	-	1	1.5	24.7	20	90	3.5	5.2	-0.4	169	169.4	169	50.71	
	CredSB_d	-90	-60	1	-	-	-	1	1.5	17.1	-	-	-	-	0.1	169.5	169.4	-	55.16		-90	-60	2	-	-	-	1	1.5	17.1	-90	-60	3.5	5.2	0.1	169.5	169.4	169	48.50	
	CredSB_c	50	60	1	-	-	-	1	1.5	18.8	-	-	-	-	0.1	169.5	169.4	-	52.22		50	60	2	-	-	-	1	1.5	18.8	50	60	3.5	5.2	0.1	169.5	169.4	169	42.09	
	CredSB_b	-60	30	1	-	-	-	1	1.5	15.8	-	-	-	-	0.1	169.5	169.4	-	64.50		-60	30	2	-	-	-	1	1.5	15.8	-60	30	3.5	5.2	0.1	169.5	169.4	169	52.06	
	CredSB_a	15	90	1	-	-	-	1	1.5	17.8	-	-	-	-	-0.4	169	169.4	-	61.45		15	90	2	-	-	-	1	1.5	17.8	15	90	3.5	5.2	-0.4	169	169.4	169	51.73	
	FalconerW_a	-90	0	1	-	-	-	1	1.5	26.6	-	-	-	-	0.1	169.5	169.4	-	44.13		-90	0	1	-	-	-	1	1.5	26.6	-40	0	3.5	9	0.1	169.5	169.4	169.6	40.59	
	FalconerW_b	15	30	1	-	-	-	1	1.5	26.1	-	-	-	-	0.1	169.5	169.4	-	37.71		15	30	1	-	-	-	1	1.5	26.1	15	30	3.5	9	0.1	169.5	169.4	169.6	24.85	
	FalconerE_a	-90	0	1	-	-	-	1	1.5	18.4	-	-	-	-	0.1	169.5	169.4	-	49.76		-90	0	1	-	-	-	1	1.5	18.4	-40	0	3.5	9	0.1	169.5	169.4	169.6	46.13	
	FalconerE_b	-45	30	1	-	-	-	1	1.5	15	-	-	-	-	0.1	169.5	169.4	-	51.66		-45	30	1	-	-	-	1	1.5	15	-45	30	3.5	9	0.1	169.5	169.4	169.6	36.33	
	Total																		68.49																		58.42	
	Impact																																					**Barrier Insertion Loss Performance**	-10.07	

Mitigation Analysis

60304588 ENGINEER ARO

Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015) DATE November 6, 2015

		With Project, Unmitigated																			Mitigated																			
RECEIVER	SOURCE	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barr θ1	Barr θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) or Leq(1hr) (dBA)	Leq (Night) (dBA)	θ1	θ2	TOPO	WOODS	No. Rows	@ Density	Ground Surface Type	Receiver Height (r) (m)	Source Receiver Dist (m)	Barr θ1	Barr θ2	Barrier Height (m)	Barrier Receiver Distance (m)	Elevation Change (e) (m)	Source Ground Elevation (m)	Receiver Ground Elevation (m)	Base of Barrier Elevation (m)	Leq(Day) or Leq(1hr) (dBA)	Leq (Night) (dBA)
R06	CredNB	-90	90	1	-	-	-	1	1.5	30.4	-	-	-	-	-0.5	170.4	170.9	-	61.94		-90	90	2	-	-	-	1	1.5	30.4	-90	90	2.5	12.2	-0.5	170.4	170.9	170.5	56.3	
Elevation changes negligible	CredSB	-90	90	1	-	-	-	1	1.5	24.8	-	-	-	-	-0.5	170.4	170.9	-	62.32		-90	90	2	-	-	-	1	1.5	24.8	-90	90	2.5	12.2	-0.5	170.4	170.9	170.5	56.19	
	Total																		65.14																			59.26	
																																						Barrier Insertion Loss Performance	-5.89	
R07	CredNB_f	-90	-30	1	-	-	-	1	1.5	82.3					0	169	169	-	47.99		-90	-30	2	-	-	-	1	1.5	82.3	-90	-30	2	2	0	169	169	169.3	41.5	
Elevation changes negligible	CredNB_e	-5	15	1	-	-	-	1	1.5	96.7	-	-	-	-	0	169	169	-	44.34		-5	15	2	-	-	-	1	1.5	96.7	-5	15	2	2	0	169	169	169.3	35.13	
	CredNB_d	-30	-10	1	-	-	-	1	1.5	91.3	-	-	-	-	0	169	169	-	45.73		-30	-10	2	-	-	-	1	1.5	91.3	-30	-10	2	2	0	169	169	169.3	36.71	
	CredNB_c	-60	-50	1	-	-	-	1	1.5	52.8	-	-	-	-	0	169	169	-	45.26		-60	-50	2	-	-	-	1	1.5	52.8	-60	-50	2	2	0	169	169	169.3	37.61	
	CredNB_b	-30	-5	1	-	-	-	1	1.5	78.7	-	-	-	-	-0.5	168.5	169	-	47.8		-30	-5	2	-	-	-	1	1.5	78.7	-30	-5	2	2	-0.5	168.5	169	169.3	38.54	
	CredNB_a	15	90	1	-	-	-	1	1.5	77.2	-	-	-	-	-0.5	168.5	169	-	51.06		15	90	2	-	-	-	1	1.5	77.2	15	90	2	2	-0.5	168.5	169	169.3	44.02	
	CredSB_d	-90	-40	1	-	-	-	1	1.5	65.5	-	-	-	-	0	169	169	-	48.46		-90	-40	2	-	-	-	1	1.5	65.5	-90	-40	2	2	0	169	169	169.3	42.21	
	CredSB_c	-40	-15	1	-	-	-	1	1.5	49.6	-	-	-	-	0	169	169	-	49.84		-40	-15	2	-	-	-	1	1.5	49.6	-40	-15	2	2	0	169	169	169.3	40.67	
	CredSB_b	-5	15	1	-	-	-	1	1.5	62.3	-	-	-	-	-0.5	168.5	169	-	47.56		-5	15	2	-	-	-	1	1.5	62.3	-5	15	2	2	-0.5	168.5	169	169.3	37.94	
	CredSB_a	0	90	1	-	-	-	1	1.5	64.1	-	-	-	-	-0.5	168.5	169	-	52.46		0	90	2	-	-	-	1	1.5	64.1	0	90	2	2	-0.5	168.5	169	169.3	44.94	
	ArgentiaW_a	-90	45	1	-	-	-	1	1.5	21.8	-	-	-	-	0	169	169	-	62		-90	45	2	-	-	-	1	1.5	21.8	-90	45	2	12.7	0	169	169	169.3	43.42	
	ArgentiaW_b	60	75	1	-	-	-	1	1.5	29.7	-	-	-	-	0	169	169	-	48.49		60	75	2	-	-	-	1	1.5	29.7	60	75	2	12.7	0	169	169	169.3	55.28	
	ArgentiaE_a	-90	70	1	-	-	-	1	1.5	21.6	-	-	-	-	0	169	169	-	60.95		-90	70	2	-	-	-	1	1.5	21.6	-90	70	2	12.7	0	169	169	169.3	41.58	
	ArgentiaE_b	45	60	1	-	-	-	1	1.5	33.7	-	-	-	-	0	169	169	-	47.18		45	60	2	-	-	-	1	1.5	33.7	45	60	2	12.7	0	169	169	169.3	54.3	
																			65.68												Note, this assumes barrier is complete with end returns - Argentia Road alone: 64.7 dBA						58.86	
																																						Barrier Insertion Loss Performance	-6.83	

ROAD TRAFFIC DATA

PROJECT NAME: Creditview Road

PAGE 1 OF 5

PROJECT NUMBER: 60304588

ENGINEER: ARO

BASE FILES: Roundabout analysis memo (May 22, 2015); Base drawing, Rev. 18 (April 20, 2015)

DATE: November 6, 2015

			NO PROJECT								Day			Road Only Parameters		
Receiver	Source	Road Segment	Year	AADTe	Growth Rate /yr	#yrs	AADT	%MT	%HT	% Day	#cars	#MT	#HT	Speed Limit (kph)	Grade %	Pavement Type
R01	CredNB_b	Creditview North from Bancroft intersection (1 lane)	2031	13900	0%	0	13900	3%	4%	90%	11634	375	500	60	2	1
	CredNB_a	Creditview North from Bancroft intersection (2 lane)	2031	13900	0%	0	13900	3%	4%	90%	11634	375	500	60	2	1
	CredSB_b	Creditview South to Bancroft intersection (1 lane)	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	2	1
	CredSB_a	Creditview South to Bancroft intersection (2 lane)	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	2	1
R01b	CredNB_b	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredSB_b	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrW	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlE	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
	KennCrE	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
R01c	CredNB_b	Creditview North from Velebit Crt intersection	2031	13930	0%	0	13930	3%	4%	90%	11659	376	501	60	0	1
	CredNB_a	Creditview North to Velebit Crt intersection	2031	13900	0%	0	13900	3%	4%	90%	11634	375	500	60	0	1
	CredSB_b	Creditview South to Velebit Crt intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	0	1
	CredSB_a	Creditview South from Velebit Crt intersection	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	0	1
	VelebitE+W	Velebit Crt to/from Creditview	2031	140	0%	0	140	3%	4%	90%	117	4	5	50	5	1
R02	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_b	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_b	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrW	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlE	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
	KennCrE_a	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
R03	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_b	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_b	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	KennCrW_a	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrE	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
	KennBlE	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
R04	CredNB	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	0	1
	CredSB	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	0	1
R04b	CredNB_a	Creditview North to Rivergate intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	0	1
	CredNB_b	Creditview North from Rivergate intersection	2031	14320	0%	0	14320	3%	4%	90%	11986	387	516	60	2	1
	CredSB_a	Creditview South from Rivergate intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	0	1
	CredSB_b	Creditview South to Rivergate intersection	2031	11720	0%	0	11720	3%	4%	90%	9810	316	422	60	2	1
	RgateEW	Rivergate EB + WB	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	0	1

ROAD TRAFFIC DATA

PROJECT NAME: Creditview Road

PAGE 2 OF 5

PROJECT NUMBER: 60304588

ENGINEER: ARO

BASE FILES: Roundabout analysis memo (May 22, 2015); Base drawing, Rev. 18 (April 20, 2015)

DATE: November 6, 2015

			NO PROJECT								Day			Road Only Parameters		
Receiver	Source	Road Segment	Year	AADTe	Growth Rate /yr	#yrs	AADT	%MT	%HT	% Day	#cars	#MT	#HT	Speed Limit (kph)	Grade %	Pavement Type
R05	CredNB_b	Creditview North from Falconer intersection	2031	14070	0%	0	14070	3%	4%	90%	11777	380	507	60	2	1
	CredNB_a	Creditview North to Falconer intersection	2031	14330	0%	0	14330	3%	4%	90%	11994	387	516	60	2	1
	CredSB_b	Creditview South to Falconer intersection	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	2	1
	CredSB_a	Creditview South from Falconer intersection	2031	11720	0%	0	11720	3%	4%	90%	9810	316	422	60	2	1
	FalconerW_a	Falconer West from Creditview intersection	2031	530	0%	0	530	3%	4%	90%	444	14	19	50	0	1
	FalconerE_a	Falconer East to Creditview intersection	2031	1050	0%	0	1050	3%	4%	90%	879	28	38	50	0	1
R06	CredNB	Creditview North to Argentia intersection	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredSB	Creditview South from Argentia intersection	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	0	1
R07	CredNB_b	Creditview North from Argentia intersection	2031	10800	0%	0	10800	3%	4%	90%	9040	292	389	60	0	1
	CredNB_a	Creditview North to Argentia intersection	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredSB_b	Creditview South to Argentia intersection	2031	10960	0%	0	10960	3%	4%	90%	9174	296	395	60	0	1
	CredSB_a	Creditview South from Argentia intersection	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	0	1
	ArgentiaW_a	Argentia West from Creditview intersection	2031	9940	0%	0	9940	3%	4%	90%	8320	268	358	60	0	1
	ArgentiaE_a	Argentia East to Creditview intersection	2031	6660	0%	0	6660	3%	4%	90%	5574	180	240	60	0	1
R08	CredNB_a	Creditview North to Old Creditview intersection	2031	11100	0%	0	11100	3%	4%	90%	9291	300	400	60	1	1
	CredNB_b	Creditview North from Old Creditview intersection	2031	10650	0%	0	10650	3%	4%	90%	8914	288	383	60	1	1
	CredNB_c	Creditview North from Old Creditview intersection	2031	10650	0%	0	10650	3%	4%	90%	8914	288	383	60	1	1
	CredSB_a	Creditview South from Old Creditview intersection	2031	10960	0%	0	10960	3%	4%	90%	9174	296	395	60	1	1
	CredSB_b	Creditview South to Old Creditview intersection	2031	10130	0%	0	10130	3%	4%	90%	8479	274	365	60	1	1
	CredSB_c	Creditview South to Old Creditview intersection	2031	10130	0%	0	10130	3%	4%	90%	8479	274	365	60	1	1
	OldCE_a	Old Creditview East from Creditview intersection	2031	3020	0%	0	3020	3%	4%	90%	2528	82	109	50	1	1
	OldCE_b	Old Creditview East from Creditview intersection	2031	3020	0%	0	3020	3%	4%	90%	2528	82	109	50	1	1
	OldCW_a	Old Creditview West to Creditview intersection	2031	3550	0%	0	3550	3%	4%	90%	2971	96	128	50	1	1
	OldCW_b	Old Creditview West to Creditview intersection	2031	3550	0%	0	3550	3%	4%	90%	2971	96	128	50	1	1

ROAD TRAFFIC DATA

PROJECT NAME: Creditview Road
PAGE 3 OF 5
PROJECT NUMBER: 60304588
ENGINEER: ARO
BASE FILES: Roundabout analysis memo (May 22, 2015); Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015)
DATE: November 6, 2015

			WITH PROJECT								Day			Road Only Parameters		
Receiver	Source	Road Segment	Year	AADTe	Growth Rate /yr	#yrs	AADT	%MT	%HT	% Day	#cars	#MT	#HT	Speed Limit (kph)	Grade %	Pavement Type
R01	CredNB_a	Creditview North from Bancroft intersection	2031	13900	0%	0	13900	3%	4%	90%	11634	375	500	60	2	1
	CredSB_c	Creditview South to Bancroft intersection	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	2	1
	CredSB_b	Creditview South to Bancroft intersection	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	2	1
	CredSB_a	Creditview South to Bancroft intersection	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	2	1
R01b	CredNB_d	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_c	Creditview North from Kenninghall intersection *	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_b	Creditview North to Kenninghall intersection *	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredSB_d	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	CredSB_c	Creditview South to Kenninghall intersection *	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	CredSB_b	Creditview South from Kenninghall intersection *	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrW	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlE_a	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
	KennBlE_b	Kenninghall Blvd East to Creditview intersection *	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
	KennCrE	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
R01c	CredNB_b	Creditview North from Velebit Crt intersection	2031	13930	0%	0	13930	3%	4%	90%	11659	376	501	60	0	1
	CredNB_a	Creditview North to Velebit Crt intersection	2031	13900	0%	0	13900	3%	4%	90%	11634	375	500	60	0	1
	CredSB_b	Creditview South to Velebit Crt intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	0	1
	CredSB_a	Creditview South from Velebit Crt intersection	2031	13640	0%	0	13640	3%	4%	90%	11417	368	491	60	0	1
	VelebitE+W	Velebit Crt to/from Creditview	2031	140	0%	0	140	3%	4%	90%	117	4	5	50	5	1
R02	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_b	Creditview North to Kenninghall intersection *	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_c	Creditview North to Kenninghall intersection *	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_d	Creditview North from Kenninghall intersection *	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_e	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_b	Creditview South from Kenninghall intersection *	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_c	Creditview South to Kenninghall intersection *	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	CredSB_d	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrW	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlE	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
	KennCrE_a	Kenninghall Cres East from Creditview intersection *	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
	KennCrE_b	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
R02R	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_b	Creditview North to Kenninghall intersection *	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_c	Creditview North to Kenninghall intersection *	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_d	Creditview North from Kenninghall intersection *	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_e	Creditview North from Kenninghall intersection *	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_f	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_b	Creditview South from Kenninghall intersection *	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_c	Creditview South to Kenninghall intersection *	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	CredSB_d	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrW	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlE	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
	KennCrE_a	Kenninghall Cres East from Creditview intersection *	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
	KennCrE_b	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1

ROAD TRAFFIC DATA

PROJECT NAME: Creditview Road | PAGE 4 OF 5

PROJECT NUMBER: 60304588 | ENGINEER: ARO

BASE FILES: Roundabout analysis memo (May 22, 2015) | DATE: November 6, 2015

Interim Roundabout Design Concept #1, Rev. 22 (May 22, 2015)

			WITH PROJECT								Day			Road Only Parameters		
Receiver	Source	Road Segment	Year	AADTe	Growth Rate /yr	#yrs	AADT	%MT	%HT	% Day	#cars	#MT	#HT	Speed Limit (kph)	Grade %	Pavement Type
R03	CredNB_a	Creditview North to Kenninghall intersection	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_b	Creditview North to Kenninghall intersection *	2031	13950	0%	0	13950	3%	4%	90%	11676	377	502	60	2	1
	CredNB_c	Creditview North from Kenninghall intersection *	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredNB_d	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	2	1
	CredSB_a	Creditview South from Kenninghall intersection	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_b	Creditview South from Kenninghall intersection *	2031	13590	0%	0	13590	3%	4%	90%	11375	367	489	60	2	1
	CredSB_c	Creditview South to Kenninghall intersection *	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	CredSB_d	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	2	1
	KennCrW_a	Kenninghall Cres West to Creditview intersection	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennCrW_b	Kenninghall Cres West to Creditview intersection *	2031	910	0%	0	910	3%	4%	90%	762	25	33	50	2	1
	KennBlW	Kenninghall Blvd West from Creditview intersection	2031	650	0%	0	650	3%	4%	90%	544	18	23	50	2	1
	KennCrE	Kenninghall Cres East from Creditview intersection	2031	200	0%	0	200	3%	4%	90%	167	5	7	50	2	1
	KennBlE	Kenninghall Blvd East to Creditview intersection	2031	2040	0%	0	2040	3%	4%	90%	1707	55	73	50	2	1
R04	CredNB	Creditview North from Kenninghall intersection	2031	14240	0%	0	14240	3%	4%	90%	11919	384	513	60	0	1
	CredSB	Creditview South to Kenninghall intersection	2031	11780	0%	0	11780	3%	4%	90%	9860	318	424	60	0	1
R05	CredNB_e	Creditview North from Falconer intersection	2031	14070	0%	0	14070	3%	4%	90%	11777	380	507	60	2	1
	CredNB_d	Creditview North from Falconer intersection *	2031	14070	0%	0	14070	3%	4%	90%	11777	380	507	60	2	1
	CredNB_c	Creditview North to Falconer intersection *	2031	14330	0%	0	14330	3%	4%	90%	11994	387	516	60	2	1
	CredNB_b	Creditview North to Falconer intersection *	2031	14330	0%	0	14330	3%	4%	90%	11994	387	516	60	2	1
	CredNB_a	Creditview North to Falconer intersection	2031	14330	0%	0	14330	3%	4%	90%	11994	387	516	60	2	1
	CredSB_d	Creditview South to Falconer intersection	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	2	1
	CredSB_c	Creditview South to Falconer intersection *	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	2	1
	CredSB_b	Creditview South from Falconer intersection *	2031	11720	0%	0	11720	3%	4%	90%	9810	316	422	60	2	1
	CredSB_a	Creditview South from Falconer intersection	2031	11720	0%	0	11720	3%	4%	90%	9810	316	422	60	2	1
	FalconerW_a	Falconer West from Creditview intersection	2031	530	0%	0	530	3%	4%	90%	444	14	19	50	0	1
	FalconerW_b	Falconer West from Creditview intersection	2031	530	0%	0	530	3%	4%	90%	444	14	19	50	0	1
	FalconerE_a	Falconer East to Creditview intersection	2031	1050	0%	0	1050	3%	4%	90%	879	28	38	50	0	1
	FalconerE_b	Falconer East to Creditview intersection	2031	1050	0%	0	1050	3%	4%	90%	879	28	38	50	0	1
R06	CredNB	Creditview North to Argentia intersection	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredSB	Creditview South from Argentia intersection	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	0	1
R07	CredNB_f	Creditview North from Argentia intersection	2031	10800	0%	0	10800	3%	4%	90%	9040	292	389	60	0	1
	CredNB_e	Creditview North from Argentia intersection *	2031	10800	0%	0	10800	3%	4%	90%	9040	292	389	60	0	1
	CredNB_d	Creditview North to Argentia intersection *	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredNB_c	Creditview North to Argentia intersection *	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredNB_b	Creditview North to Argentia intersection *	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredNB_a	Creditview North to Argentia intersection	2031	14060	0%	0	14060	3%	4%	90%	11768	380	506	60	0	1
	CredSB_d	Creditview South to Argentia intersection	2031	10960	0%	0	10960	3%	4%	90%	9174	296	395	60	0	1
	CredSB_c	Creditview South to Argentia intersection *	2031	10960	0%	0	10960	3%	4%	90%	9174	296	395	60	0	1
	CredSB_b	Creditview South from Argentia intersection *	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	0	1
	CredSB_a	Creditview South from Argentia intersection	2031	10940	0%	0	10940	3%	4%	90%	9157	295	394	60	0	1
	ArgentiaW_a	Argentia West from Creditview intersection	2031	9940	0%	0	9940	3%	4%	90%	8320	268	358	60	0	1
	ArgentiaW_b	Argentia West from Creditview intersection *	2031	9940	0%	0	9940	3%	4%	90%	8320	268	358	60	0	1
	ArgentiaE_a	Argentia East to Creditview intersection	2031	6660	0%	0	6660	3%	4%	90%	5574	180	240	60	0	1
	ArgentiaE_b	Argentia East to Creditview intersection *	2031	6660	0%	0	6660	3%	4%	90%	5574	180	240	60	0	1

PROJECT NAME: Creditview Road

PAGE 5 OF 5

PROJECT NUMBER: 60304588

ENGINEER: ARO

ROAD TRAFFIC DATA

DATE: November 6, 2015

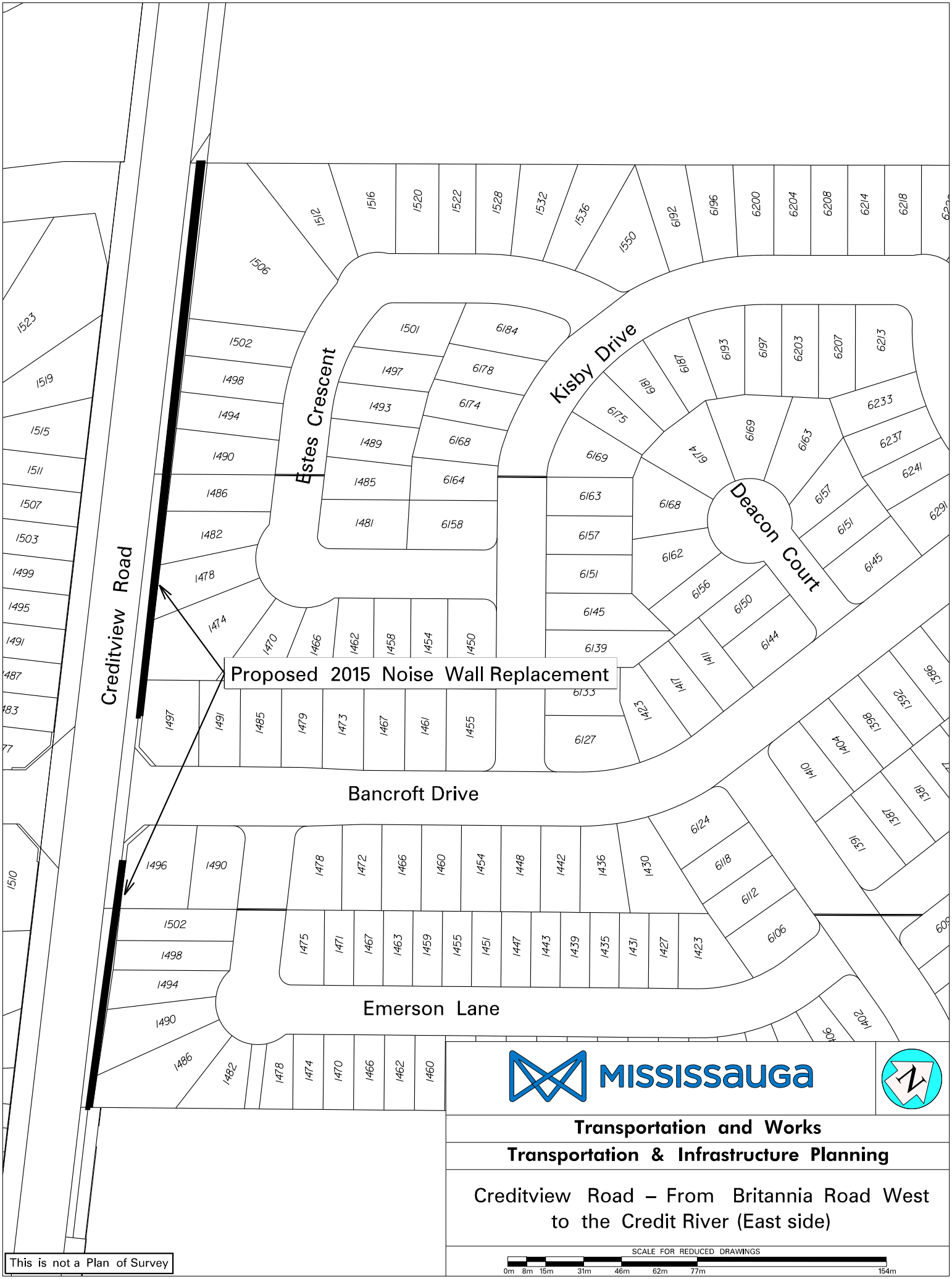
R08	CredNB_a	Creditview North to Old Creditview intersection	2031	111000	0%	0	111000	3%	4%	90%	92907	2997	3996	60	1	1
	CredNB_b	Creditview North from Old Creditview intersection	2031	10650	0%	0	10650	3%	4%	90%	8914	288	383	60	1	1
	CredNB_c	Creditview North from Old Creditview intersection	2031	10650	0%	0	10650	3%	4%	90%	8914	288	383	60	1	1
	CredSB_a	Creditview South from Old Creditview intersection	2031	10960	0%	0	10960	3%	4%	90%	9174	296	395	60	1	1
	CredSB_b	Creditview South to Old Creditview intersection	2031	10130	0%	0	10130	3%	4%	90%	8479	274	365	60	1	1
	CredSB_c	Creditview South to Old Creditview intersection	2031	10130	0%	0	10130	3%	4%	90%	8479	274	365	60	1	1
	OldCE_a	Old Creditview East from Creditview intersection	2031	3020	0%	0	3020	3%	4%	90%	2528	82	109	50	1	1
	OldCE_b	Old Creditview East from Creditview intersection	2031	3020	0%	0	3020	3%	4%	90%	2528	82	109	50	1	1
	OldCW_a	Old Creditview West to Creditview intersection	2031	3550	0%	0	3550	3%	4%	90%	2971	96	128	50	1	1
	OldCW_b	Old Creditview West to Creditview intersection	2031	3550	0%	0	3550	3%	4%	90%	2971	96	128	50	1	1

Notes to tables:

* = Roundabout segment

Pavement Type: 1 = Typical Asphalt

Appendix E: City of Mississauga Proposed 2015 Noise Wall Replacement



This is not a Plan of Survey

MISSISSAUGA

Transportation and Works

Transportation & Infrastructure Planning

Creditview Road – From Britannia Road West to the Credit River (East side)

SCALE FOR REDUCED DRAWINGS

0m 8m 15m 31m 46m 62m 77m 154m

Appendix F: City of Mississauga Noise Control By-Law 360-79

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

(Amended by 77-85, 1298-86, 755-87, 62-92, 230-94, 303-00, 495-03, 124-05, 110-06, 92-07, 120-07, 127-07, 248-07, 73-08, 99-08, 299-08)

WHEREAS the Council of a local municipality is empowered under The Environmental Protection Act, 1971, as amended, to pass by-laws, subject to the approval of the Minister of the Environment, for regulating or prohibiting the emission of sounds or vibrations;

AND WHEREAS it is the policy of the Council to reduce and control unusual or unnecessary sounds or vibrations which may degrade the quality and tranquillity of the lives of the inhabitants of the City of Mississauga or cause nuisance.

NOW THEREFORE the Council of the Corporation of the City of Mississauga ENACTS as follows:

INTERPRETATION

1. In this by-law,

***"City"* means the City of Mississauga in the Regional Municipality of Peel**

***"Commissioner"* means the Commissioner of Transportation and Works for the City or his or her designate; (299-08)**

***"construction"* includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting, equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith;**

***"construction equipment"* means any equipment or device designed and intended for use in construction or material handling, including but not limited to, air compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, excavators, trenchers, cranes, derricks, loaders, scrapers, pavers, generators, off-highway haulers or trucks, ditchers, compactors and rollers, pumps, concrete mixers, graders or other material handling equipment;**

"*Council*" means the Council of the Corporation of the City of Mississauga;

***"Minister"* means the Minister of the Environment;**

***"Ministry"* means the Ministry of the Environment;**

***"motor vehicle"* includes an automobile, motorcycle, motor assisted bicycle unless otherwise indicated in The Highway Traffic Act, and any other vehicle propelled or driven otherwise than by muscular power, but does not include the cars of electric or steam railways, or other motor vehicles running only upon rails, or a motorized snow vehicle, traction engine, farm tractor, self-propelled implement of husbandry or road-building machine within the meaning of The Highway Traffic Act.**

***"motorized conveyance"* includes a vehicle and any other device employed to transport a person or persons or goods from place to place, but does not include any such device or vehicle if operated only within the premises of a person or if propelled or driven only by muscular, gravitational or wind power;**

***"noise"* means unwanted sound;**

***"Noise Control Officer"* means a person designated by the Commissioner for the City as a noise control officer; (By-law 755-87, 299-08)**

"*point of reception*" means any point on the premises of a person where sound or vibration originating from other than those premises is received;

***"Quiet Zone"* means those areas of the City where quiet is of particular importance and as more particularly designated in Schedule 4 to this By-law.**

***"Residential Area"* means any area containing dwellings which are normally used for human habitation.**

ADMINISTRATION

2. The Commissioner shall be responsible for the administration and enforcement of this by-law. (By-law 755-87, 495-03, 299-08)

GENERAL PROHIBITION

3. No person shall emit or cause or permit the emission of sound resulting from an act listed in Schedule 1 to this by-law and which sound is clearly audible at a point of reception.

PROHIBITION BY TIME AND PLACE

4. No person shall emit or cause or permit the emission of sound resulting from any act listed in Column 1 to Schedule 2 to this by-law if clearly audible at a point of reception located in a residential area or quiet zone within a prohibited period of time for such an area as set out in Column 2 to Schedule 2 to this By-law.

PUBLIC SAFETY EXEMPTION

5. The provisions of Section 3 and 4 do not apply to the emission of a sound or vibration in connection with emergency measures undertaken:

(a) for the immediate health, safety or welfare of the inhabitants of the City or any of them; or

(b) for the preservation or restoration of property.

EXEMPTION OF TRADITIONAL FESTIVE OR RELIGIOUS ACTIVITIES

6. The provisions of Section 3 and 4 do not apply to the emission of sounds or vibrations made by persons in connection with any of the traditional, festive, religious or other activities set out in Schedule 3 to this by-law.

GRANT OF EXEMPTION BY COUNCIL

7. (1) Any person may apply for an exemption from the provisions of Sections 3 and 4 of this By-law, with respect to any source of sound or vibration. (299-08)

(2) An application for exemption under Subsection (1) shall be in writing and shall contain:

(a) the name and address of the applicant,

(b) a description of the source of sound or vibration in respect of which exemption is being sought,

(c) a statement of the section of the by-law from which exemption is sought,

(d) the period of time (not in excess of six (6) months) for which the exemption is sought,

(e) the reasons why the exemption is being sought,

(f) proof of publication for two consecutive days within the preceding ten (10) days in a newspaper of general circulation within the City, of a notice of intention to apply for any exemption to this by-law, received or by the distribution of a flyer as prescribed by the City to all residences within a 500 meter radius of the subject property containing the information required by Clauses (a) through (e) hereof, stating the date upon which objections may be submitted to City staff. (299-08)

(g) the application fee. (299-08)

(3) An application for an exemption completed in accordance with section 7(2) shall be delivered to the Commissioner. (299-08)

(4) The Commissioner may grant an exemption, in whole or in part, with terms and conditions, subject to the provisions of this By-law. (299-08)

(5) In considering the completed application for any exemption, the Commissioner shall take into account the following: (299-08)

(a) If an exemption is granted, a time limit shall be specified, and an exemption shall not exceed six months.

(b) The Commissioner shall consult with the affected Ward Councillor on an application for an exemption and the consultation shall include any terms and conditions that may be attached to an exemption.

(c) Any correspondence received regarding the application as a result of the distribution of the Notice or newspaper advertisement referred to in Section 7(2)(f).

(d) The proximity of the sound to a Residential Area and the likelihood that the sound for which an exemption is requested may negatively affect persons in a Residential Area.

(e) Whether any negative impacts under clauses (c) or (d) can be reduced with the use of mitigation measures including limiting the sound to certain days or times of the day.

(6) A breach by the applicant of any of the terms or conditions imposed by the Commissioner in granting an exemption shall immediately render the exemption null and void. (299-08)

(7) Notwithstanding that the authority to grant an exemption is delegated to the Commissioner, and that he or she may have already exercised the delegated power, Council shall retain the right to exercise the authority to grant or deny an exemption in accordance with the conditions set out in section 7 (5) of this By-law. (299-08)

SEVERABILITY

8. If a court of competent jurisdiction declares any section or part of a section of this by-law invalid, such section or part of a section shall not be construed as having persuaded or influenced Council to pass the reminder of the by-law and it is hereby declared that the remainder of the by-law shall be valid and shall remain in force.

PENALTY

9. (1) Every person who contravenes any provision of this by-law is guilty of an offence. Pursuant to the provisions of the Provincial Offences Act, R. S. O. 1990, c.P. 33 upon conviction a person is liable to a fine of not more than $5,000, exclusive of costs. (by-law 63-92)

(2) In addition to the provisions of Subsection (1), the Court in which the information is first laid and any court of competent jurisdiction thereafter, may issue an order prohibiting the contravention and repetition of the offence by the person convicted, and such order shall be in addition to any penalty imposed on the person convicted.

10. (1) By-law Number 7364 enacted by the former Town of Mississauga and any other by-law passed by the former Town of Mississauga to control noise is hereby repealed.

(2) By-law Number 957, enacted by the former Village of Port Credit and any other by-law passed by the former Village of Port Credit to control noise is hereby repealed.

(3) By-law Number 66-36, enacted by the former Town of Streetsville and any other by-law passed by the former Town of Streetsville to control noise is hereby repealed.

(4) By-law 2370 enacted by the former Township of Toronto and any other by-law passed by the former Township of Toronto to control noise is hereby repealed.

(5) Any Noise Control By-law, enacted by the Town of Oakville in that part of Oakville which was annexed by the City of Mississauga, and more particularly described in Section 2(1)(a) of The Regional Municipality of Peel Act, 1973, S.O. 1973, c. 60, is hereby repealed.

READ A FIRST AND SECOND TIME THIS 28TH DAY OF MAY, 1979.
READ A THIRD TIME AND FINALLY PASSED THIS 28TH DAY OF JANUARY 1980.
Signed by: "Hazel McCallion", Mayor "Terence L. Julian", Clerk
This by-law is approved pursuant to the provisions of The Environmental Protection Act, 1971, as amended, at Toronto, this 9th day of April, 1980.
Signed by: "Harry Parrott", Minister of the Environment

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 1 TO BY-LAW NUMBER 360-79
GENERAL PROHIBITIONS

1. **The racing of any motorized conveyance other than in a racing event regulated by law.**

2. **The operation of a motor vehicle at a speed and in a manner which causes its tires to squeal.**

3. **The operation of any combustion engine or pneumatic device without an effective exhaust or intake muffling device in good working order and in constant operation.**

4. **The operation of a vehicle or a vehicle with a trailer resulting in banging, clanking, squealing or other like sounds due to improperly secured load or equipment, or inadequate maintenance.**

5. **The operation of an engine or motor in, or on, any motor vehicle or item of attached auxiliary equipment for a continuous period exceeding five minutes, while such vehicle is stationary in a Residential Area or a Quiet Zone unless:**

   (a) the original equipment manufacturer specifically recommends a longer idling period for normal and efficient operation of the motor vehicle in which case such recommended period shall not be exceeded; or,

   (b) operation of such engine or motor is essential to a basic function of the vehicle or equipment, including but not limited to, operation of ready-mixed concrete trucks, lift platforms and refuse compactors; or,

   (c) weather conditions justify the use of heating or refrigerating systems powered by the motor or engine for the safety and welfare of the operator, passengers or animals, or the preservation of perishable cargo, and the vehicle is stationary for purposes of delivery or loading; or,

   (d) prevailing low temperatures make longer idling periods necessary immediately after starting the motor or engine; or,

   (e) the idling is for the purpose of cleaning and flushing the radiator and associated circulation system for seasonal change of antifreeze, cleaning of the fuel system, carburettor or the like, when such work is performed other than for profit.

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 1 TO BY-LAW NUMBER 360-79
GENERAL PROHIBITIONS

6. **The operation of a motor vehicle horn or other warning device except when required or authorized by law or in accordance with good safety practices.**

7. **The operation of any item of construction equipment in a Quiet Zone or Residential Area without effective muffling devices in good working order and in constant operation.**

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

A - 23:00 hrs. of one day to 07:00 hrs. next day (09:00 hrs. Sundays)

B - 19:00 hrs. of one day to 07:00 hrs. next day (09:00 hrs. Sundays)

C - 17:00 hrs. of one day to 07:00 hrs. next day (09:00 hrs. Sundays)

D - All Day Sundays and Statutory Holidays

E - 17:00 hrs. of one day to 07:00 hrs. next day

F - 19:00 hrs. of one day to 07:00 hrs. next day

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

COLUMN 1		COLUMN 2 PROHIBITED PERIOD OF TIME	
		QUIET ZONE	RESIDENTIAL AREA
1.	The operation of any auditory signalling device, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means except where required or authorized by law or in accordance with good safety practices.	At Any Time	B & D
2.	The operation of any electronic device or group of connected devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.	At Any Time	C
3.	All selling or advertising by shouting or outcry or amplified sound.	At Any Time	B & D
4.	Loading, unloading, delivering, packing, unpacking, or otherwise handling any containers, products, materials, or refuse, whatsoever, unless necessary for the maintenance of essential services or the moving of private household effects.	B	B & D
5.	The operation of any construction equipment in connection with construction.	E & D	F & D

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

	COLUMN 1	COLUMN 2 PROHIBITED PERIOD OF TIME QUIET ZONE	 RESIDENTIAL AREA
6.	The detonation of fireworks or explosive devices not used in construction.	At Any Time	A - unless otherwise permitted in accordance with the provisions of By-law 160-74 or its successors
7.	The discharge of firearms.	At Any Time	At Any time- unless in accordance with the provisions of By-law 331-77 or its successors.
8.	The operation of a combustion engine which (i) is, or (ii) is used in, or (iii) is intended to be used in, a toy, or a model or replica of any device, which model or replica has no function other than amusement and which is not a conveyance.	At Any Time	A
9.	The operation of any powered rail car including but not limited to refrigeration cars, locomotives or self-propelled passenger cars, while stationary on property not owned or controlled by a railway governed by The Canada Railway Act	At Any Time	A

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 2 TO BY-LAW NUMBER 360-79
PROHIBITED PERIODS OF TIME:

	COLUMN 1	**COLUMN 2** PROHIBITED PERIOD OF TIME	
		QUIET ZONE	**RESIDENTIAL AREA**
10.	**The operation of any motorized conveyance other than on a highway or other place intended for its operation.**	**At Any Time**	**B**
11.	**The venting, release or pressure relief of air, steam or other gaseous material, product or compound from any autoclave, boiler, pressure vessel, pipe, valve, machine, device or system.**	**At Any Time**	**A**
12.	**Persistent barking, calling or whining or other persistent noise making by any domestic pet.**	**At Any Time**	**At Any Time**
13.	**The operation of any powered or nonpowered tool for domestic purposes other than snow removal.**	**A**	**A**
14.	**The operation of solid waste bulk lift or refuse compacting equipment.**	**B**	**A**
15.	**The operation of a commercial car wash with air drying equipment.**	**B**	**B**
16.	**Yelling, shouting, hooting, whistling or singing.**	**At Any Time**	**A**

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 3 TO BY-LAW 360-79
ACTIVITIES TO WHICH THE BY-LAW DOES NOT APPLY

(amended by By-law 495-03, 124-05, 110-06, 92-07, 120-07, 127-07, 248-07, 73-08, 99-08)

ACTIVITIES TO WHICH THE BY-LAW DOES NOT APPLY	LOCATION
Airport Taxi Limousine Sports Tournament & Picnic	Wildwood Park 3430 Derry Road West
Ashworth Square Co-operative Multicultural Day	Ashworth Square Co-operative Complex 3180 Kirwin Avenue
BOT Construction Group construction of Mclaughlin Road at Highway 401 between March 1, 2008 and December 31, 2008	Mclaughlin Road at Highway 401
Can-Sikh Festival	Wildwood Park 3430 Derry Road West
Canadian Cancer Society – Relay for Life	John Fraser Secondary School 2665 Erin Centre Boulevard
Carolling in the Park	Port Credit Memorial Park 22 Stavebank Road North
Celebrate the Season	Civic Square 300 City Centre Drive
Desh Bhagat	Wildwood Park 3430 Derry Road West
Fall Fair and Folk Festival	Bradley Museum 1620 Orr Road
Graham Bros. Construction of Confederation Parkway from Rathburn Road West to the Hydro Corridor north of Highway 403 between July 5, 2007 and September 30, 2008	Confederation Parkway from Rathburn Road West to Hydro Corridor
Historic Halloween Fun	Benares Museum 1507 Clarkson Road North
Kalayaan Festival	Mississauga Valley Park 1275 Mississauga Valley Boulevard
Meadow-Wood Rattray Ratepayers Picnic	Bradley Museum 1620 Orr Road
Ministry of Transportation of Ontario reconstruction of the median, a median barrier, and the installation of a high mast lighting system on the Queen Elizabeth Way (QEW) between September 1, 2007 to August 31, 2010	Queen Elizabeth Way (QEW) between Mississauga Road and Winston Churchill Boulevard
Ministry of Transportation of Ontario construction related to the Queen Elizabeth Way (QEW)/Hurontario Street Interchange Improvements project between August 1, 2007 to November 30, 2009.	Queen Elizabeth Way (QEW) and Hurontario Street Interchange
Mississauga Canada Day Celebration	300 City Centre Drive
Mississauga Corporate Challenge	J.C. Saddington Park 53 Lake Street

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79

SCHEDULE 3 TO BY-LAW 360-79
ACTIVITIES TO WHICH THE BY-LAW DOES NOT APPLY

Mississauga Marathon	**Civic Square** **300 City Centre Drive,** **Lakefront Promenade Park** **800 Lakefront Promenade**
Mississauga Rotary Ribfest	**Civic Square** **300 City Centre Drive**
Mississauga Waterfront Festival	**Port Credit Memorial Park** **22 Stavebank Road North**
Mount Zion Apostolic Church Picnic	**Wildwood Park** **3430 Derry Road West**
My Mississauga	**Civic Square** **300 City Centre Drive**
On the Verandah Concert Series	**Benares Museum** **1507 Clarkson Road North**
Port Credit Paint the Town Red	**Port Credit Memorial Park** **22 Stavebank Road North**
Salmon Derby	**J.C. Saddington Park** **53 Lake Street**
San Salvidor Del Mundo Festival	**Fred Halliday Park** **2187 Stir Crescent**
Shakespeare Under the Stars	**Bradley Museum** **1620 Orr Road**
Sherwood Forrest Family Fun Day	**Sherwood Green Park** **1864 Deer's Wold**
Streetsville Canada Celebration	**Streetsville Memorial Park** **335 Church Street**
Streetsville Founders Bread & Honey Festival	**Streetsville Memorial Park** **335 Church Street**
Sunset Concert Series	**Civic Square** **300 City Centre Drive,** **St. Lawrence Park** **141 Lakeshore Road East**
Southside Shuffle	**Port Credit Memorial Park** **22 Stavebank Road North**
Teddy Bears' Picnic	**Benares Museum** **1507 Clarkson Road North**
University of Santos Thomas Alumni Annual Picnic	**Mississauga Valley Park** **1275 Mississauga Valley Boulevard**

THE CORPORATION OF THE CITY OF MISSISSAUGA
NOISE CONTROL BY-LAW 360-79
SCHEDULE 4 TO BY-LAW NUMBER 360-79
QUIET ZONES

The Quiet Zones are those areas contained within the dotted lines on Maps A, B, C and D which are attached to By-law 360-79

THE CORPORATION OF THE CITY OF MISSISSAUGA
THE NOISE CONTROL BY–LAW 360–79

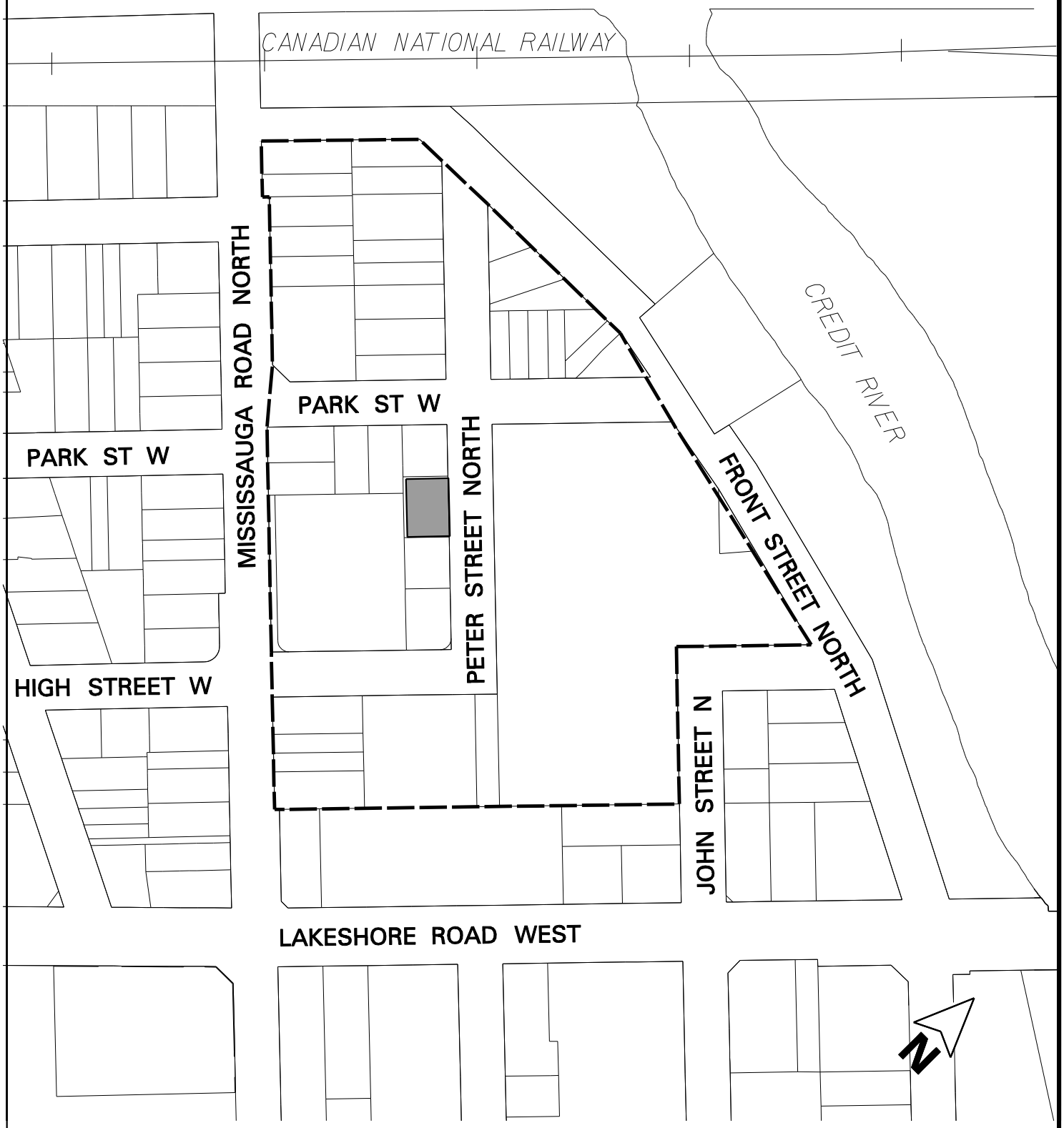
① TRILLIUM HEALTH CARE
100 THE QUEENSWAY WEST

② CHELSEY PARK NURSING HOME
2250 HURONTARIO STREET

③ EXTENDICARE NURSING HOME
55 THE QUEENSWAY WEST

MAP A– BY–LAW 360–79

THE CORPORATION OF THE CITYOF MISSISSAUGA
THE NOISE CONTROL BY–LAW 360–79

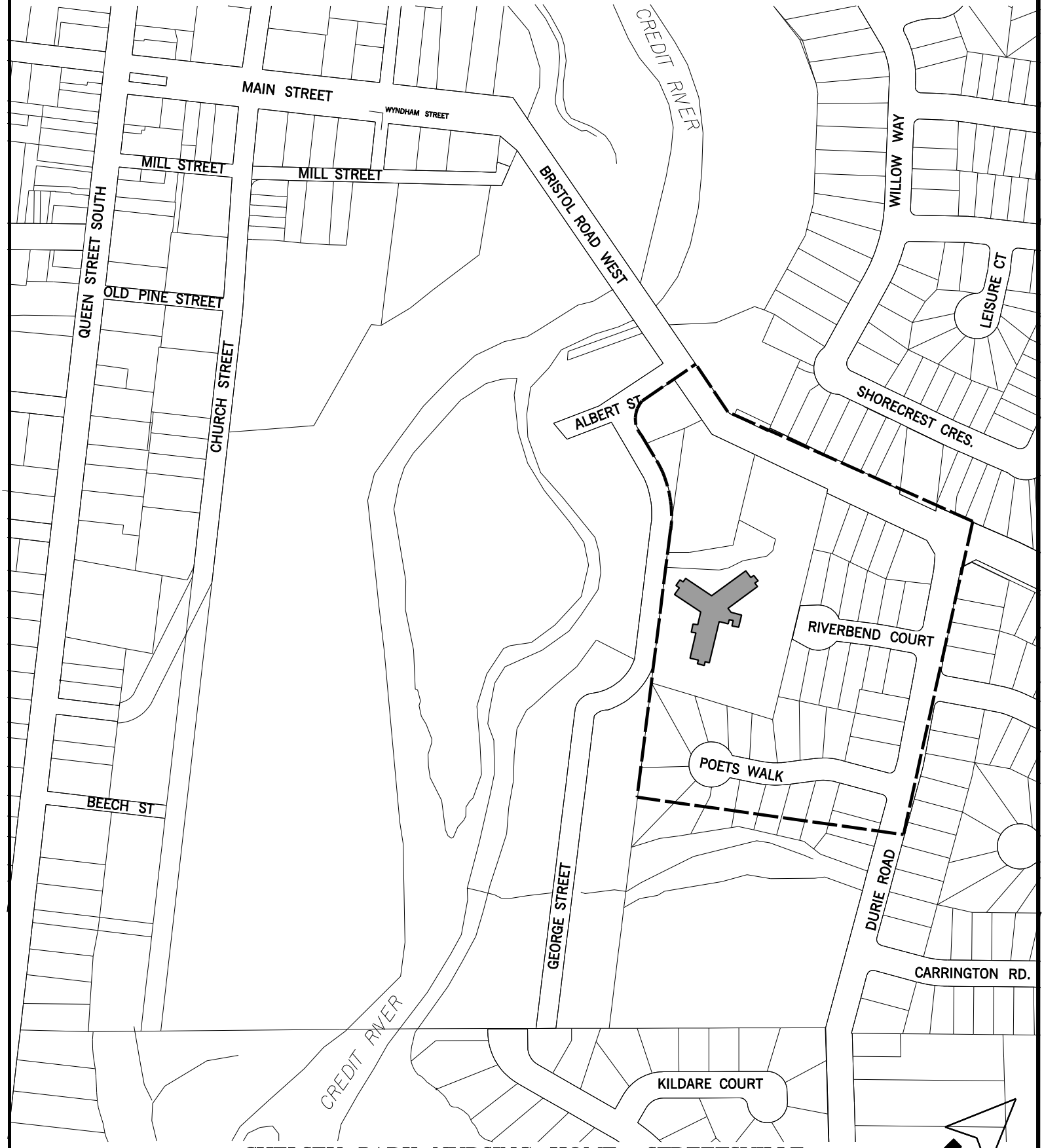


TAARA NURSING HOME
26 PETER STREET NORTH

MAP B– BY–LAW 360–79

THE CORPORATION OF THE CITY OF MISSISSAUGA

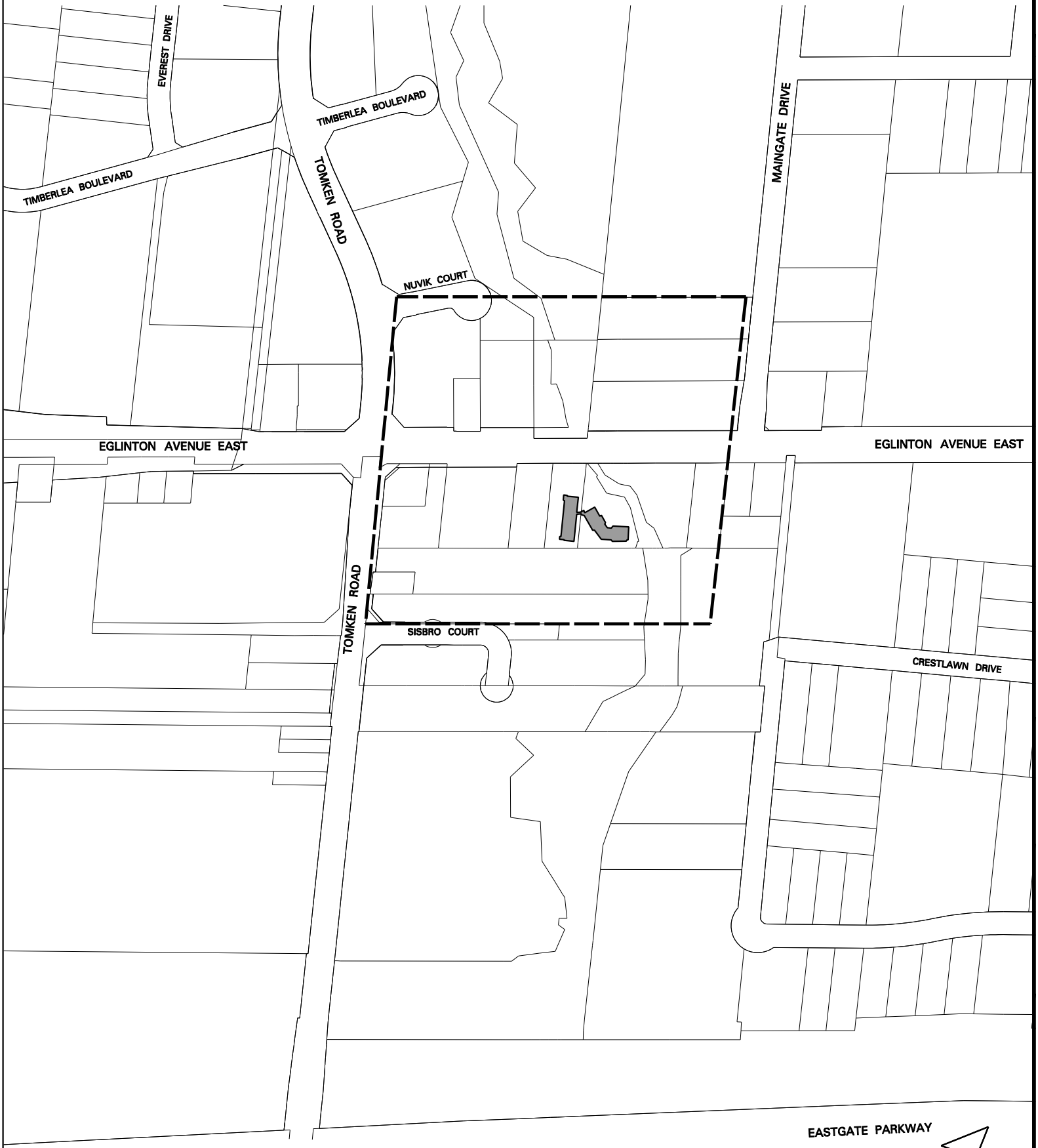
THE NOISE CONTROL BY–LAW 360–79



CHELSEY PARK NURSING HOME STREETSVILLE
87 MAIN STREET

MAP C– BY–LAW 360–79

THE CORPORATION OF THE CITY OF MISSISSAUGA
THE NOISE CONTROL BY-LAW 360-79



TYDALL NURSING HOME
1060 EGLINTON AVENUE EAST

MAP D- BY LAW 360-79