10 Aspen Springs Drive

Environmental Noise Assessment

Bowmanville, ON

SLR Project No: 241.30367.00000

May 2022

ENVIRONMENTAL NOISE ASSESSMENT
10 Aspen Springs Drive
Bowmanville, Ontario
SLR Project No: 241.30367.00000

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1. INTRODUCTION

SLR Consulting (SLR) was retained by Sunray Group to conduct an environmental noise assessment for the proposed mixed-use development (the Project) at 10 Aspen Springs Drive, Bowmanville, Ontario. This report is in support of the Official Plan Amendment (OPA) and Zoning Bylaw Amendment (ZBA) applications for the development.

1.1 FOCUS OF REPORT

In keeping with the Municipality of Clarington, Durham Region and Ministry of Environment, Conservation and Parks (MECP) requirements, this report examines the potential for:

- Noise impacts of the environment on the proposed development;
- Noise impacts of the proposed development on the environment; and
- Noise impacts of the proposed development on itself.

1.2 NATURE OF THE SURROUNDINGS

The proposed development site is bounded by the following:

- Land zoned for residential use, with the CPR Belleville Subdivision and agricultural/commercial lands beyond, to the north;
- Bowmanville Avenue, with low density residential dwellings beyond to the east;
- Aspen Springs Drive, with low density residential dwellings beyond to the south; and
- Land zoned for residential uses with low rise condominium/townhouse developments to the west.

Note, based on the Transport Project Assessment Process (TPAP) Environment Assessment Study for Oshawa to Bowmanville Rail Service Expansion (AECOM, February 2011), the future Bowmanville GO Station may in the future be located north of the proposed development along the existing CPR Subdivision, west of Bowmanville Avenue. SLR understands that the final location of the Bowmanville GO Station has not been determined, so the location assessed in the TPAP study was used. This would represent the predictable worst-case scenario in terms of considering the nature of the surroundings.

A context plan is shown in Figure 1, and zoning information for the site and surrounding area is shown in Figure 2.

1.3 DESCRIPTION OF PROPOSED DEVELOPMENT

The Project is located at 10 Aspen Springs Drive, Bowmanville, at the northeast corner of the intersection of Aspen Springs Drive and Bowmanville Avenue/Martin Road. The site is zoned for commercial (C6-12) land used based on Clarington Zoning By-Law 84-63 and is currently vacant. The proposed development will have one (1) two-tower mixed-use building with 4-storey podium, containing residential and commercial land uses, and one (1) mid-rise residential building.

The two-tower mixed use building (Building 1) will be located along the east side of the site, adjacent to Bowmanville Avenue. It will have a four-storey podium structure with ground floor commercial spaces, and 67 residential uses above. The two Building 1 towers, Tower A (north) and Tower B (south), will be 25

storeys in height, with 209 residential units planned per tower. A common rooftop amenity space is planned atop the podium between the two towers. Three levels of underground parking/storage will be provided.

The mid-rise residential building will be located at the southwest portion of the site, along Aspen Springs Drive. It will be 9 storeys in height, with a rooftop common amenity space planned atop the building. Three levels of underground parking/storage will be provided, part of a common underground parking structure shared with the other on-site building.

An at-grade publicly accessible common space will be located between Building 2 and the mixed-use Building 1. West of Tower A at the north side of the site will be a small, gated dog exercise and relief area.

Access to the site will be from Aspen Springs Drive at the southwest corner of the site, and from Bowmanville Avenue at the northeast corner of the site (via a shared private laneway with future adjacent development).

A copy of the site plan and floor plans are included for reference in Appendix A. The site plan is shown in part in Figure 3.

PART 1: IMPACTS OF THE ENVIRONMENT ON THE DEVELOPMENT

In assessing potential noise impacts associated with the proposed development, the focus of this report is to evaluate:

- Roadway noise impacts from Bowmanville Avenue/Martin Road, Aspen Springs Drive, and King Street West/Highway 2 on the development;
- Railway noise impacts from the CPR Belleville Subdivision, accounting for freight rail traffic and potential future Metrolinx GO Train traffic associated with the Bowmanville GO Station;
- Stationary source noise impacts from the commercial land uses located to the northwest of the site; and
- Stationary source noise impacts from the proposed development mechanical equipment onto the development itself, and onto surrounding noise-sensitive receptors.

An assessment of aircraft noise is not considered necessary as there are no airports located in the surrounding area.

The Project is located in proximity to the CPR Belleville Subdivision, which is a potential source of vibration. A detailed vibration assessment was completed by SLR and provided under a separate cover.

2. TRANSPORTATION NOISE IMPACTS

2.1 TRANSPORTATION NOISE SOURCES

The transportation sources of interest with potential to produce noise at the proposed development are road noise from Bowmanville Avenue/Martin Road, Aspen Springs Drive, and King Street/Highway 2, and rail noise from trains travelling along the CPR Belleville Subdivision (freight, and potential future GO passenger trains).

Road and rail noise from these sources have been predicted, and this information has been used to determine façade, ventilation, and warning clause requirements for the proposed development.

2.2 SURFACE TRANSPORTATION NOISE CRITERIA

2.2.1 MINISTRY OF ENVIRONMENT PUBLICATION NPC-300

Noise Sensitive Developments

Ministry of the Environment, Conservation and Parks (MECP) Publication NPC-300 provides sound level criteria for noise sensitive developments. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A – Background. Tables 1 to 4 summarize the applicable surface transportation (road and rail) criteria limits.

Location Specific Criteria

Table 1 summarizes criteria in terms of energy equivalent sound exposure (L_{eq}) levels for specific noise-sensitive locations. Both outdoor and indoor locations are identified, with the focus of outdoor areas being amenity spaces. Indoor criteria vary with sensitivity of the space. As a result, Sleeping Quarters have more stringent criteria than Living/Dining room spaces.

Table 1: MECP Publication NPC-300 Sound Level Criteria for Road and Rail Traffic

Type of Space	Time Period	Equivalent Sound Exposure Level - L_{eq} (dBA)		Assessment Location
		Road	Rail [1]	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	55	Outdoors [2]
Living / Dining Rooms	Daytime (0700-2300h)	45	40	Indoors [3]
	Night-time (2300-0700h)	45	40	Indoors [3]
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors [3]
	Night-time (2300-0700h)	40	35	Indoors [3]

Notes to Table 1:

[1] Whistle noise is excluded for OLA noise assessments and included for indoor (Living/Dining Room and Sleeping Quarters) assessments.

[2] Road and Rail noise impacts are to be combined for assessment of OLA impacts.

[3] An assessment of indoor noise levels is required only if the criteria in Table 4 are exceeded.

Outdoor Amenity Areas

Table 2 summarizes the noise mitigation requirements for communal outdoor amenity areas ("Outdoor Living Areas" or "OLAs").

For the assessment of outdoor sound levels, the surface transportation noise impact is determined by combining road and rail traffic sound levels. Whistle noise due to railway trains is not included for OLAs.

Table 2: MECP Publication NPC-300 Outdoor Living Area Mitigation Requirements

Time Period	Equivalent Sound Level in Outdoor Living Area (dBA)	Mitigation Requirements
Daytime (0700-2300h)	≤ 55	• None
	56 to 60 incl.	• Noise barrier **OR** Warning Clause A
	> 60	• Noise barrier to reduce noise to 55 dBA **OR** • Noise barrier to reduce noise to 60 dBA and Warning Clause B

Ventilation and Warning Clauses

Table 3 summarizes requirements for ventilation where windows would potentially have to remain closed as a means of noise control. Despite implementation of ventilation measures where required, if sound exposure levels exceed the guideline limits in Table 1, warning clauses advising future occupants of the potential excesses are required. Warning clauses also apply to OLAs.

Table 3: MECP Publication NPC-300 Ventilation & Warning Clause Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA)		Ventilation and Warning Clause Requirements [2]
		Road	Rail [1]	
Outdoor Living Area	Daytime (0700-2300h)	56 to 60 incl.		Type A Warning Clause
Plane of Window	Daytime (0700-2300h)	≤ 55		None
		56 to 65 incl.		Forced Air Heating /provision to add air conditioning + Type C Warning Clause
		> 65		Central Air Conditioning + Type D Warning Clause
	Night-time (2300-0700h)	51 to 60 incl.		Forced Air Heating/ provision to add air conditioning + Type C Warning Clause
		> 60		Central Air Conditioning + Type D Warning Clause

Notes to Table 3:

[1] Whistle noise is excluded.

[2] Road and Rail noise impacts are to be combined for determining ventilation and warning clause requirements.

Warning clause requirements are also in place for development located within 300 m of a Canadian Pacific Railway (CPR) and/or Metrolinx rail right-of-way (RoW).

Building Shell Requirements

Table 4 provides sound level thresholds which, if exceeded, require the building shell and components (i.e., wall, windows) to be designed and selected accordingly to ensure that the applicable indoor sound criteria are met.

Table 4: MECP Publication NPC-300 Building Component Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA))		Component Requirements
		Road	Rail [1]	
Plane of Window	Daytime (0700-2300h)	> 65	> 60	Designed/Selected to Meet Indoor Requirements [2]
	Night-time (2300-0700h)	> 60	> 55	

Notes to Table 4:

[1] Whistle noise is included in the assessment.

[2] Building component requirements are to be assessed separately for Road and Rail noise. The resulting sound isolation parameters are required to be combined to determine the overall acoustic parameter.

2.2.2 RAILWAY ASSOCIATION OF CANADA/FEDERATION OF CANADIAN MUNICIPALITIES GUIDELINES

Metrolinx and CPR have adopted the guidelines for development in proximity to railway corridors published by the Rail Associated of Canada/Federation of Canadian Municipalities. The CPR Belleville Subdivision in the proposed development area is considered a Principal Branch Line. Accordingly, the applicable RAC/FCM guideline limits are presented in Table 5. The guidelines generally follow those of the MECP outlined in NPC-300.

Table 5: RAC/FCM Guidelines for Rail Noise

Type of Space	Time Period	Equivalent Sound Exposure Level - L_{eq} (dBA)	Assessment Location
		Rail	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	Outdoors
Living / Dining Rooms	Daytime (0700-2300h)	40	Indoors
	Night-time (2300-0700h)	---	Indoors
Sleeping Quarters	Daytime (0700-2300h)	---	Indoors
	Night-time (2300-0700h)	35	Indoors

2.3 TRAFFIC DATA AND FUTURE PROJECTIONS

2.3.1 ROAD TRAFFIC DATA

Ultimate forecasted AADT volumes for the regional roads (Bowmanville Avenue and King Street West/Highway 2) were obtained from the Regional Municipality of Durham. The data also provides number of lanes, percentage of commercial vehicles (including breakdown of heavy/medium trucks), and speed. Day/night splits were obtained from ATR Count Reports from May, 2019.

Future year (2034) average annual daily traffic (AADT) volumes and vehicle percentages for Aspen Springs Drive were obtained from 8-hour TMC data at the intersection of Bowmanville Avenue and Aspen Springs Drive obtained in November 2019. Data were projected to year 2034 at a typical growth rate of 2% per year. A typical day/night split of 90%/10% was applied, as is common for well-travelled roadways.

Copies of all traffic data, correspondence and related calculations are provided for reference in Appendix B. Table 6 summarizes the road traffic volumes and associated details used in the analysis.

Table 6: Road Traffic Data Used in Transportation Noise Analysis

Roadway Link	Modelled Traffic Volumes (AADT)	% Day/ Night Volume Split		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Bowmanville Avenue/Martin Road [1]	18,000	89.3	10.7	5.0	5.0	60
Highway 2/King Street West (west of Bowmanville Avenue) [1]	20,000	93.7	6.3	5.2	2.8	60
Highway 2/King Street West (east of Bowmanville Avenue) [1]	19,000	93.7	6.3	4.2	2.8	50
Aspen Springs Drive [2]	6,021	90	10	8.5	5.7	50

Notes to Table 6:

[1] Traffic forecasts, travel speeds and commercial traffic breakdown obtained from the Regional Municipality of Durham.

[2] Road traffic data were obtained from a 2019 8-hour (TMC) at Bowmanville Avenue/Aspen Springs Drive (**Appendix B**). The traffic volume was projected to year 2034 at a growth rate of 2.0%.

2.3.2 RAIL TRAFFIC DATA

CPR is no longer providing traffic data to consultants. Therefore, the most recently available traffic data obtained directly from CPR in proximity to the development were used in the assessment. Rail traffic volumes and details from 2019 along the Belleville Subdivision in Oshawa were used and projected to year 2034 at a growth rate of 2.5%. This growth is commonly applied in rail transportation noise assessments.

Metrolinx provided future forecasted rail volume data for their proposed expansion to the Bowmanville GO Station. They confirmed the volumes in the 2011 TPAP Study were no longer applicable and provided updated volumes to consider in the assessment.

Rail traffic data and correspondence are provided for reference in Appendix B.

The nearby rail crossings are grade-separated from the roadways, and no whistle crossings were identified in proximity to the proposed development. Therefore, whistle noise was not considered in the assessment.

The rail traffic data used in the assessment is summarized in Table 7.

Table 7: Rail Traffic Data Used in Transportation Noise Analysis

Railway Source	Train Type	Max. Loco. per Train	Max. Cars per Train	Number of Trains (Year 2034)		Max. Speed (km/hr)
				Daytime (0700-2300h)	Night-time (2300-0700h)	
CPR Belleville Subdivision [1]	Freight	4	207	9	5	97
Metrolinx GO Trains (through future Bowmanville Station)	GO (Diesel)	2	12	50	9	97

Notes to Table 7:

[1] Rail traffic data for CPR at the nearest milepost with data available in the SLR database were used. 2019 volumes were projected to 2034 at a 2.5% growth rate.

[2] Metrolinx data represents forecasted future volumes associated with GO service expansion through Bowmanville.

2.4 PREDICTED SOUND LEVELS

Future road traffic sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software. Roadways were modelled as line sources of sound, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MECP. These predictions were validated and are equivalent to those made using the MECP's ORNAMENT or STAMSON v5.04 road traffic noise models. A STAMSON validation file is included for reference in Appendix C.

Rail operation sound levels at the proposed development were predicted using the U.S. Department of Transportation Federal Transit Administration ("FTA") and Federal Railway Administration ("FRA") rail noise modelling algorithms included in the Cadna/A software. The FTA/FRA algorithms are the replacement models for the former MECP "STEAM" model and are written into the current draft version of MECP Publication NPC-306, which will replace the current NPC-206 guideline on transportation noise prediction. The FTA/FRA algorithms have been used in numerous Environmental Assessments ("EAs") for Metrolinx and CPR railway projects, as well as in numerous land use planning projects across the province.

As previously noted, the future Bowmanville GO Station may also be located along the CPR Belleville Subdivision, northwest of the proposed development. To account for GO train traffic, the site plan for the future station was used to determine the northbound and southbound rail track configuration. Furthermore, the deceleration and acceleration of GO trains entering and leaving the station was accounted for, for both locomotive and wheel noise. This was done by dividing the northbound and southbound tracks into 10 separate segments each. The segments account for deceleration (decreasing train velocity across 5 segments from the top speed of 97 km/hr) and acceleration (locomotive throttle setting of 8 with increasing velocity across 5 segments back up to the top speed of 97 km/hr). Appendix B contains details of the modelled railway sources.

Façade sound levels for the proposed development were predicted using the "building evaluation" feature of Cadna/A. This feature allows for noise levels to be predicted across the entire façade of a structure.

2.4.1 FAÇADE SOUND LEVELS

Predicted worst-case façade sound levels are presented in Table 8. The transportation façade sound levels are shown in Figure 4 and Figure 5 for daytime and night-time periods, respectively.

Table 8: Summary of Transportation Facade Sound Levels

Assessment Location	Façade [1]	Road Sound Levels (dBA) [2]		Rail Sound Levels (dBA) [2]		Combined Road & Rail Sound Levels (dBA) [2]	
		L_{eq} Day (dBA)	L_{eq} Night (dBA)	L_{eq} Day (dBA)	L_{eq} Night (dBA)	L_{eq} Day (dBA)	L_{eq} Night (dBA)
Building 1 Tower A (25 Storeys)	North	64	58	65	65	67	65
	East	68	62	61	61	69	64
	South	64	57	57	57	64	59
	West	54	46	65	64	65	64
Building 1 Tower B (25 Storeys)	North	64	57	62	62	66	62
	East	68	62	59	58	69	63
	South	64	58	55	55	64	59
	West	53	46	63	62	63	62

Assessment Location	Façade [1]	Road Sound Levels (dBA) [2]		Rail Sound Levels (dBA) [2]		Combined Road & Rail Sound Levels (dBA) [2]	
		L_{eq} Day (dBA)	L_{eq} Night (dBA)	L_{eq} Day (dBA)	L_{eq} Night (dBA)	L_{eq} Day (dBA)	L_{eq} Night (dBA)
Building 1 Podium Structure (4 Storeys)	North	66	60	66	66	69	66
	East	70	63	61	61	70	65
	South	66	60	55	54	67	61
	West	56	49	65	65	66	65
Building 2 (9 Storeys)	North	65	59	62	62	65	62
	East	68	62	57	57	69	63
	South	67	61	54	53	67	61
	West	60	53	62	62	64	62

Notes to Table 8:

[1] Façade locations are shown in **Figure 4** and **Figure 5**.

[2] The sound levels presented are the highest predicted sound level for the façade.

The highest façade roadway sound levels are predicted to be above the daytime and night-time road and rail guidelines referenced in Table 4. Therefore, an assessment of building components is required for parts of proposed development, outlined in Section 2.5 of this report.

2.4.2 OUTDOOR LIVING AREAS

The predicted noise impacts from the surrounding transportation sources onto the proposed development OLAs are shown in Figure 6 and summarized in Table 9.

Table 9: Summary of Transportation Noise Impacts - OLAs

ID [1]	Assessment Location	Predicted Sound Level L_{eq} Day (dBA)		
		Road	Rail	Total (Road + Rail)
OLA 1	Building 1 Podium Structure Common Rooftop Amenity Area	50	61	61
OLA 2	Building 2 Common Rooftop Amenity Area	55	59	61

Notes to Table 9:

[1] OLA assessment locations are shown in **Figure 6**.

Sound levels at the OLAs exceed 60 dBA; therefore, mitigation is required. Mitigation requirements are discussed further in Section 2.6.2.

2.5 FAÇADE ASSESSMENT

Based on the values presented in Table 8, predicted sound levels along some facades exceed the values in Table 4 for road and rail noise, respectively. Therefore, wall and window construction to achieve the indoor sound level requirements as outlined in NPC-300 have been determined.

Indoor sound levels and required Sound Transmission Class (STC) ratings for façade components were estimated using the procedures outlined in the National Research Council Building Practice Note 56. This document provides a method to estimate the STC ratings required based on road and rail noise.

Calculations for all façade locations are provided for reference in Appendix D. Detailed architectural floor plans and elevation drawings were not yet available the time of this study. The following assumptions were therefore made in the assessment:

- Window wall construction with glazing and glass spandrel panel elements;
- For living/dining rooms, 70% of the exterior wall is vision glass/patio doors;
- For bedrooms, 50% of the exterior wall is vision glass;
- Non-glazing portions of the wall (i.e., glass spandrel panel) has an assumed STC rating of 45;
- Living rooms were assumed to be 3 m x 6 m in size with intermediate absorption;
- Bedrooms were assumed to be 3 m x 3 m in size and very absorptive.

Glazing STC requirements are summarized in Table 10. The building façade requirements should be reviewed by an acoustical consultant in detail when detailed floor plans and elevations are available, usually at the Site Plan Application (SPA) or building permit stage of the development.

Table 10: Transportation Noise – Façade STC Requirements

Building	Façade [1]	Non-Vision Glazing Portion of Facade	Glazing Requirements (Windows and Patio Doors)	
			Living/Dining Room (STC)	Bedroom (STC)
Building 1 Tower A (25 Storeys)	North	45	30	35
	East	45	OBC	31
	South	45	OBC	OBC
	West	45	OBC	34
Building 2 Tower B (25 Storeys)	North	45	OBC	31
	East	45	OBC	OBC
	South	45	OBC	OBC
	West	45	OBC	31
Building 1 Podium Structure (4 Storeys)	North	45	31	36
	East	45	OBC	31
	South	45	OBC	OBC
	West	45	30	35
Building 2 (9 Storeys)	North	45	OBC	32
	East	45	OBC	OBC
	South	45	OBC	OBC
	West	45	OBC	31

Notes to Table 10:

[1] OBC = Ontario Building Code. Window construction meeting the minimum non-acoustic requirements of the Ontario Building Code (i.e., thermal and structural requirements) is predicted to be sufficient. Equivalent to a glazing element with a rating of STC 29.

[2] Corner units with two exposed facades may require an increase in STC rating of up to 3 points. These requirements should be reviewed by an Acoustical Consultant during the detailed design phase of the project.

2.6 VENTILATION, BARRIER AND WARNING CLAUSE REQUIREMENTS

2.6.1 RESIDENTIAL UNITS

The requirements for triggering warning clauses are summarized in Table 3. Where required, the warning clauses should be included in agreements registered on Title for the residential units, in all agreements of purchase and sale or lease, and all rental agreements. Ventilation warning clauses for the proposed development are summarized in Appendix E.

Based on the predicted façade noise levels, residential units within all buildings associated with the development will require central air conditioning to be implemented for noise control purposes, with an MECP Type D warning clause. This requirement is applicable to the following:

- Building 1 – Tower A, Tower B, and Podium Structure residential units; and,
- Building 2 residential units.

Due to the proximity of the proposed development to the CPR Belleville Subdivision (i.e., within 300 m of the right-of-way), CPR and Metrolinx warning clauses are required. Refer to Appendix E.

2.6.2 OUTDOOR AMENITY AREAS

As predicted daytime sound levels exceed 60 dBA, mitigation is required for the two (2) OLAs considered in the assessment.

For the rooftop amenity area atop the Building 1 podium structure (OLA 1), a 1.1 m high, 26.5 m long parapet wall along a portion of the west side of the podium is required to achieve a sound level of 60 dBA. Also, for the rooftop amenity area atop Building 2 (OLA 2), a 1.1 m high parapet wall around the amenity terrace area is required to achieve a sound level of 58 dBA. The locations and extents of the parapet walls for OLA 1 and OLA 2 are shown on Figure 7. Warning Clause B is also required.

The parapet walls must be constructed of a material with surface density of 20 kg/m^2, and without any cracks or gaps (except for small, localized gaps under the barrier if required for drainage purposes). A range of materials can be used to construct the barriers, including concrete, wood and plexiglass, provided the surface density requirements are met.

Note, the at-grade common space between Buildings 1 and 2 is accessible by the general public and not fenced off or restricted. Therefore, it has not been considered as an outdoor living area (OLA) in the assessment.

3. STATIONARY SOURCE NOISE IMPACTS

The Project surrounding area was reviewed to determine stationary noise sources in proximity to the proposed development. Assessment of stationary sources was determined in part based on the MECP Guideline D-6 Potential Influence Areas. These are illustrated on Figure 8. Commercial/retail lands that comprise the nearby stationary sources are considered to be Class I Industries based on these guidelines, which have a 70 m area of influence according to the D-6 guidelines.

None of the nearby stationary sources are within 70 m of the proposed development, but some are within approximately 300 m of the Project (i.e., area of influence setback distance for Class II Industries). The nearest stationary sources to the proposed development are commercial/retail establishments, and a Church, with existing residential land uses located significantly closer to them than the Project.

A detailed stationary source assessment was not deemed necessary, due to the intervening distances and presence of existing noise-sensitive land uses located significantly closer to the sources. Nonetheless, it is recommended that a Type E warning clause be recommended for all units in the proposed development. Refer to Appendix E.

The stationary sources are discussed further in the following subsections.

Commercial/Retail Plaza – 2401 Durham Regional Highway 2

The commercial/retail plaza at 2401 Durham Regional Highway 2 includes an Atmosphere, Sport Chek, and Shoppers Drug Mart. Potential noise sources associated with the plaza are rooftop HVAC/cooling equipment, and truck movements at the rear (southeast) area of the building. There are two overhead bay doors for shipping/receiving. The operating hours for the stores are during daytime and evening hours (i.e., 0700h – 2300h) only.

Due to the setback distances from the Project to the nearest noise sources at the commercial/retail plaza (approximately 300 m or more), and the presence of existing noise-sensitive points of reception located closer to the associated noise sources, adverse noise impacts are not expected at the proposed development. Therefore, the facility has not been considered further in this assessment.

Church of Jesus Christ of Latter-day Saints – 2425 Durham Regional Highway 2

The Church of Jesus Christ of Latter-day Saints is located approximately 300 m northwest of the proposed development. There are no expected significant sources of noise associated with the Church that have the potential for adverse noise impacts at Project. Therefore, the Church has not been considered further in this assessment.

Commercial/Retail Plaza – 39 Martin Road/1550 Bowmanville Avenue

The commercial/retail plaza at 39 Martin Road/1550 Bowmanville Avenue is located approximately 160 m south of the Project. It contains a pub and grill, animal hospital, butcher, dentist, tanning/esthetics salon, ice cream shop, breakfast restaurant, pizza shop, physiotherapy clinic, and a Circle K convenience store. The building containing the establishments is 2 storeys in height, and potential sources of noise associated with the commercial/retail plaza are HVAC and cooling equipment.

Due to the presence of several rows of intervening residences, and the distance between the Project and the plaza, adverse noise impacts are not anticipated. Therefore, the plaza has not been considered further in this assessment.

Professional Services/Retail Plaza – Aspen Springs Centre, 1 Hartwell Avenue

The Aspen Springs Centre is a two-storey building located approximately 300 m from the Project. It contains retail stores and professional services such as a dental centre, Kumon learning centre, hearing centre, and insurance brokerages. Potential sources of noise associated with the plaza are HVAC and cooling equipment.

Due to the presence of several rows of intervening residences, and the distance between the Project and the plaza, adverse noise impacts are not anticipated. Therefore, they have not been considered further in this assessment.

PART 2: IMPACTS OF THE DEVELOPMENT ON ITSELF

4. STATIONARY SOURCE NOISE IMPACTS ON THE DEVELOPMENT ITSELF

The building mechanical systems (e.g., make-up air units, cooling units, emergency generator and parking garage vents) have not been selected or designed in detail at this stage of the development process. Although no adverse impacts are expected, such equipment has the potential to result in noise impacts on the noise sensitive spaces within the development itself.

Therefore, the potential noise impacts from mechanical systems should be assessed as part of the final building design. Applicable noise guidelines/criteria are expected to be met at all on-site receptors with the appropriate selection of mechanical equipment, by locating equipment to minimize noise impacts within the development, and by incorporating appropriate control measures where necessary (e.g., silencers, barriers) into the design.

It is recommended that the mechanical systems be reviewed by an accredited Acoustical Consultant prior to final selection of equipment.

PART 3: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA

5. STATIONARY SOURCE NOISE IMPACTS ON SURROUNDING AREA

With respect to the noise environment of the area (i.e., Class 1), it is expected that the Project will have a negligible effect on the neighbouring properties.

The traffic related to the proposed development will be small relative to the existing traffic volumes within the area and is not of concern with respect to potential noise impacts.

Other noise sources associated with the proposed development with possible adverse impacts on the surrounding neighbourhood are mechanical equipment (e.g., make up air units, cooling units, and parking garage vents). Sound levels due to operation of these sources are required to meet MECP Publication NPC-300 limits at off-site noise sensitive receptors.

Off-site impacts are not anticipated given the elevated ambient sound levels in the area, and because systems will be designed to ensure that the applicable noise guidelines are met at on-site receptors.

Regardless, potential impacts will be assessed as part of the final building design to ensure compliance. The applicable criteria can be met at all surrounding and on-site receptors though the use of routine mitigation measures, including the appropriate selection of mechanical equipment, by locating equipment with sufficient setback from noise sensitive locations, and by incorporating noise control measures (e.g., silencers, barriers) into the design.

It is recommended that the mechanical systems be reviewed by an accredited Acoustical Consultant prior to final selection of equipment.

6. CONCLUSIONS AND RECOMMENDATIONS

The potential for noise impacts on and from the proposed development have been assessed. Impacts of the environment on the development, the development on itself, and the development on the surrounding area have been considered. Based on the results of this assessment, the following conclusions have been reached:

6.1 TRANSPORTATION NOISE

- An assessment of transportation noise impacts from surrounding road and rail sources has been completed.
- Based on predicted transportation façade sound levels, upgraded glazing is required for portions of the development as outlined in Section 2.5.
- Noise impacts at the two outdoor living areas (OLAs) exceed 60 dBA; therefore, parapet walls and Type B warning clauses are required as outlined in Section 2.6.2 and Appendix E.
- Residential units in Building 1 (podium structure, Tower A, and Tower B) and Building 2 require central air conditioning and Type D warning clauses, as outlined in Section 2.6.1 and Appendix E.
- CPR, Metrolinx and Type E Warning Clauses are also required, as outlined in Section 2.6.1 and Appendix E.
- Warning clauses should be included in agreements registered on Title for the affected residential units and included in agreements of purchase and sale.

6.2 STATIONARY NOISE

- No significant stationary sources with the potential for adverse noise impacts on the development were identified in the surrounding area.

6.3 OVERALL ASSESSMENT

- Impacts of the environment on the proposed development can be adequately controlled with upgraded glazing, parapet walls, sound barriers, and the inclusion of appropriate ventilation and warning clauses as detailed in Part 1 of this report.
- Impacts of the proposed development on itself are not anticipated and can be adequately controlled by following the design guidance outlined in Part 2 of this report.

- Impacts of the proposed development on the surroundings are expected to meet the applicable guideline limits and can be adequately controlled by following the design guidance outlined in Part 3 of this report.

  As the mechanical systems for the proposed development have not been designed at the time of this assessment, equipment selections and acoustical design should be reviewed by an accredited Acoustical Consultant as part of the final building design.

7. REFERENCES

AECOM, GO Transit – Rail Service Expansion from Oshawa to Bowmanville and New Rail Maintenance Facility in Whitby – Environment Noise & Vibration Assessment. January 2011.

AECOM, Transit Project Assessment Process (TPAP) Environmental Assessment Study – Oshawa to Bowmanville Rail Service Expansion and Rail Maintenance Facility – Environmental Project Report. February 2011.

International Organization for Standardization, ISO 9613-2: *Acoustics – Attenuation of Sound During Propagation Outdoors Part 2: General Method of Calculation*, Geneva, Switzerland, 1996.

National Research Council, Building Practice Note 56: *Controlling Sound Transmission into Buildings*, Canada 1985.

Ontario Ministry of the Environment, Conservation and Parks, 1989, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT).

Ontario Ministry of the Environment, Conservation and Parks, Publication NPC-300: *Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*, 2013.

Ontario Ministry of the Environment, Conservation and Parks, 1996, STAMSON v5.04: Road, Rail and Rapid Transit Noise Prediction.

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for 2-sided printing purposes

FIGURES

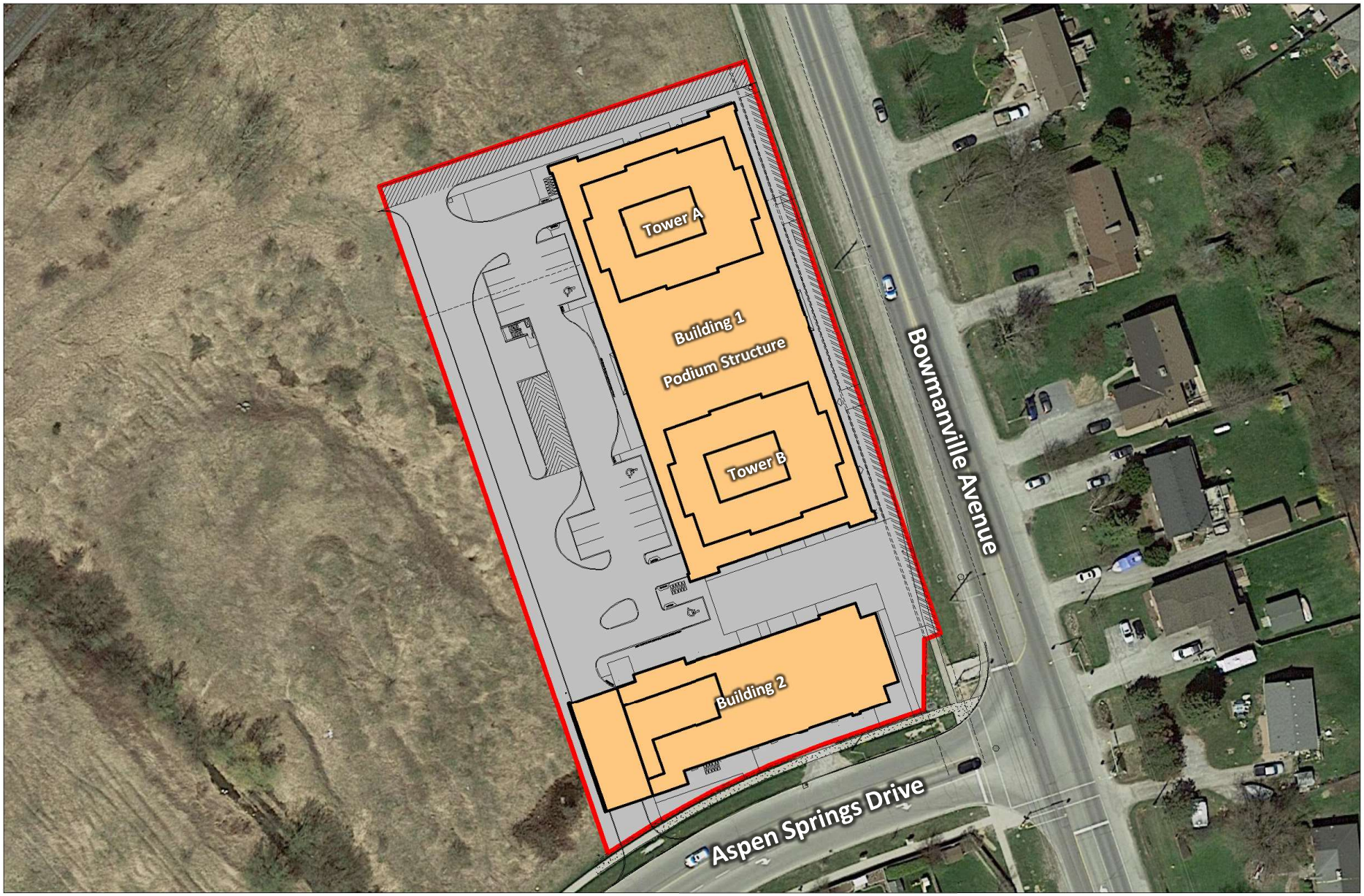
Environmental Noise Assessment

10 Aspen Springs Drive

Bowmanville, ON

SLR Project No.: 241.30367.00000

SUNRAY GROUP	True North	Scale: 1:5000	METRES	SLR global environmental solutions
10 ASPEN SPRINGS DRIVE, BOWMANVILLE		Date: May 3, 2022 Rev 1.0	Figure No. 1	
CONTEXT PLAN		Project No. 241.30367.00000		



SUNRAY GROUP	True North	Scale: 1:1000	METRES	SLR global environmental solutions
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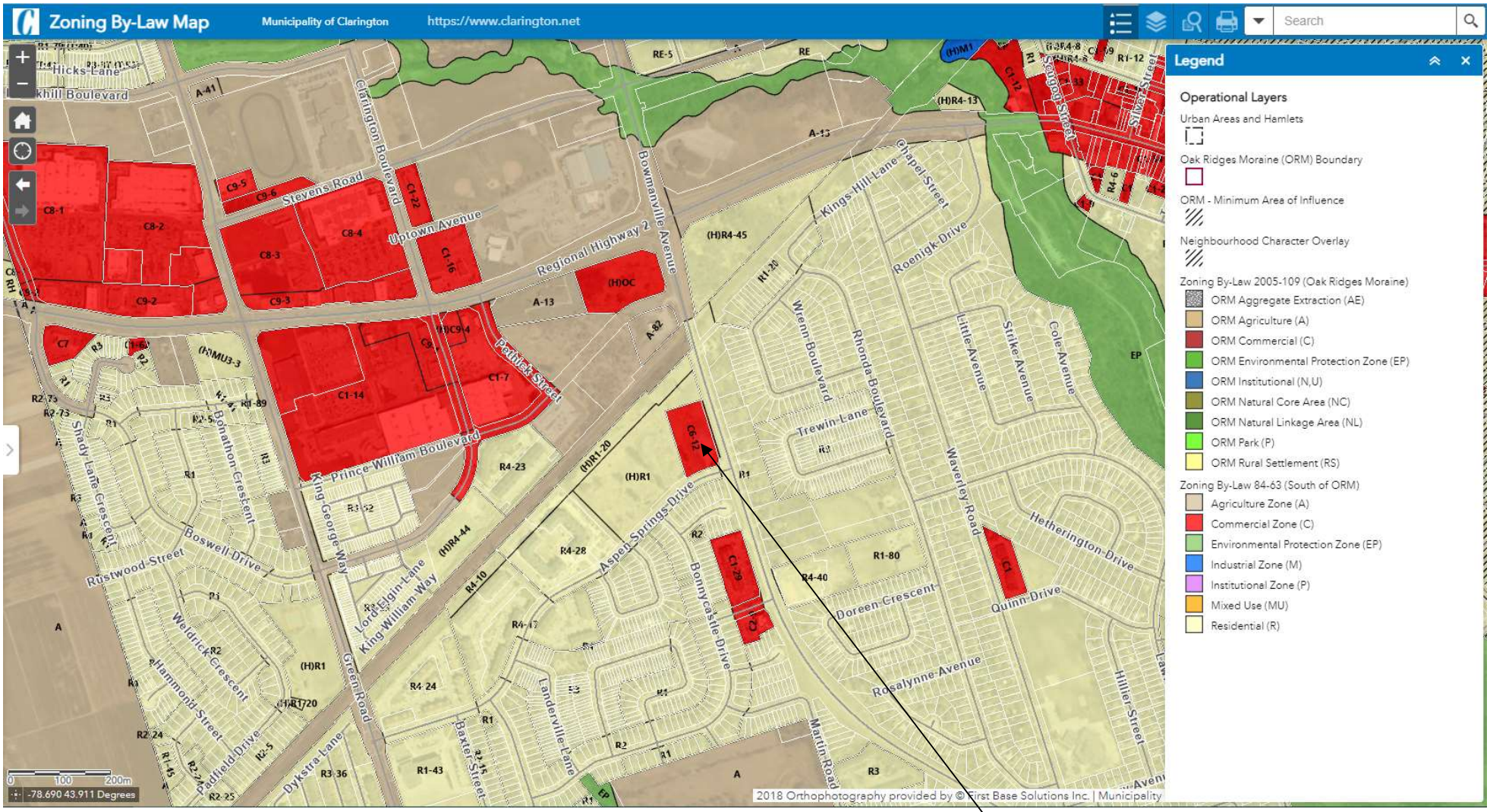
SITE PLAN		Project No. 241.30367.00000		



Municipality of Clarington Zoning By-Law 84-63

Source: https://www.arcgis.com/apps/webappviewer/index.html?id=e4a0b124f40c4a8fa130f831b995cd34

SUNRAY GROUP	True North	Scale: N.T.S.	METRES	SLR global environmental solutions
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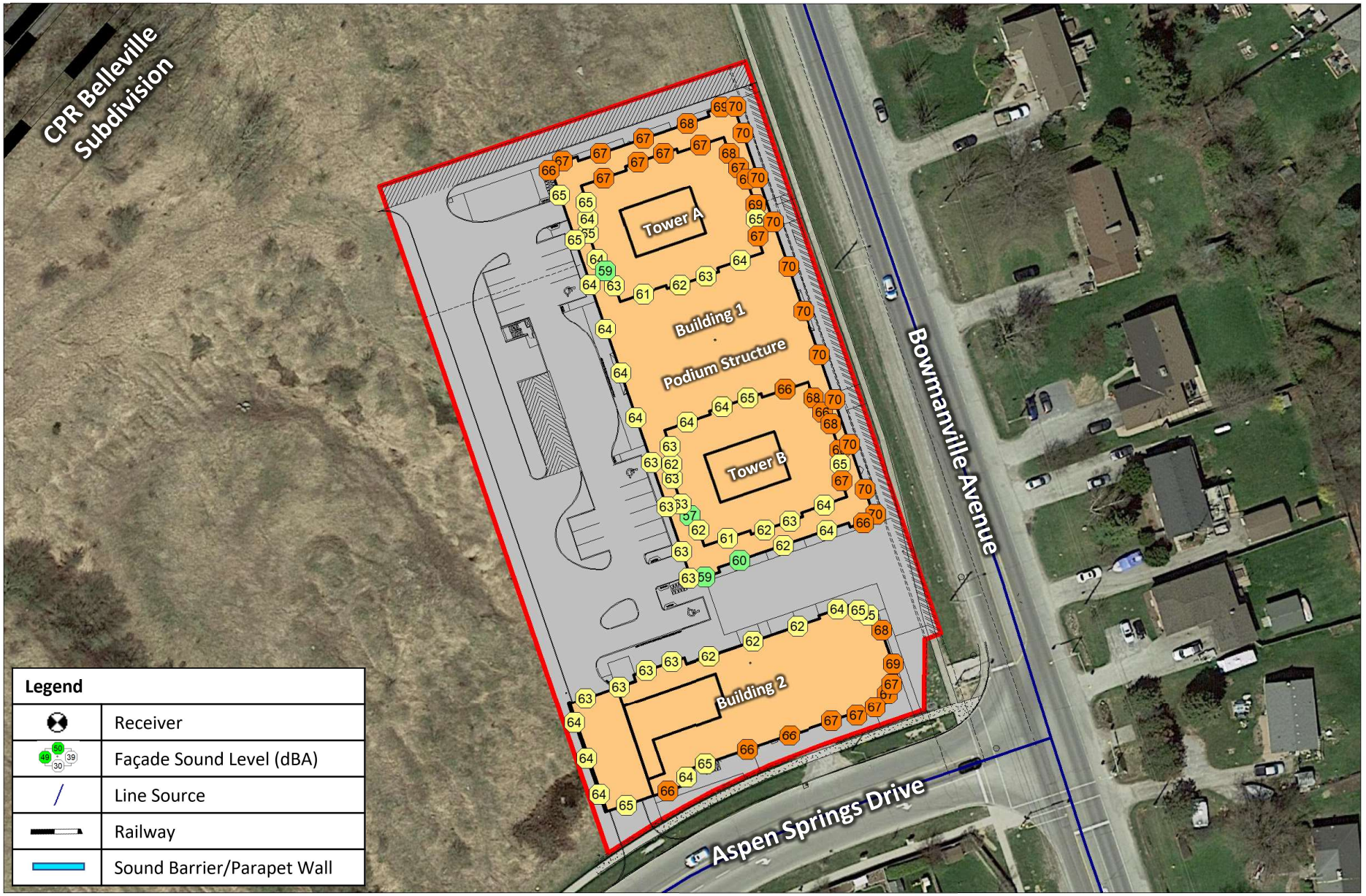
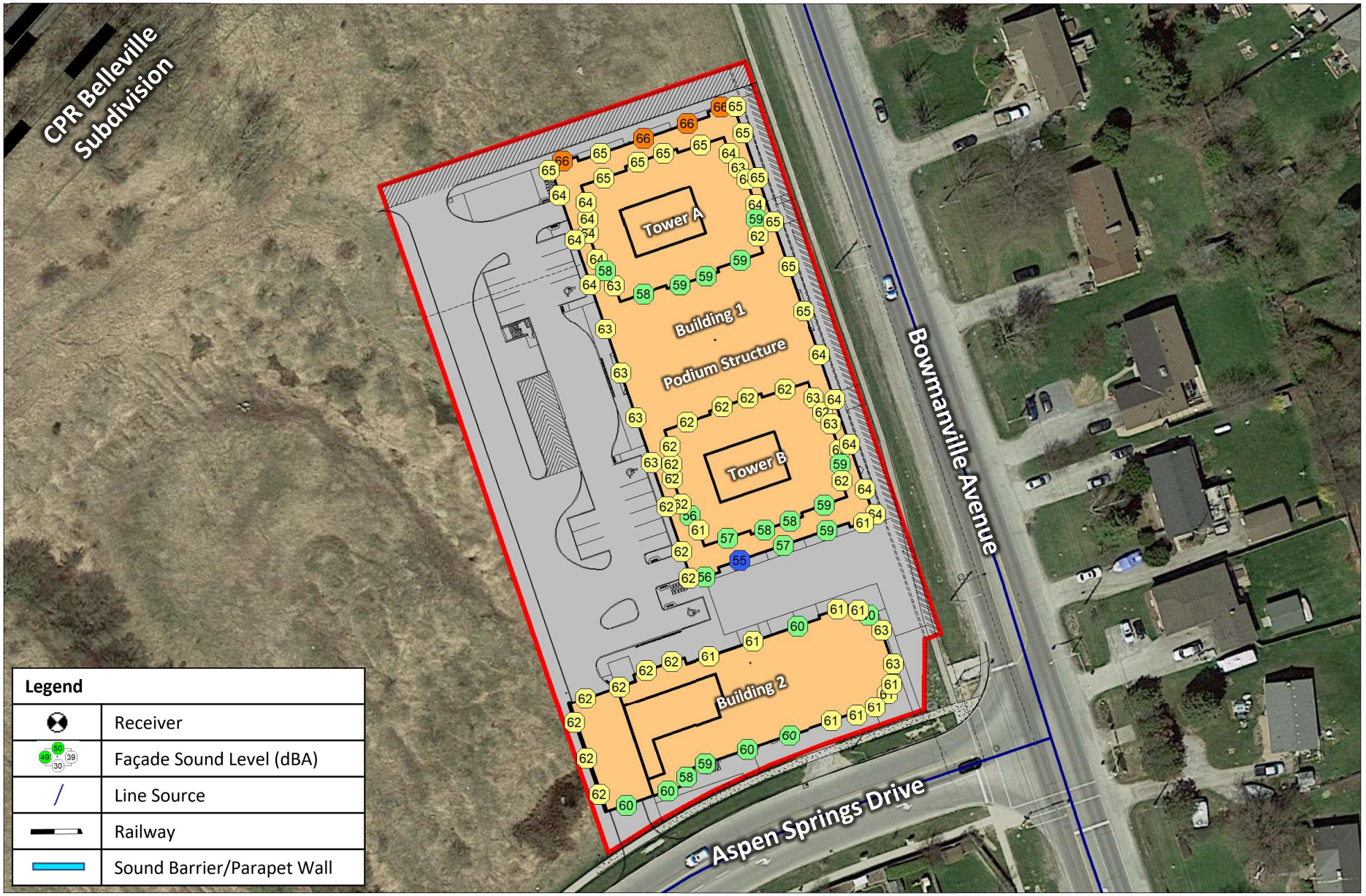
ZONING INFORMATION		Project No. 241.30367.00000		



SUNRAY GROUP	True North	Scale: 1:1000	METRES	SLR global environmental solutions
10 ASPEN SPRINGS DRIVE, BOWMANVILLE		Date: May 3, 2022 Rev 1.0	Figure No. **4**	
FAÇADE SOUND LEVELS – ROAD & RAIL (TOTAL) – DAYTIME		Project No. 241.30367.00000		



SUNRAY GROUP	True North	Scale: 1:1000	METRES	SLR global environmental solutions
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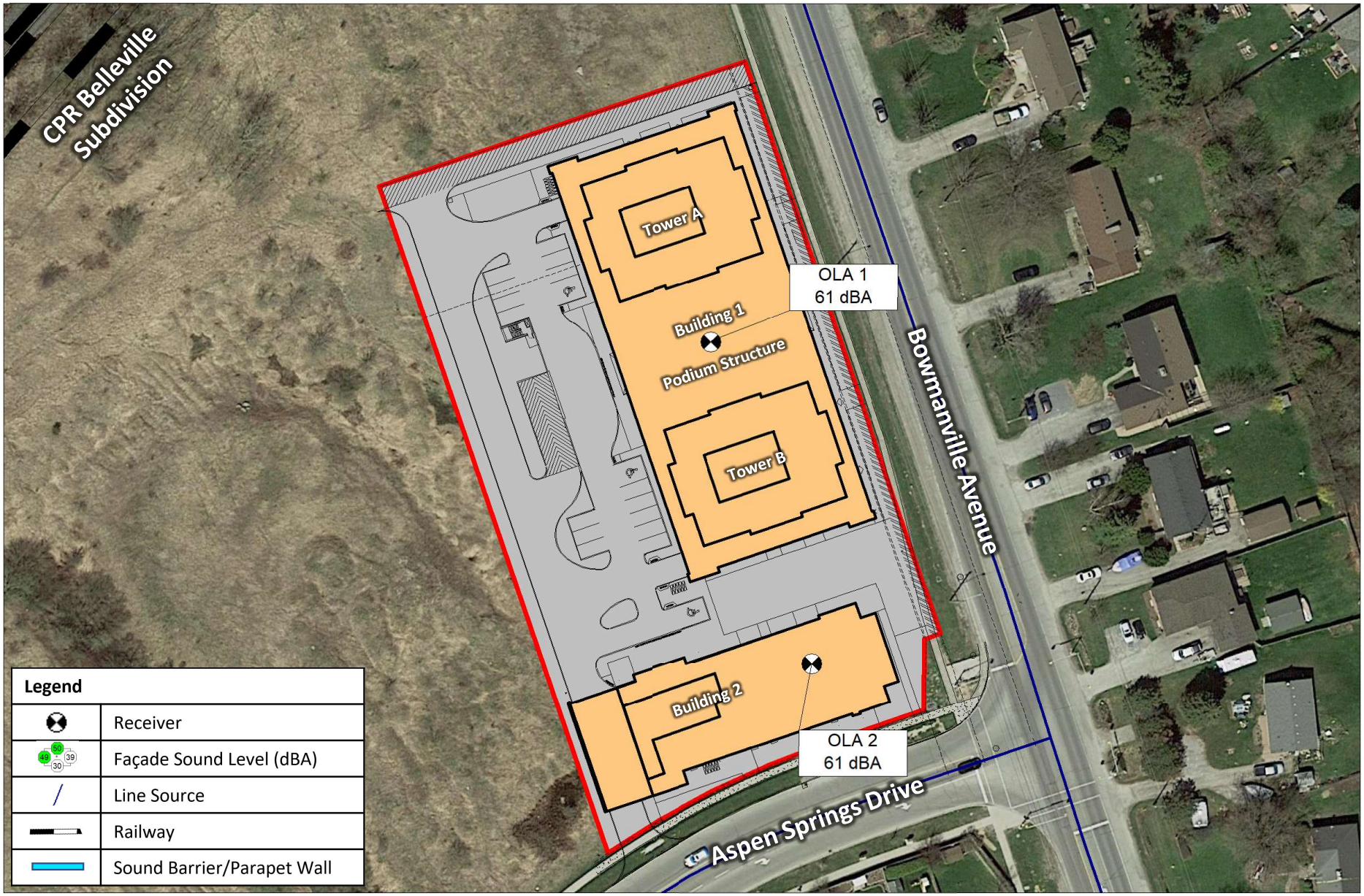
FAÇADE SOUND LEVELS – ROAD & RAIL (TOTAL) – NIGHT-TIME		Project No. 241.30367.00000		



SUNRAY GROUP	True North	Scale: 1:1000	METRES	SLR global environmental solutions
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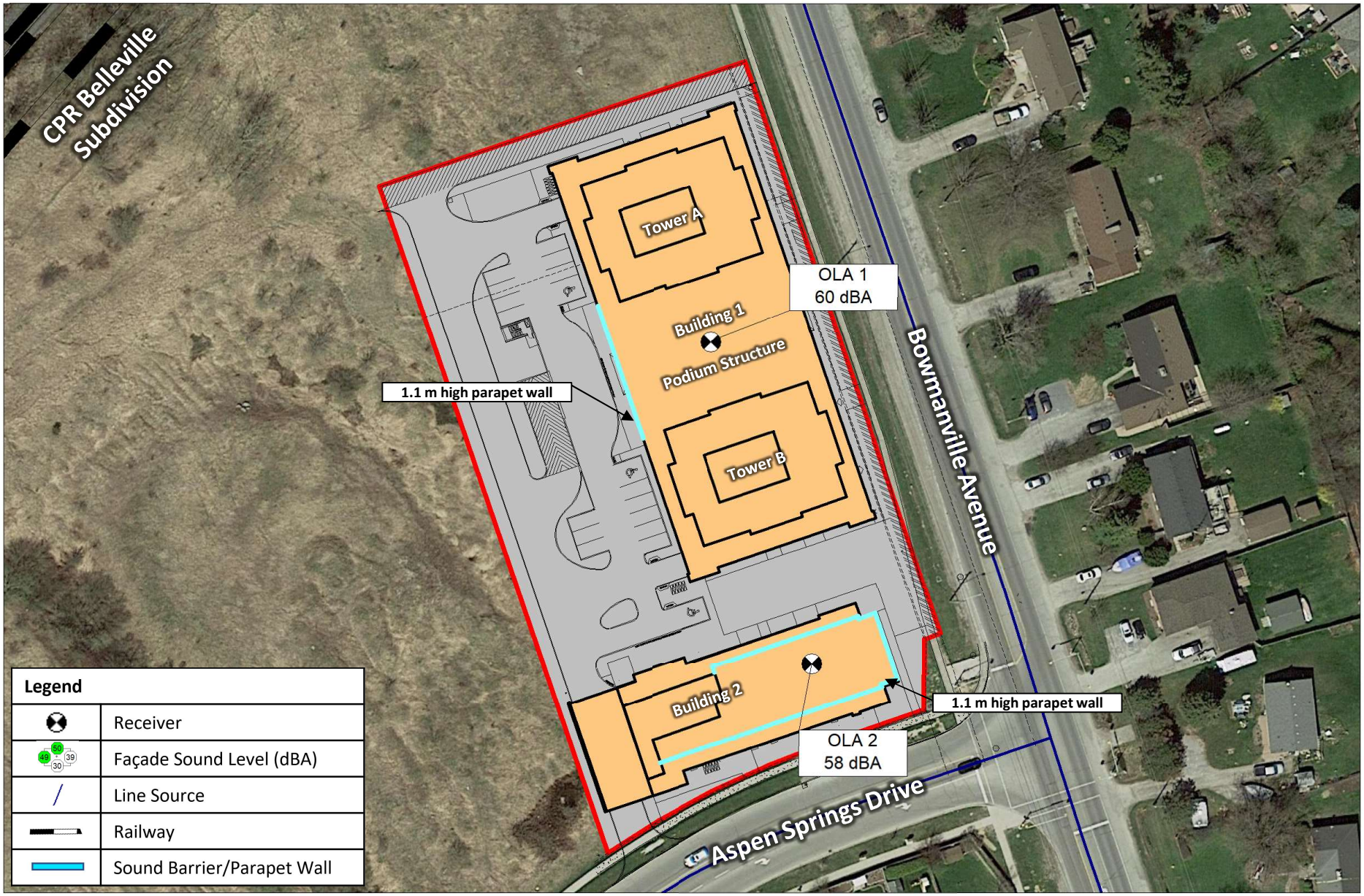
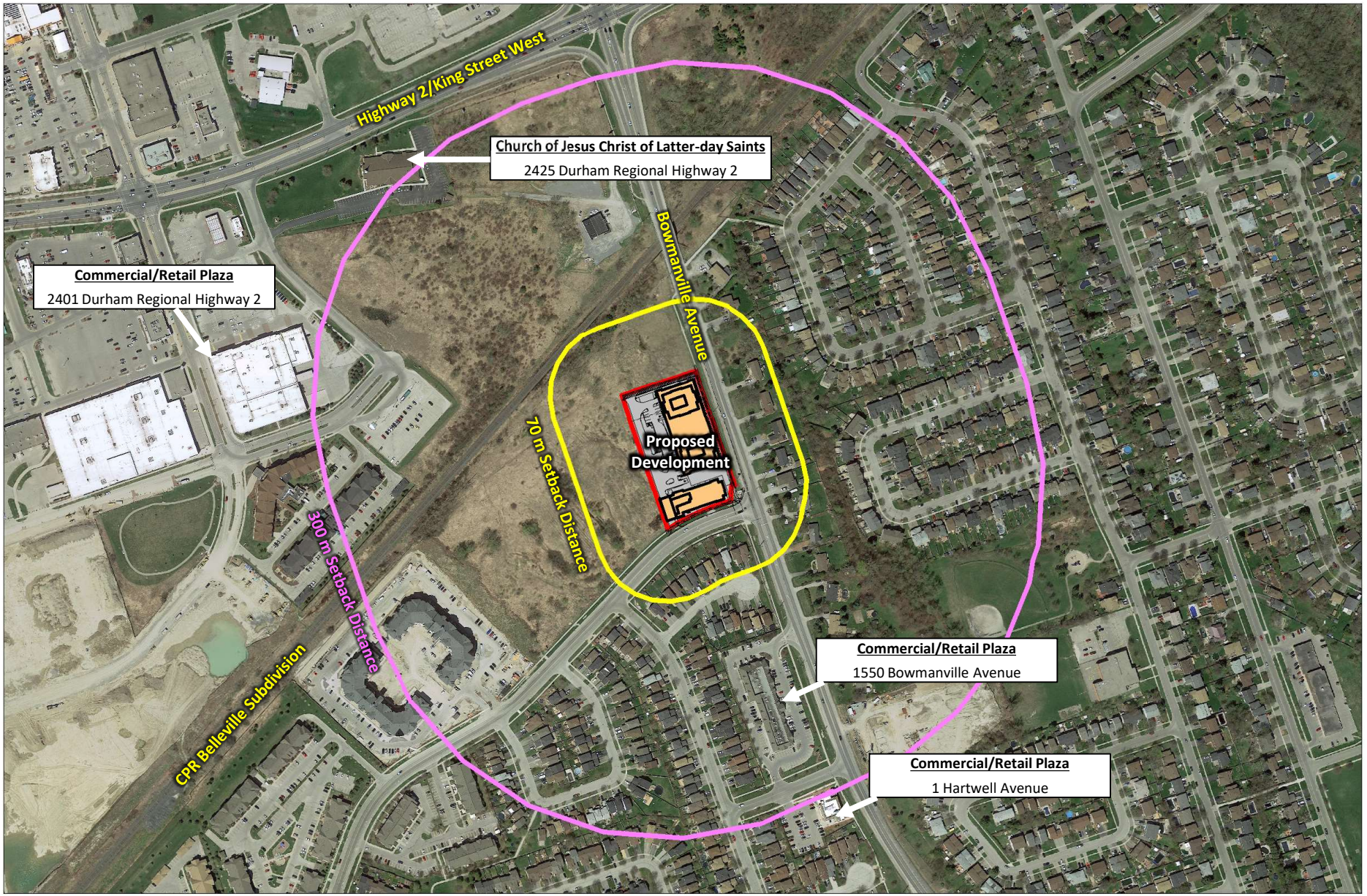
OUTDOOR LIVING AREA SOUND LEVELS – ROAD & RAIL (TOTAL) – DAYTIME		Project No. 241.30367.00000		



SUNRAY GROUP	True North	Scale: 1:1000	METRES	SLR global environmental solutions
10 ASPEN SPRINGS DRIVE, BOWMANVILLE		Date: May 3, 2022 Rev 1.0	Figure No. 7	
MITIGATED OUTDOOR LIVING AREA SOUND LEVELS – ROAD & RAIL (TOTAL) – DAYTIME		Project No. 241.30367.00000		



SUNRAY GROUP	True North	Scale: 1:5000	METRES	SLR global environmental solutions
10 ASPEN SPRINGS DRIVE, BOWMANVILLE		Date: May 3, 2022 Rev 1.0	Figure No. **8**	
D-6 SETBACK DISTANCES & SURROUNDING STATIONARY SOURCE LOCATIONS		Project No. 241.30367.00000		

Appendix A

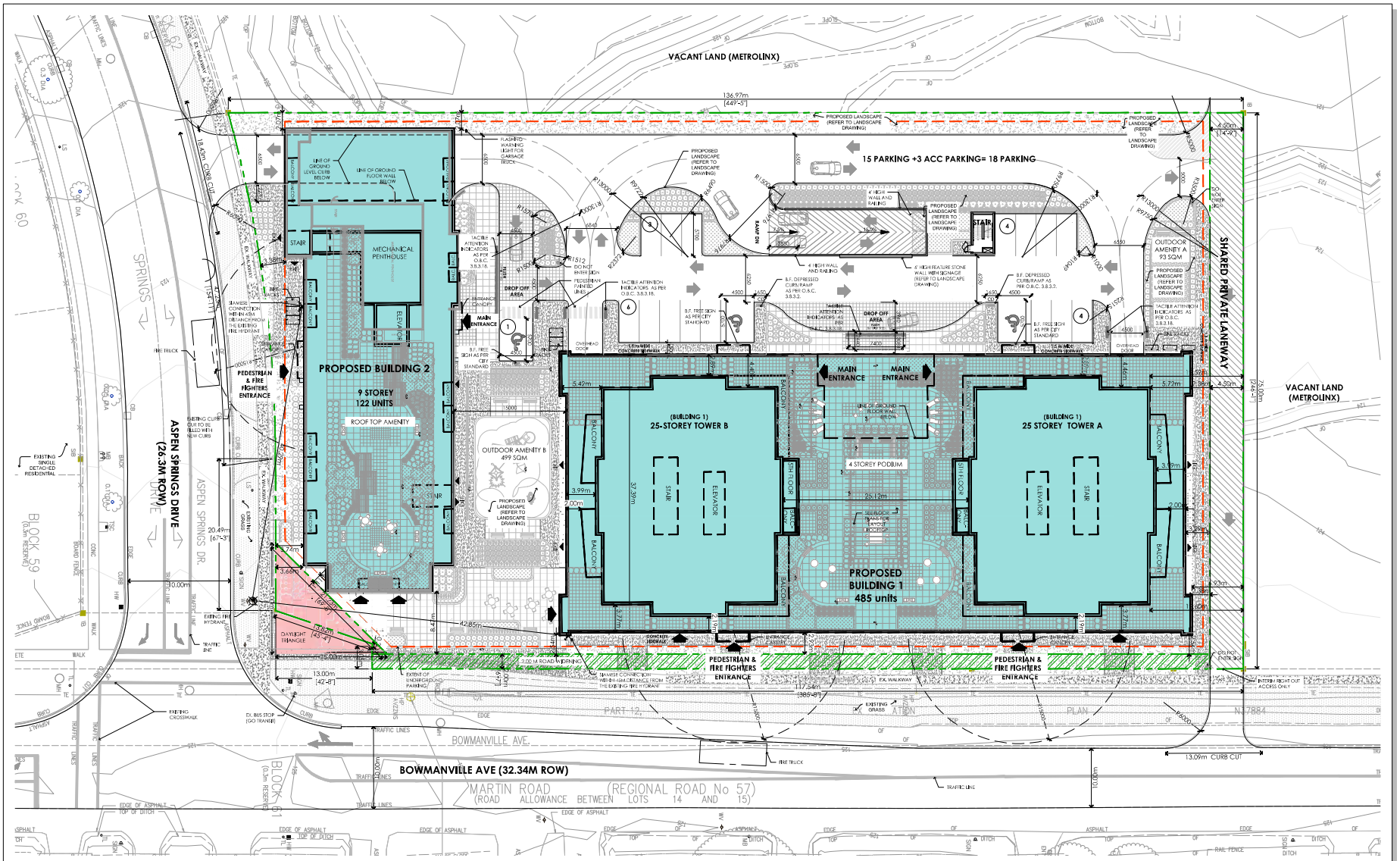
Development Drawings

Environmental Noise Assessment

10 Aspen Springs Drive

Bowmanville, ON

SLR Project No.: 241.30367.00000



PROPERTY LINE		OTHER ACCESS POINTS		HOSE BIB (REFER TO MECHANICAL DWGS)	WALL MOUNTED LIGHT FIXTURE -REFER TO ELECTRICAL DWGS
EXTENT OF UNDERGROUND PARKING		EXISTING TOWN HYDRANT		PAD MOUNTED HYDRO TRANSFORMER W/ STEEL BOLLARDS	LANDSCAPED AREA
CURB RAMP AS PER OBC 3.8.3.2		PROPOSED LOCATION OF NEW FIRE HYDRANT W/ STEEL BOLLARDS (REFER TO CIVIL DWGS)		SINGLE HEADED LIGHT FIXTURE ON CONCRETE BASE -REFER TO ELECTRICAL	DAYLIGHT TRIANGLE
PRINCIPLE ENTRANCE		FIRE DEPARTMENT CONNECTION		DOUBLE HEADED LIGHT FIXTURE ON CONCRETE BASE -REFER TO ELECTRICAL DWGS	

Project North: | True North:

Key Plan:

No.	Date:	Issue/Revision	By:
1	YY/MM/DD	Issued for	XX

Drawing Issues/Revisions:

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Project:
BOWMANVILLE

10 ASPEN SPRINGS DR, BOWMANVILLE, ON L1C 4W7

Sheet title:
SITE PLAN

Design By:	Drawn By:	Approved By:
M.A	X.Z	EM
Scale: 1:250	Date: 22.03.10	Project No.: 21-019

Drawing No:
ASP-3
OF

Drawing Series:

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1/O P2	
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3.4m x 5.7m ACC - SHARED	4
4.5m x 5.7m ACC - SINGLE	1
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1/O P3	
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GFA COLOR LEGEND

COMMON SPACES

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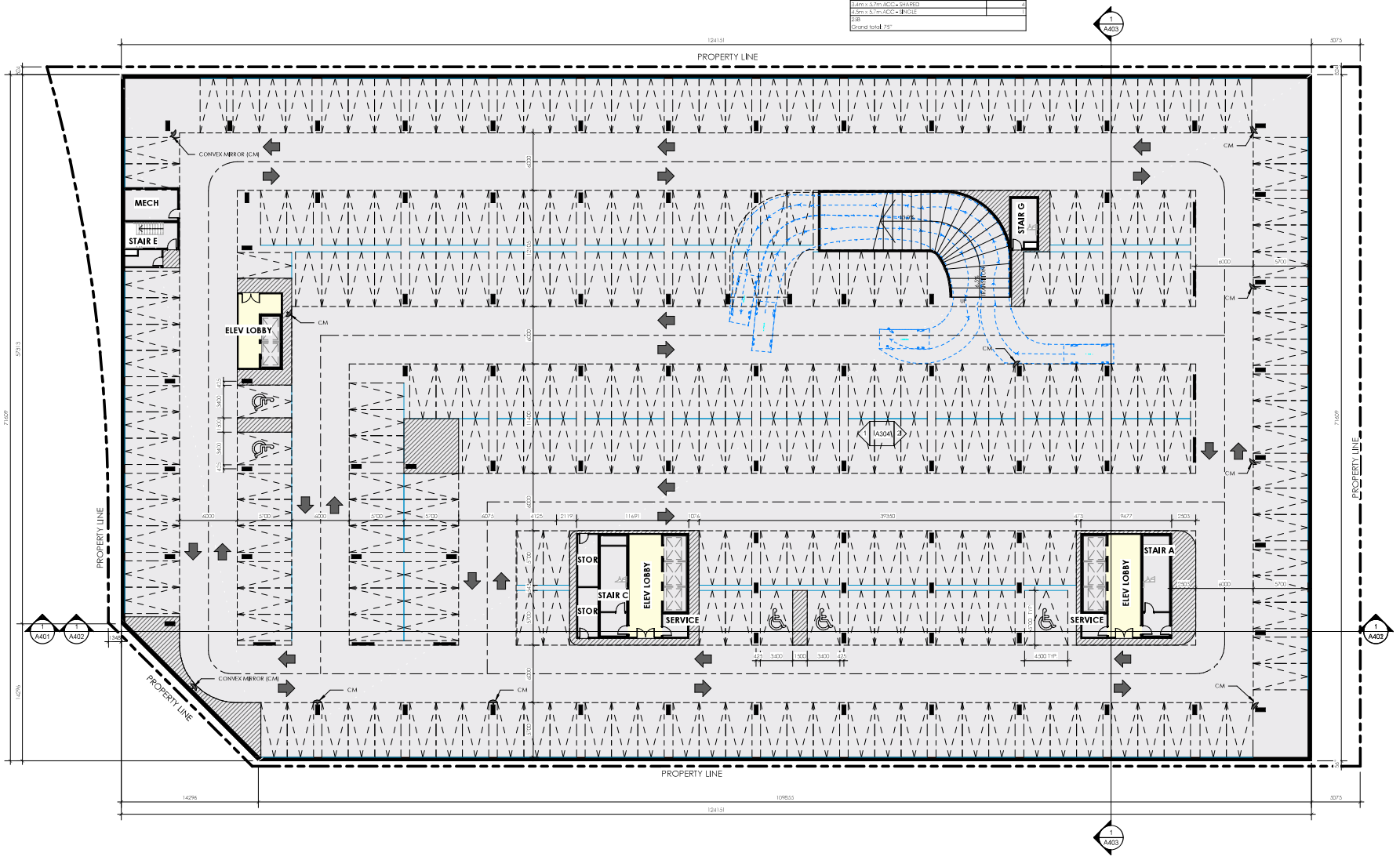

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10 ASPEN SPRINGS DR.,
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Sheet Title:

PARKING LEVEL P3

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale:	Date:	Project No.:
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Drawing No:

A201

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Drawing Series:

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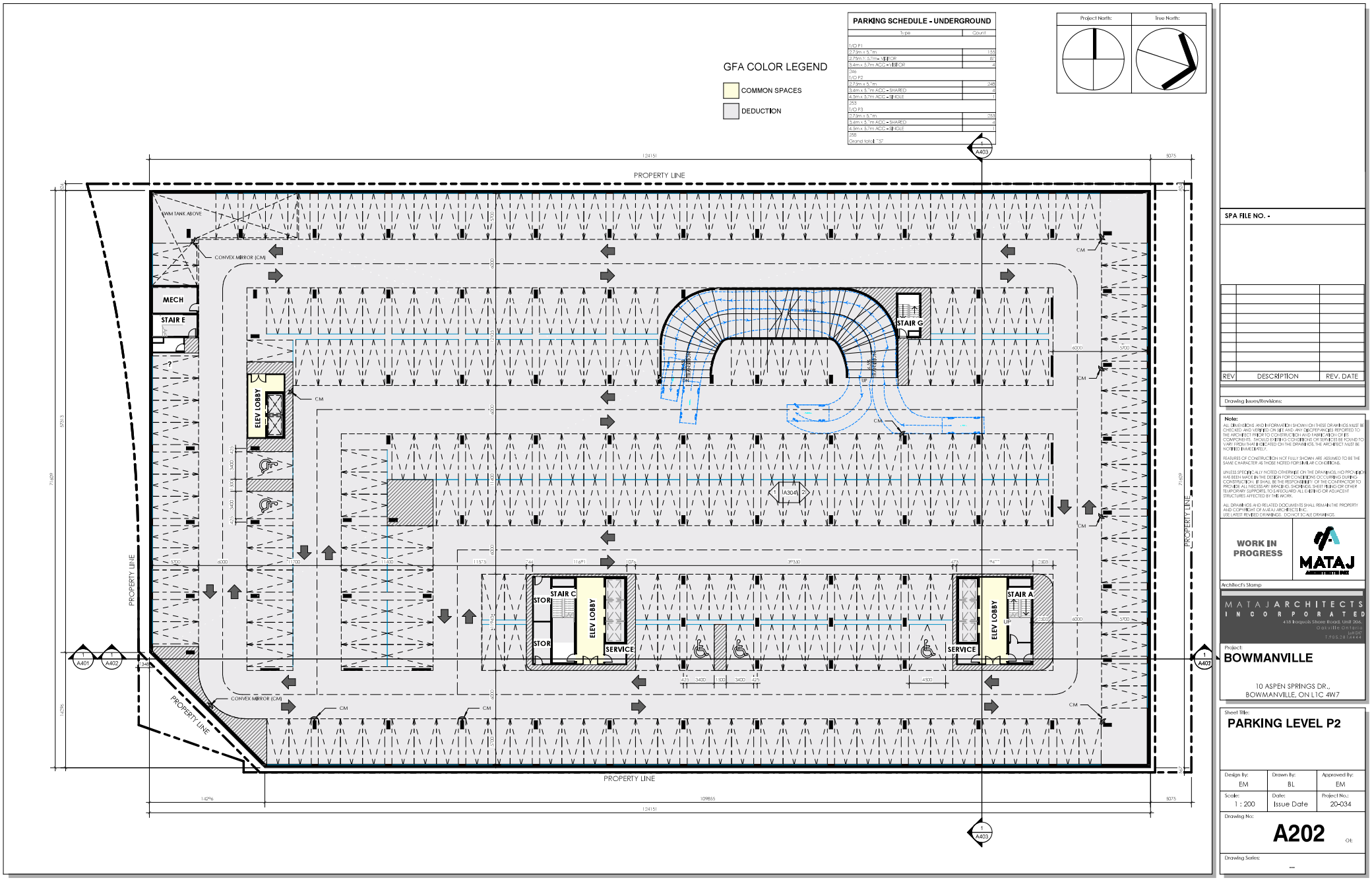

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BOWMANVILLE, ON L1C 4W7

Sheet Title:

PARKING LEVEL P2

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
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Drawing No:

A202

Drawing Series:

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2.75m x 5.7m	248
3.4m x 5.7m ACC - SHARED	4
4.6m x 5.7m ACC - SINGLE	1
253	
LVO P3	
2.75m x 5.7m	253
3.4m x 5.7m ACC - SHARED	4
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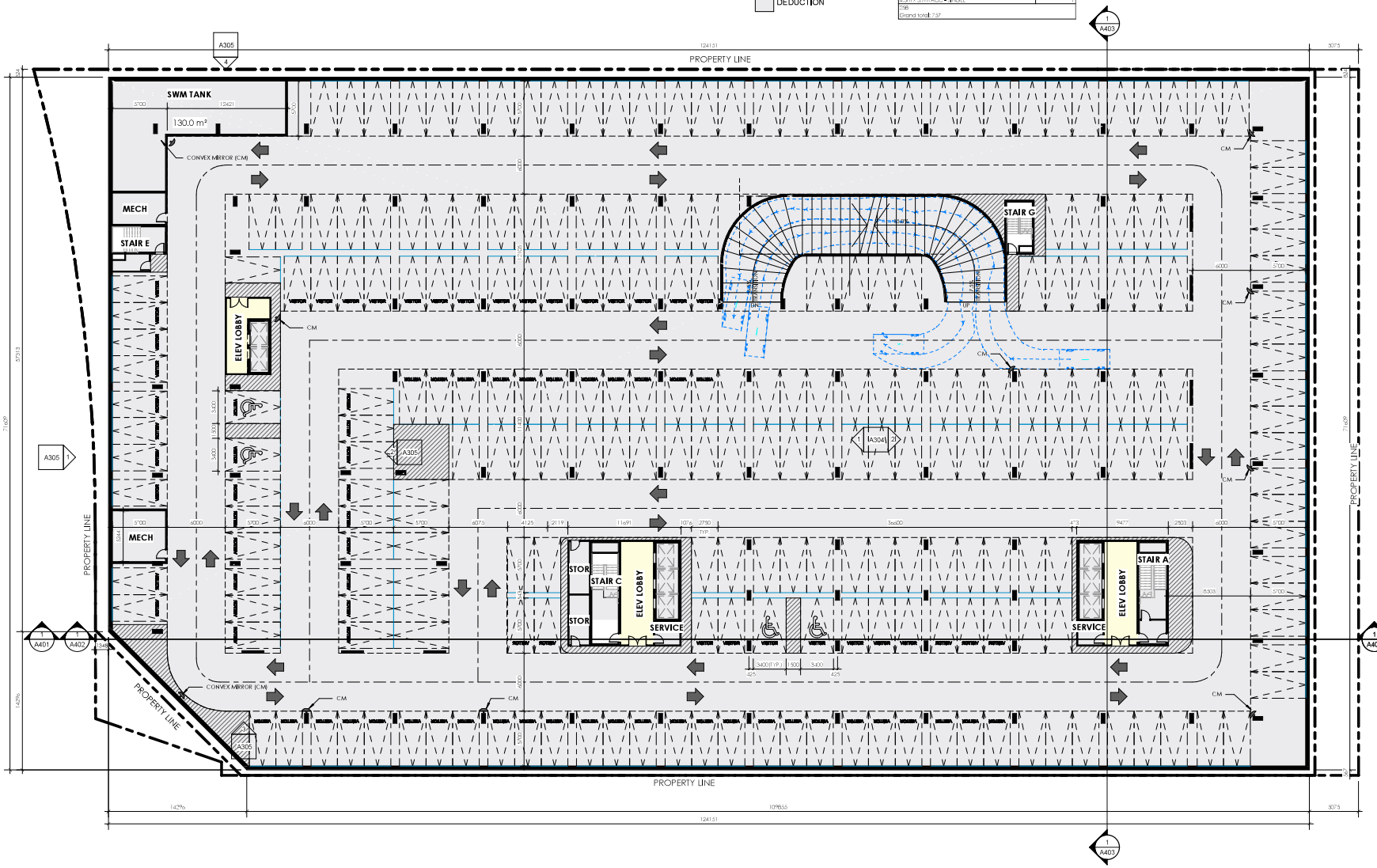
GFA COLOR LEGEND

- COMMON SPACES
- DEDUCTION



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SPA FILE NO. -

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BOWMANVILLE, ON L1C 4W7

Sheet Title:
PARKING LEVEL P1

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 200	Issue Date	20-034

Drawing No:
A203
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Drawing Series:
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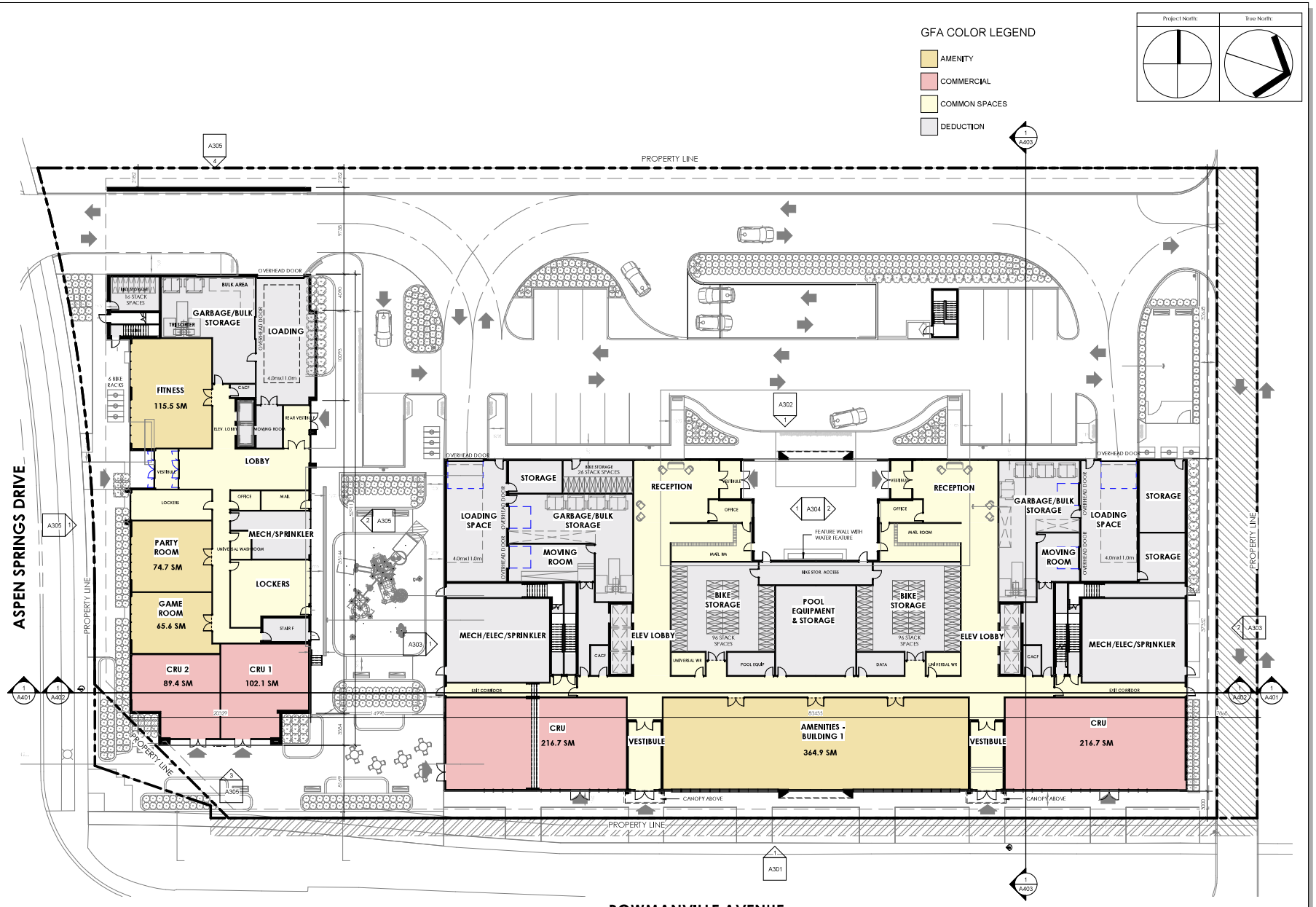

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Project:
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10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
OVERALL GROUND FLOOR PLAN

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
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Drawing No:
A204
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Drawing Series:
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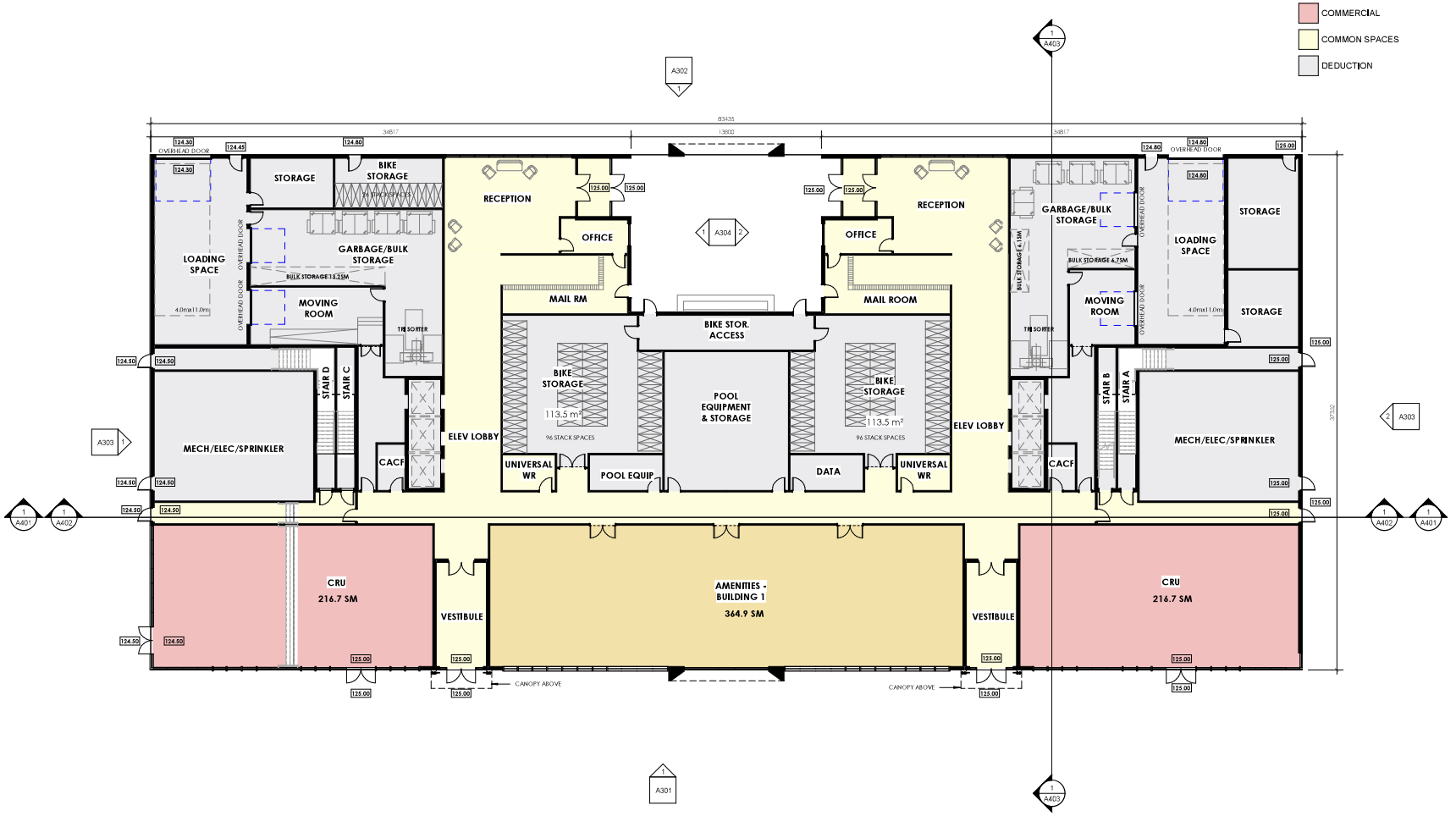

Project North: True North:

GFA COLOR LEGEND

- AMENITY
- COMMERCIAL
- COMMON SPACES
- DEDUCTION

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

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BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:

BUILDING 1 - ENLARGED 1ST FLOOR PLAN

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:

A205

Drawing Series:

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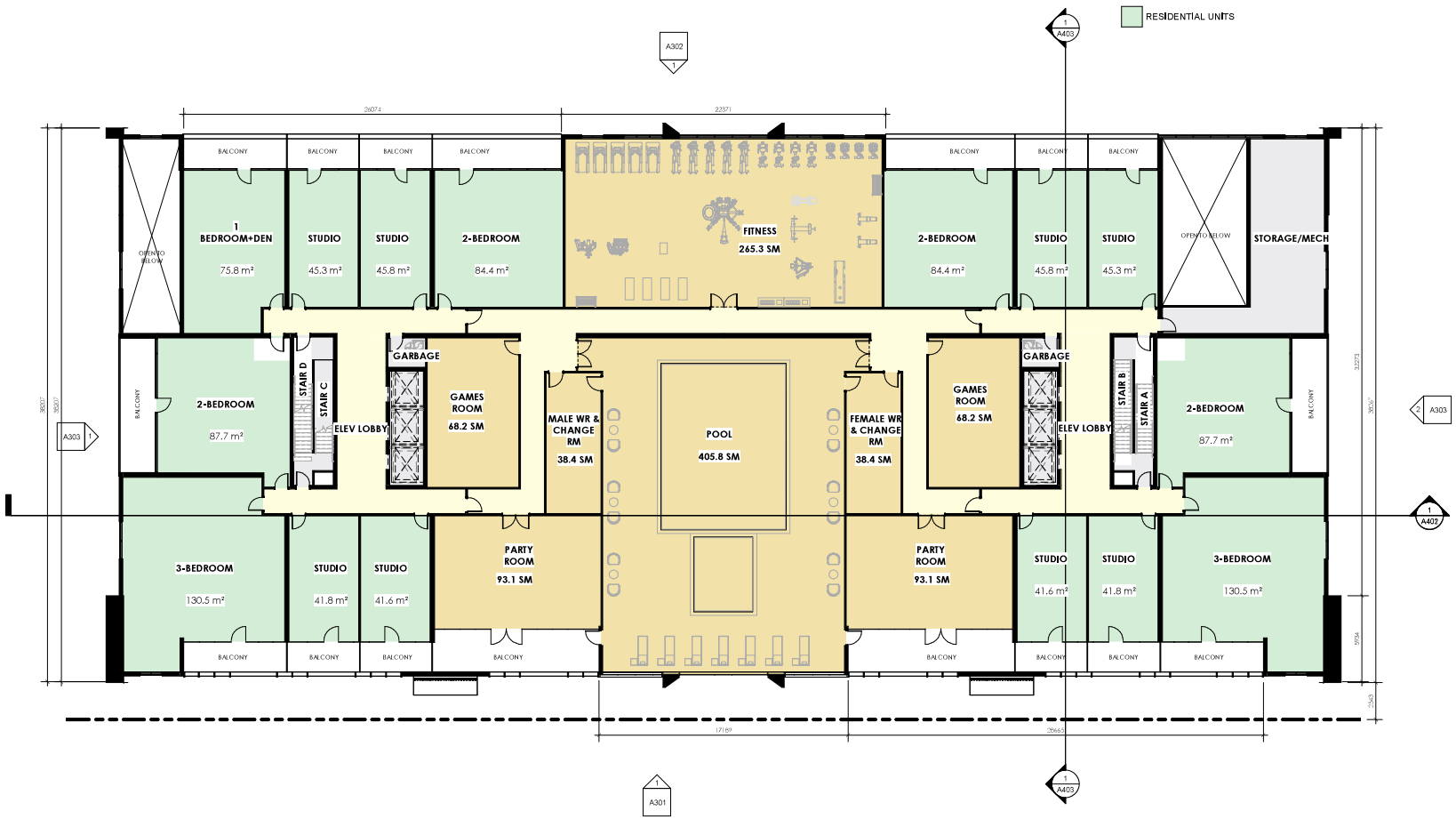

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REV	DESCRIPTION	REV. DATE

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Oakville, ON L6H 0X7
T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 1 - 2ND FLOOR PLAN

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
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Drawing No:
A206
Of:

Drawing Series:
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SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

Note:
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418 Iroquois Shore Road, Unit 206,
Oakville, ON L6H 0X3
T 905.281.4444

Project:
BOWMANVILLE

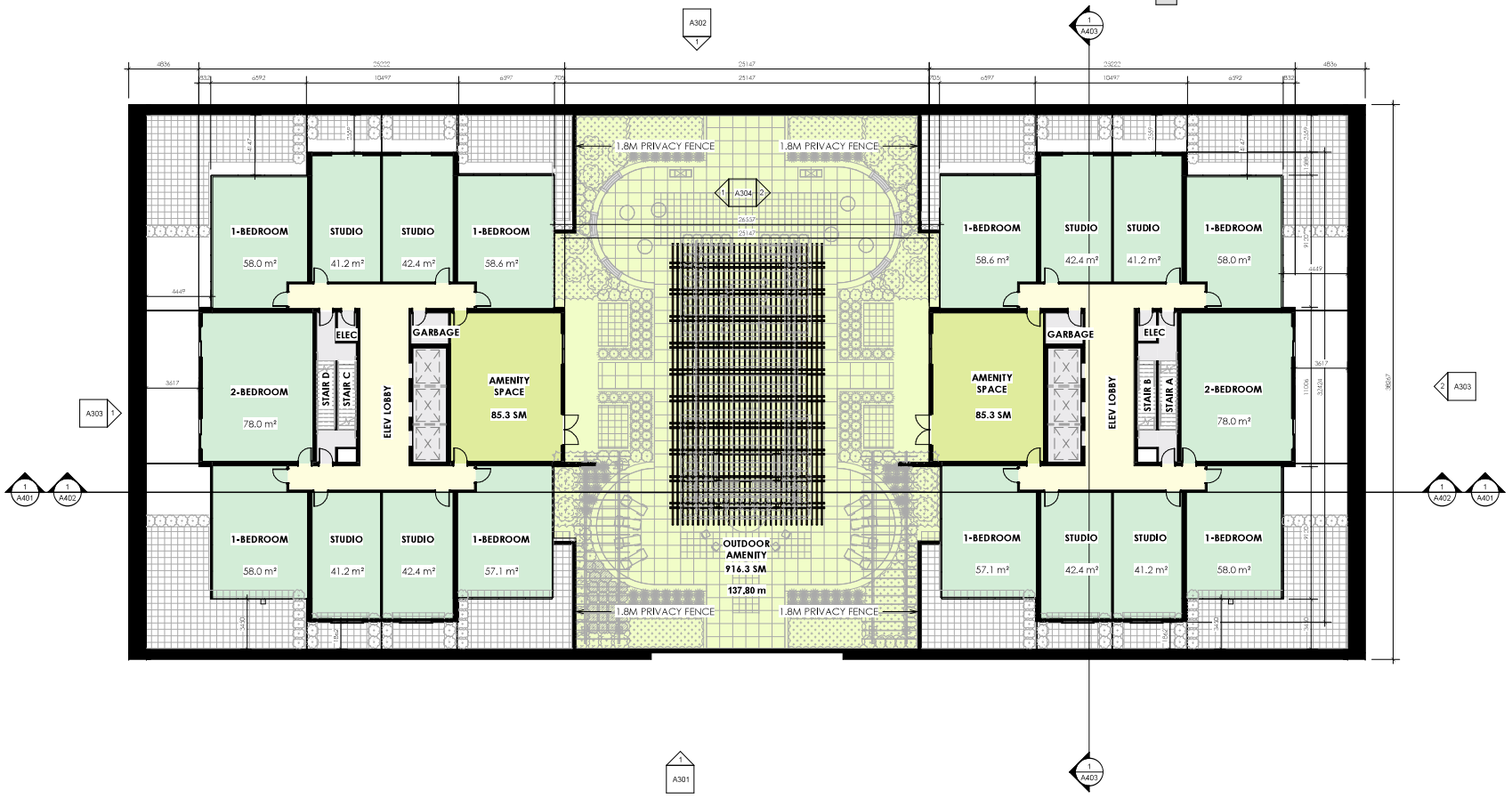
10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 1 - 3RD & 4TH FLOOR PLANS

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A207
Of:

Drawing Series:
—



SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

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Oakville, ON L6H 0X7
T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 1 - 5TH FLOOR PLAN

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A208
Ot

Drawing Series:
—

FLOOR PLAN LEGEND

Project North:	True North:

GFA COLOR LEGEND

- COMMON SPACES
- DEDUCTION
- RESIDENTIAL UNITS

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE
1	PROGRESS SET	Date 2

Drawing Issues/Revisions:

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T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 1 - TYPICAL FLOOR PLAN 6TH - 23TH

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A209
01

Drawing Series:
—

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE
1	PROGRESS SET	Date 2

Drawing Issues/Revisions:

Note:
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Oakville, ON L6H 0X3
T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 1 - 24TH & 25TH FLOOR PLAN

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A210
01

Drawing Series:
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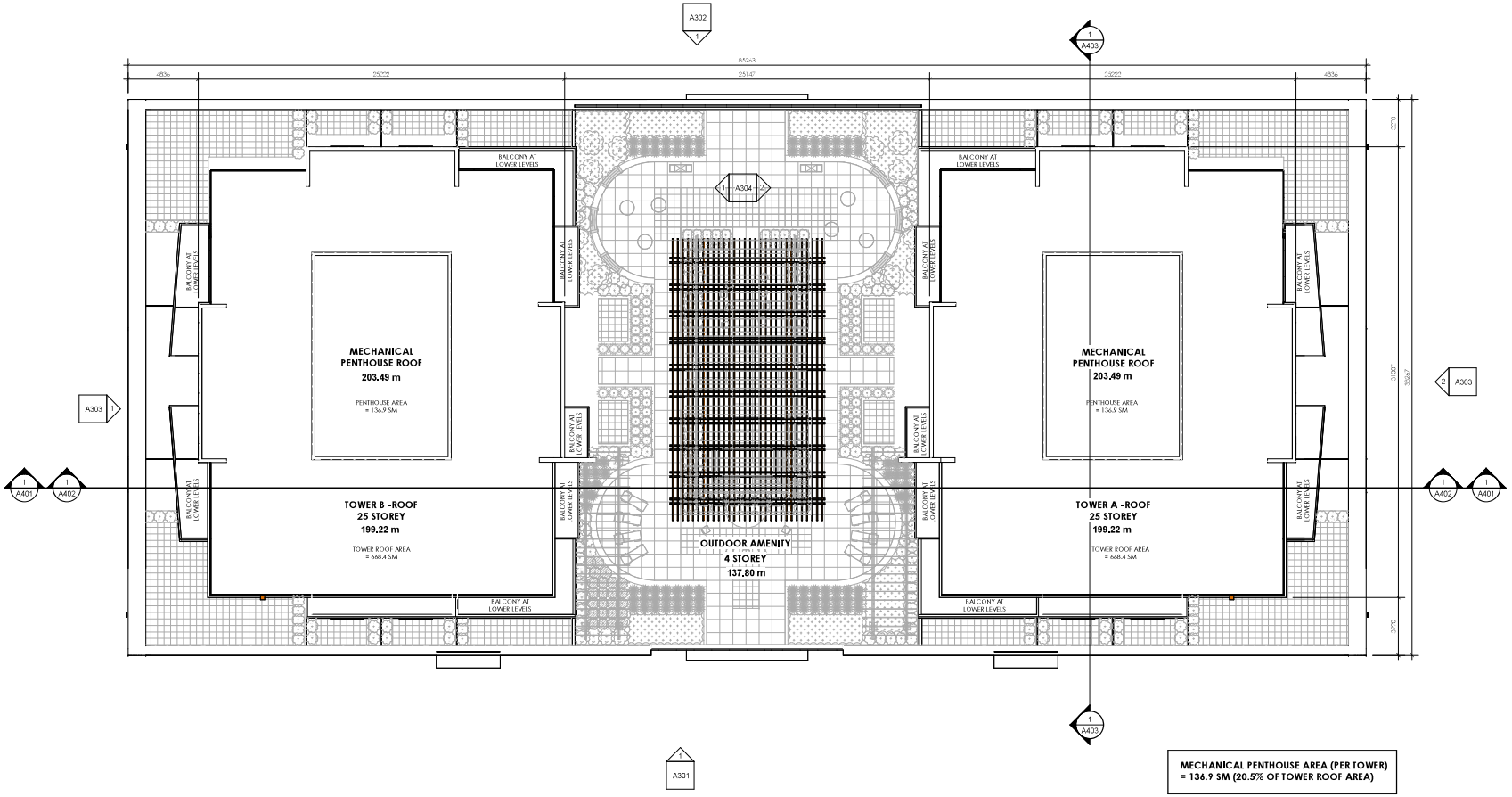

MECHANICAL PENTHOUSE AREA (PER TOWER)
= 136.9 SM (20.5% OF TOWER ROOF AREA)

Project North: True North:

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

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T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 1 - ROOF PLAN

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A211
01

Drawing Series:
—

1 A212 BUILDING 2 - 1ST FLOOR PLAN
1 : 150

2 A212 BUILDING 2 - 2ND FLOOR PLAN
1 : 150

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

Note:
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Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 2 - 1ST & 2ND FLOOR PLANS

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale: 1 : 150	Date: Issue Date	Project No.: 20-034

Drawing No:
A212
Ot:

Drawing Series:
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1 A213 BUILDING 2 - TYP FLOOR PLAN (3RD -8TH)
1 : 150

2 A213 BUILDING 2 - 9TH FLOOR PLAN
1 : 150

GFA COLOR LEGEND

- COMMON SPACES
- DEDUCTION
- RESIDENTIAL UNITS

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

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Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 2 - TYPICAL FLOOR PLANS

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A213
Ot

Drawing Series:
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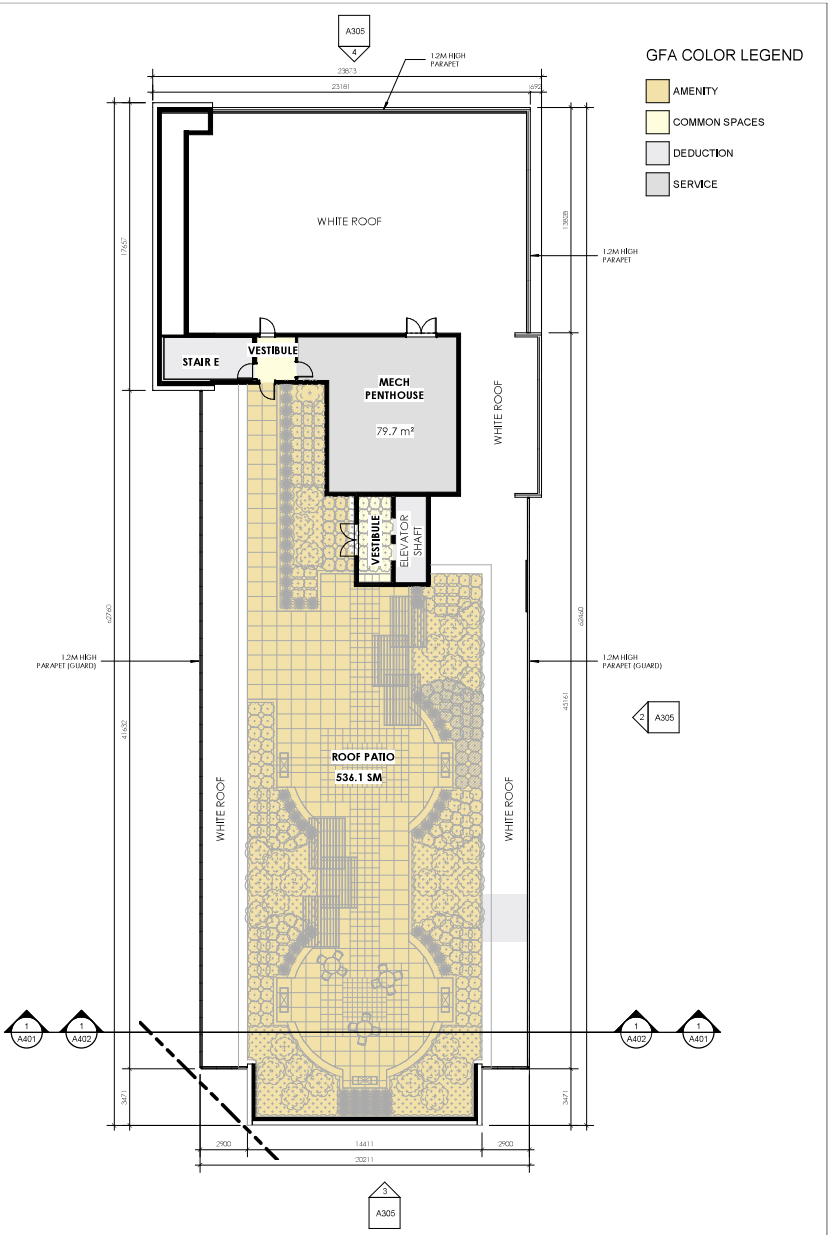
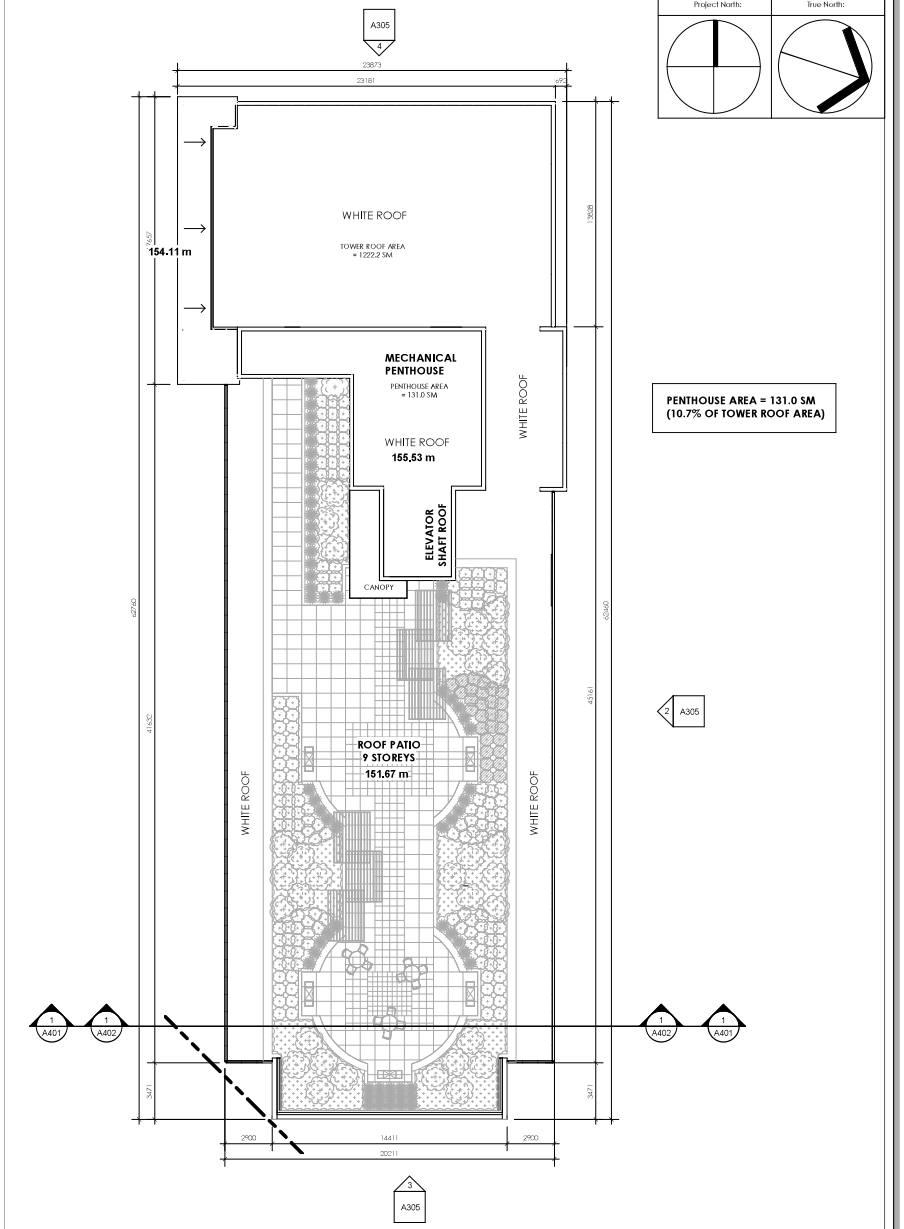


1 A214 BUILDING 2 - ROOFTOP AMENITY
1 : 150



2 A214 BUILDING 2 - ROOF PLAN
1 : 150

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

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L6H 0X7
T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
BUILDING 2 - ROOFTOP AMENITY - ROOF PLANS

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale:	Date:	Project No.:
1 : 150	Issue Date	20-034

Drawing No:
A214
Ot:

Drawing Series:
—

EXTERIOR ELEVATION LEGEND

E01	DRI-DESIGN FINISH - WHITE DOVE, RM OC 17
E02	GLASS GUARD RAIL
E04	ACM - PURE ORANGE 2004 BY LARSON
E05	ACM - CHARCOAL 5-281 BY LARSON - 18" PROJECTION
E06	ACM - SOLVE WHITE BY LARSON
E07	DECORATIVE PERFORATED STAINLESS STEEL - 8" PROJECTION
E08	5"X8" CLEAR ANODIZED ALUMINUM
E09	12" ACM CANOPY - PURE ORANGE 2004 BY LARSON
E10	12"X12" ACM FIN - PURE ORANGE 2004 BY LARSON
E11	TINTED CURTAIN WALL, FRAMELESS
E12	6"X6" ACM FIN - SOLVE WHITE BY LARSON
E13	SHADE STRUCTURE. REFER TO LANDSCAPE DRAWINGS
E15	MECHANICAL SCREEN

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

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Oakville, ON L6H 1M3
T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
EAST ELEVATION - BUILDING 1

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 200	Issue Date	20-034

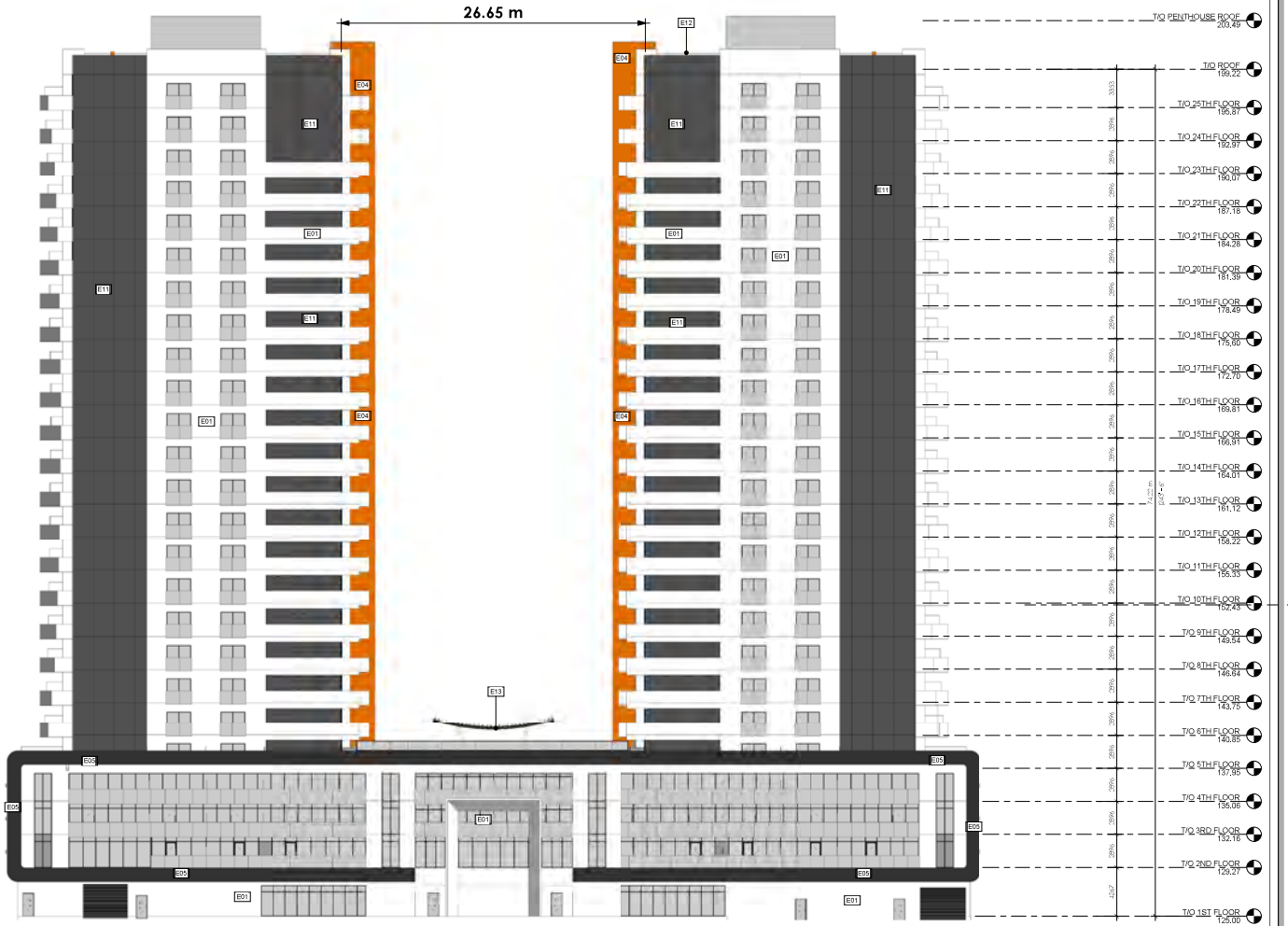
Drawing No:
A301

Drawing Series:
—

EXTERIOR ELEVATION LEGEND	
E01	BRICK - SMOOTH FINISH - WHITE DOVE, BM OC-17
E04	ACM - PURE ORANGE 200A BY LARSON
E05	ACM - CHARCOAL 5-381 BY LARSON - 18" PROJECTION
E11	TINTED CURTAIN WALL, FRAMELESS
E12	6" NF ACM TRIM - SOFT WHITE BY LARSON
E13	SHADE STRUCTURE - REFER TO LANDSCAPE DRAWINGS

TOWER A

TOWER B



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REV	DESCRIPTION	REV. DATE
1	PROGRESS SET	Date 2

Drawing Issues/Revisions:

Note:

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Oakville, ON L6H 0X7
T 905.281.4444

Project:

BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:

WEST ELEVATION - BUILDING 1

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale: 1 : 200	Date: Issue Date	Project No.: 20-034

Drawing No:

A302

Drawing Series:

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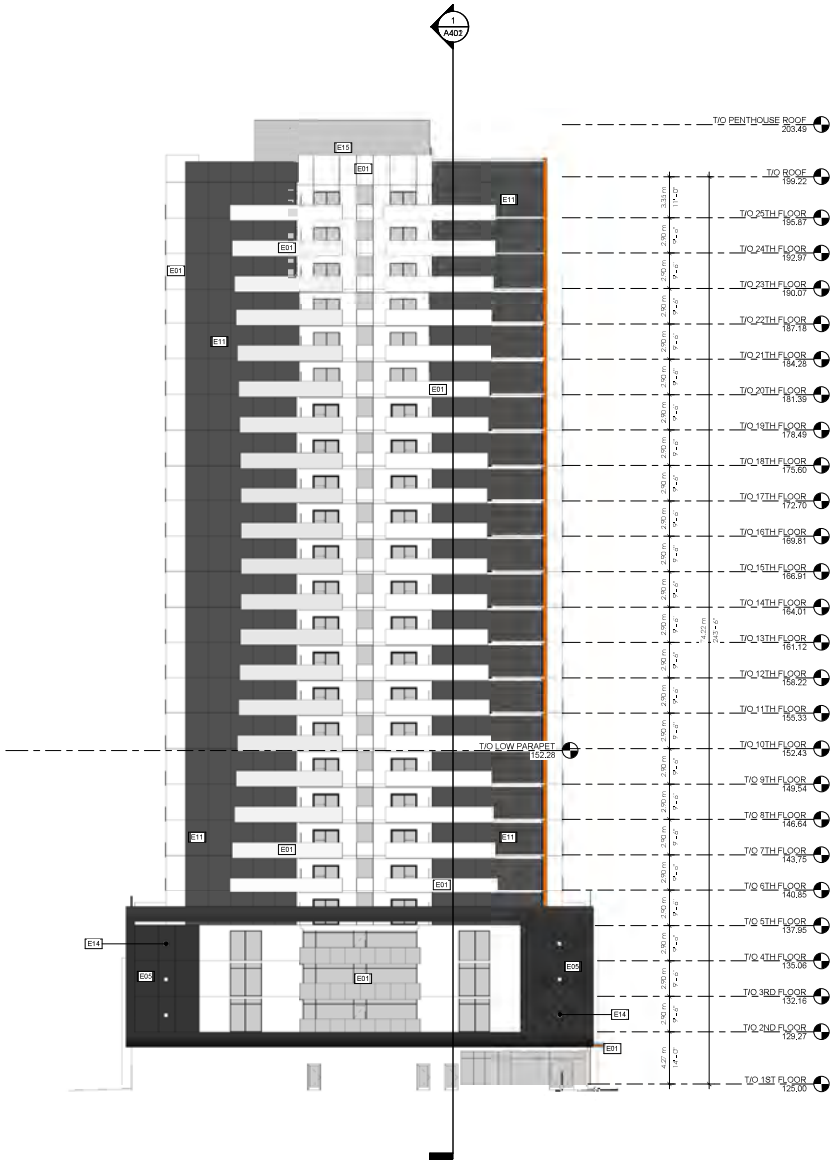
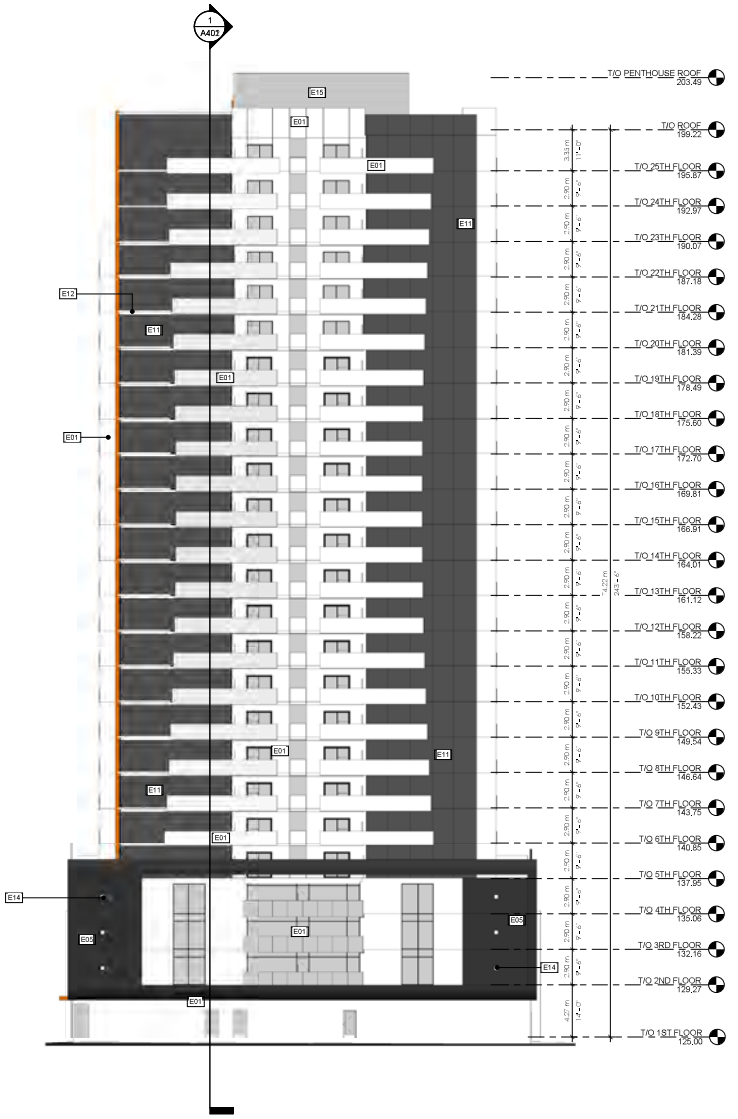


1 A303 SOUTH ELEVATION - BUILDING 1
1 : 200

EXTERIOR ELEVATION LEGEND	
E01	EIFS - SMOOTH FINISH - WHITE DOVE, BM OC-17
E05	ACM - CHARCOAL S-381 BY LARSON - 18" PROJECTION
E11	TINTED CURTAIN WALL, FRAMELESS
E12	ACM WITH V-BOX WHITE BY LARSON
E14	DECORATIVE LIGHTING FIXTURE
E15	MECHANICAL SCREEN



2 A303 NORTH ELEVATION - BUILDING 1
1 : 200

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

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418 Iroquois Shore Road, Unit 206,
Oakville, ON L6H 0X3
T 905.281.2444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
NORTH & SOUTH ELEVATIONS - BUILDING 1

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 200	Issue Date	20-034

Drawing No:
A303 01

Drawing Series:
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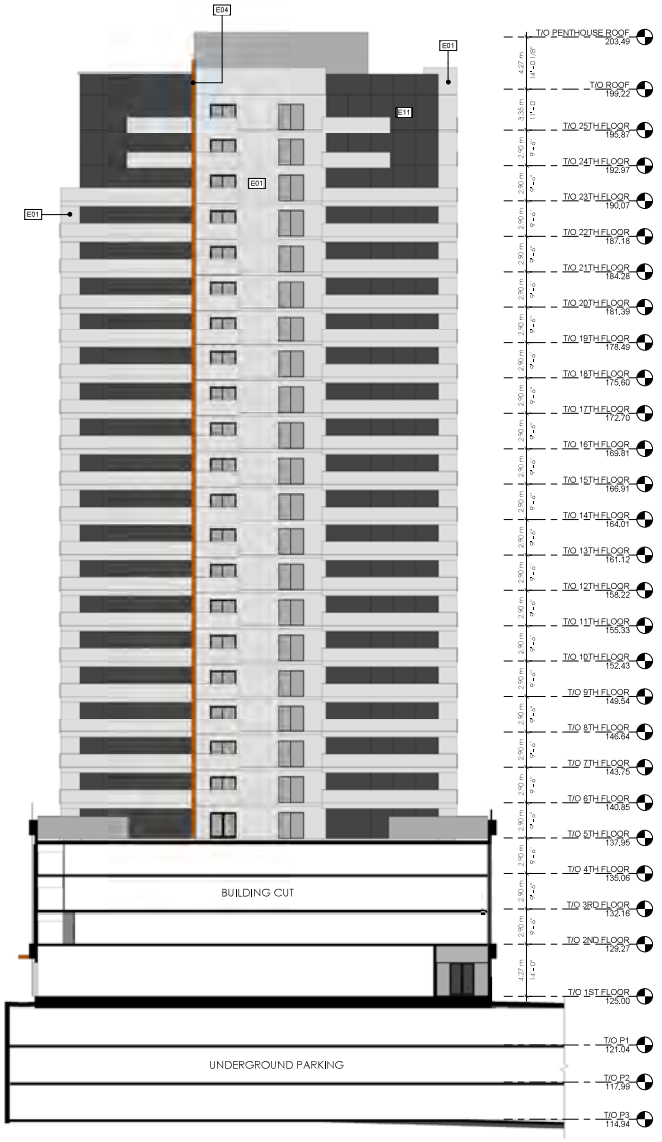
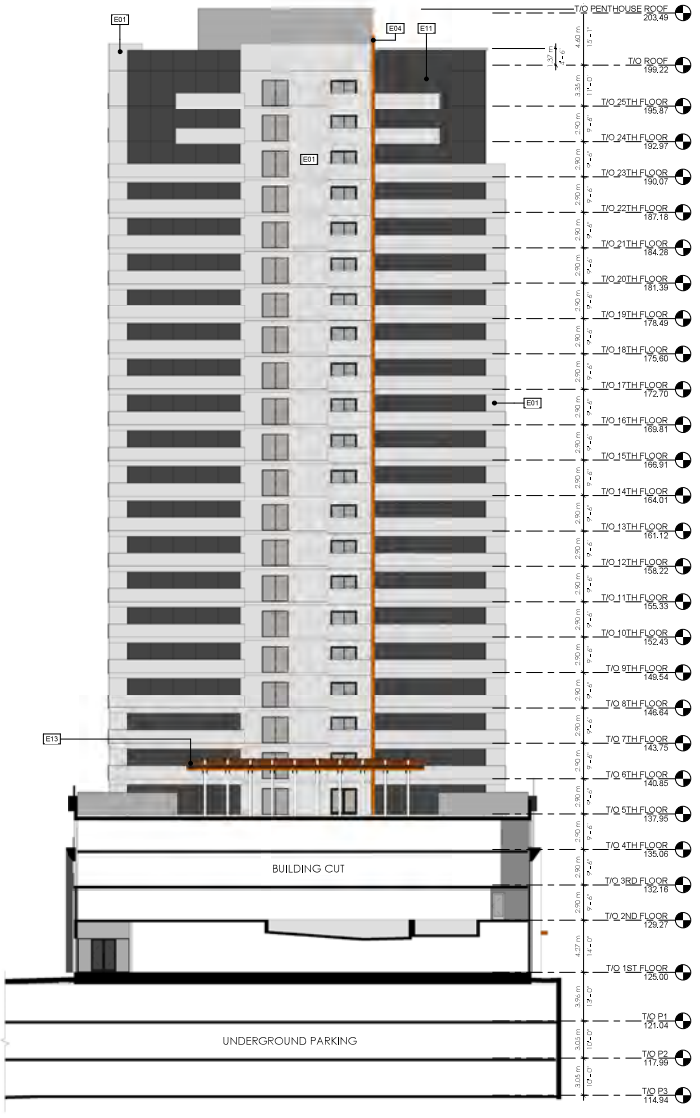


1 A304 NORTH ELEVATION - TOWER A
1 : 200



2 A304 SOUTH ELEVATION - TOWER B
1 : 200

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

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Architect's Stamp

MATAJ ARCHITECTS INCORPORATED
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Oakville, Ontario
L6H 0X7
T 905.281.4444

Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
TOWER ELEVATIONS - BUILDING 1

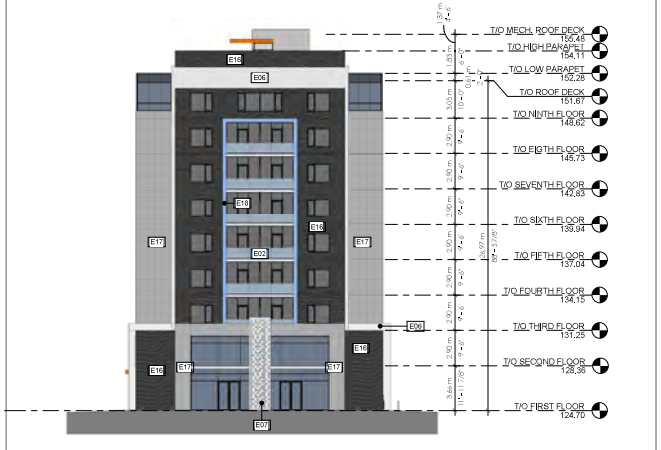
Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale:	Date:	Project No.:
1 : 200	Issue Date	20-034

Drawing No:
A304 01

Drawing Series:
--

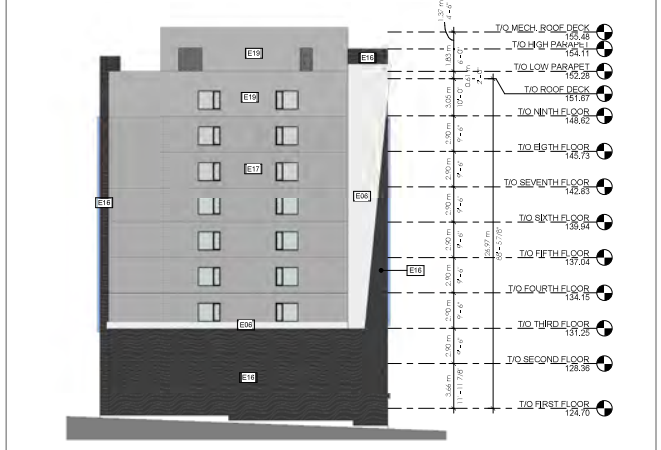
1 A305 SOUTH ELEVATION - BUILDING 2
1 : 200

EXTERIOR ELEVATION LEGEND	
E02	GLASS GUARD RAIL
E04	ACM - PURE ORANGE 2004 BY LARSON
E05	ACM - BONE WHITE BY LARSON
E07	DECORATIVE PERFORATED STAINLESS STEEL - 8" PROJECTION
E16	EIFS - SLATE FINISH, KENDALL CHARCOAL, HC-166
E17	EIFS - STACK ROCK STONE PATTERN - CAPE MAY COBBLESTONE BENJAMIN MOORE 1474
E18	EIFS SMOOTH - LIGHT BLUE
E19	EIFS SMOOTH - LIGHT GREY BIATTI 1-30



3 A305 EAST ELEVATION - BUILDING 2
1 : 200

2 A305 NORTH ELEVATION - BUILDING 2
1 : 200



4 A305 WEST ELEVATION - BUILDING 2
1 : 200

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE

Drawing Issues/Revisions:

Note:
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Project:
BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:
ELEVATIONS - BUILDING 2

Design By:	Drawn By:	Approved By:
Designer	Author	Approver
Scale: 1 : 200	Date: Issue Date	Project No.: 20-034

Drawing No:
A305 01

Drawing Series:
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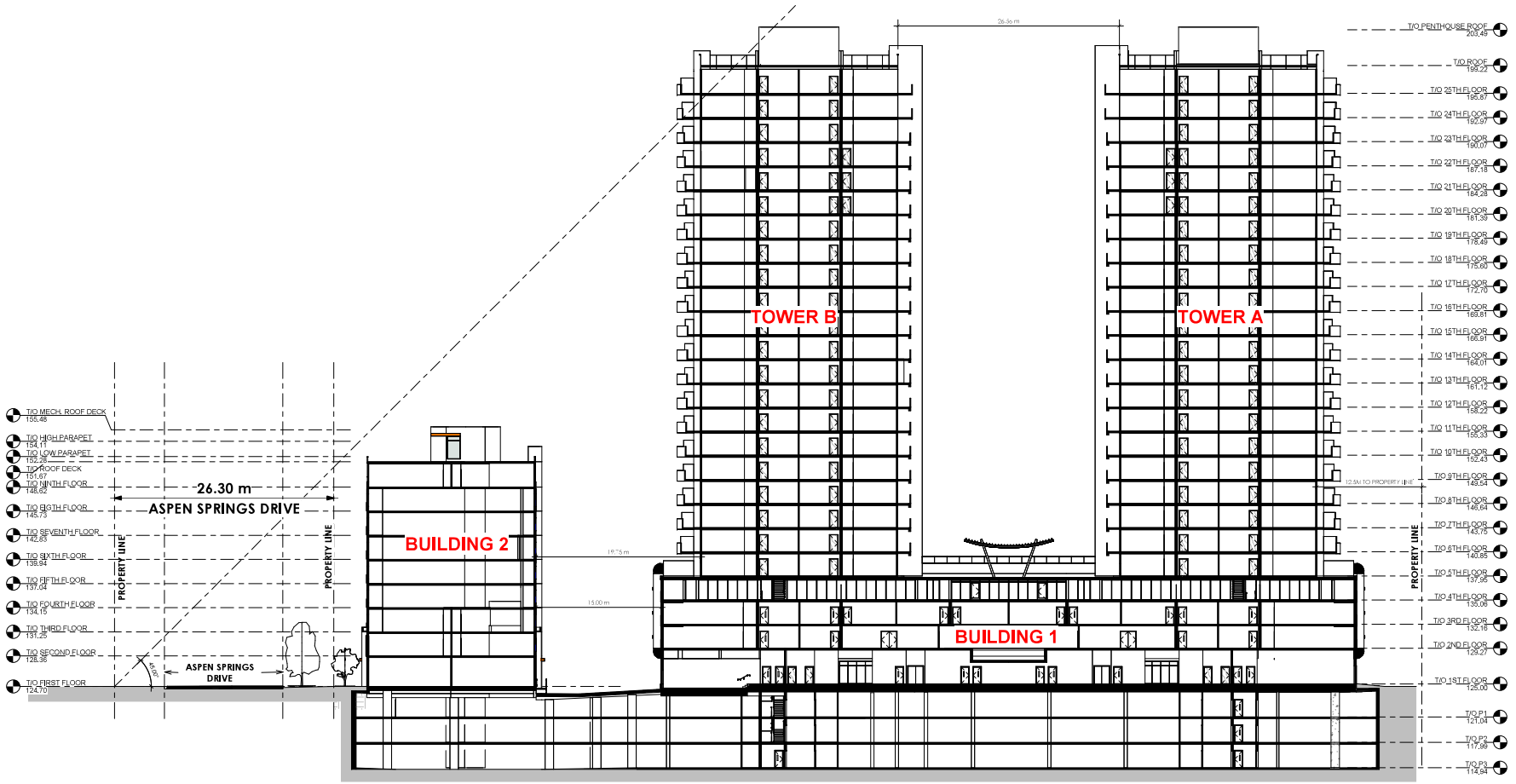

SPA FILE NO. -

REV	DESCRIPTION	REV. DATE
1	PROGRESS SET	Date 2

Drawing Issues/Revisions:

Note:

ALL DIMENSIONS AND INFORMATION SHOWN ON THESE DRAWINGS MUST BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT PRIOR TO CONSTRUCTION AND FABRICATION OF ITS COMPONENTS. SHOULD EXISTING CONDITIONS OR SERVICES BE FOUND TO VARY FROM THAT INDICATED ON THE DRAWINGS, THE ARCHITECT MUST BE NOTIFIED IMMEDIATELY.

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MATAJ

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Project:

BOWMANVILLE

10 ASPEN SPRINGS DR.,
BOWMANVILLE, ON L1C 4W7

Sheet Title:

SITE SECTION

Design By:	Drawn By:	Approved By:
EM	BL	EM
Scale:	Date:	Project No.:
1 : 250	Issue Date	20-034

Drawing No:

A401

Ot

Drawing Series:

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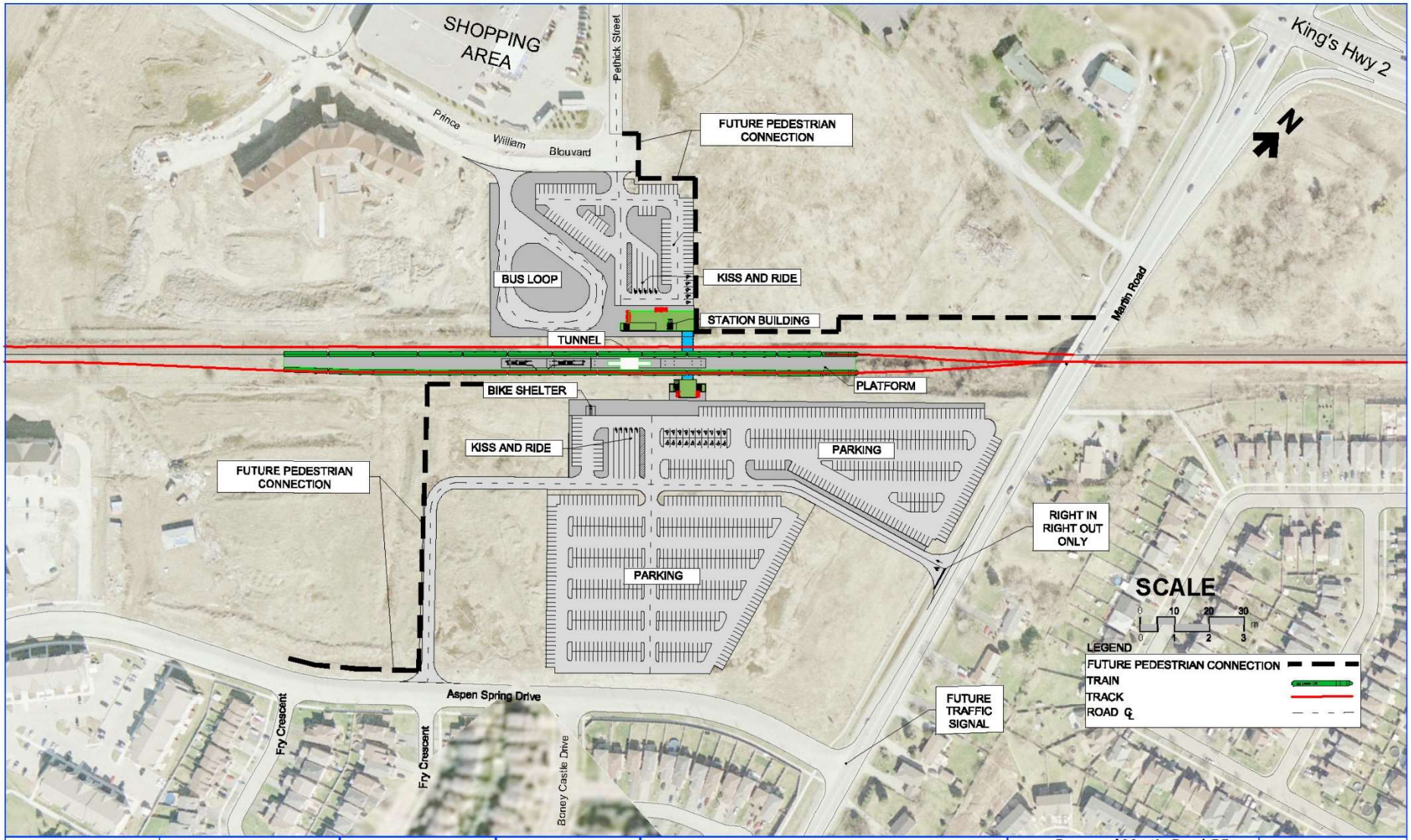


Source: AECOM. Oshawa to Bowmanville Rail Service Expansion and Rail Maintenance Facility. Transit Project Assessment Process Environmental Assessment Study. Environmental Project Report – Volume 1 – Main Report. February 2011.

SUNRAY GROUP	True North	Scale: N.T.S.	METRES
10 ASPEN SPRINGS DRIVE, BOWMANVILLE		Date: May 3, 2022 Rev 1.0	Figure No. **A1**
FUTURE BOWMANVILLE GO STATION CONCEPT PLAN – EXCERPT FROM TPAP		Project No. 241.30367.00000	

SLR global environmental solutions

Appendix B

Traffic Data and Calculations

Environmental Noise Assessment

10 Aspen Springs Drive

Bowmanville, ON

SLR Project No.: 241.30367.00000

Planning and Economic
Development Department

Planning Division

605 ROSSLAND RD. E.
4TH FLOOR
P.O. BOX 623
WHITBY, ON L1N 6A3
CANADA
905-668-7711
1-800-372-1102
Fax: 905-666-6208
E-Mail: planning@durham.ca

www.durham.ca

Brian Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

The Regional Municipality of Durham

ROAD SEGMENT TRAFFIC FORECASTS FOR NOISE ANALYSES

This information is to be used as the basis for assessing the potential impacts of noise, generated by traffic on Provincial Highways and arterial roads, on proposed land uses that are sensitive (e.g., residential subdivisions). Arterial roads include existing and future Type A, B and C, as designated in the Durham Regional Official Plan.

Noise assessment reports recommend specific measures to be integrated into the design of sensitive developments to reduce road noise impacts to acceptable levels.

Provided For:

Name / Name of Firm: Keni Mallinen, SLR Consulting (Canada) Ltd.

Address: 200 Stone Rd W, Guelph, ON N1G 4S9

Telephone: (226) 203-7385 Fax:

Location of Proposal:

10 Aspen Springs Dr, Bowmanville, ON L1C 4W7

Municipality: Clarington Lot(s): Concession:

Durham Region File No. (if available):

Name of Property Owner (if available):

Date Request Received: February 28, 2022 Received By: Victor Copetti

Date Forecast Sent: February 28, 2022

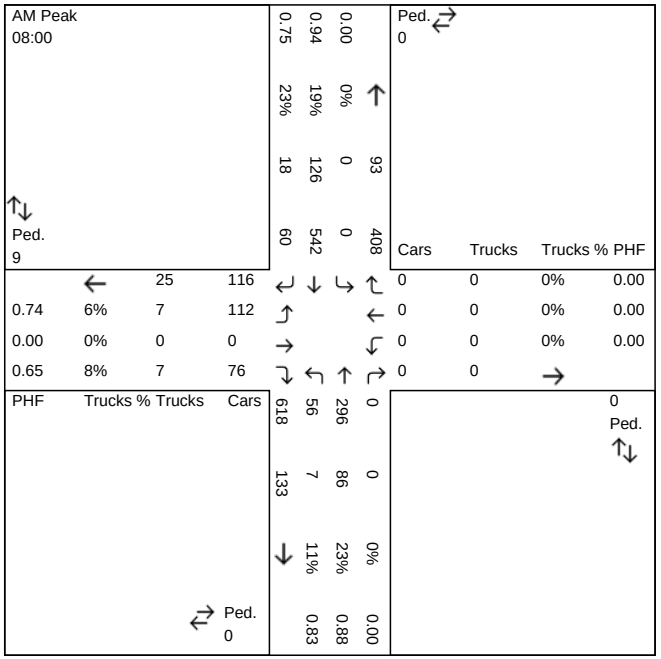
Name of Road Segment	Forecasted AADT*	No. of Lanes	% of Trucks	Heavy : Medium Truck Ratio		Speed (km/h)
Bowmanville Ave. (south of King St. W)	18,000	4	10	50	50	60
Hwy 2 (west of Bowmanville Ave.)	20,000	4	8	35	65	60
Hwy 2 (east of Bowmanville Ave.)	19,000	4	7	40	60	50
	0	0	0	0	0	0

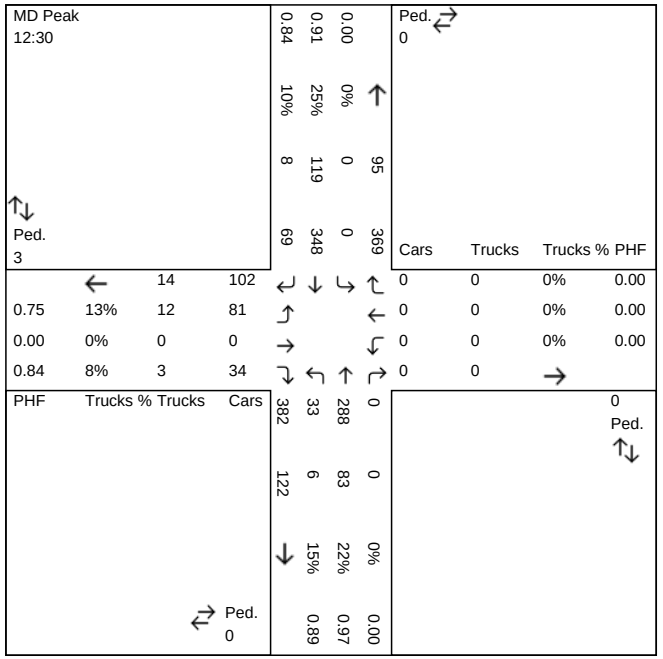
* Average Annual Daily Traffic. Forecast based on ultimate development according to the Durham Regional Official Plan.

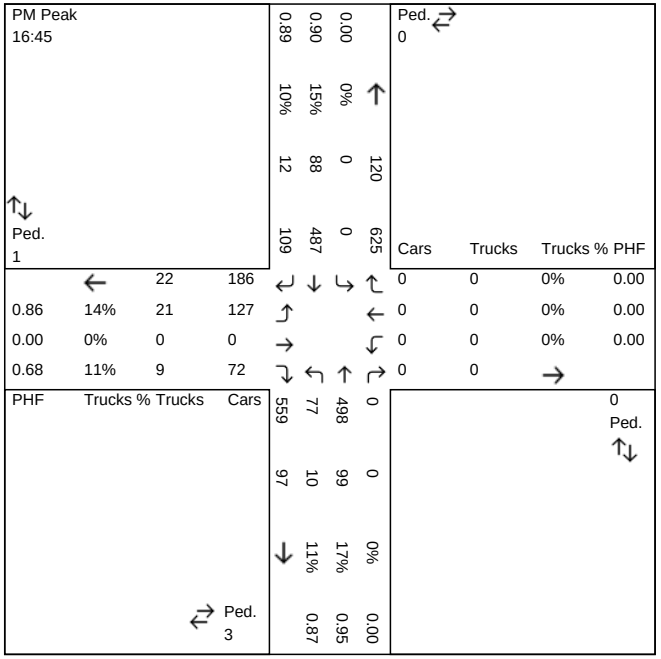
TMC Tabular Report

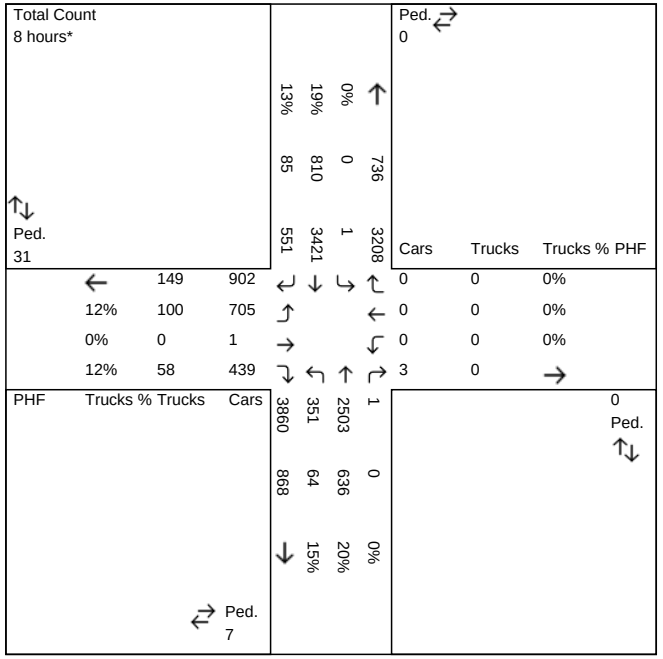
Bowmanville Av (R.R.57) @ Aspen Springs Dr

TMC No: 0570600000 **Intersection ID:** 5157 **Count ID:** 35702018202 **Count Date:** 11/20/2019, Wed









TMC 15 Min Report

Bowmanville Av (R.R.57) @ Aspen Springs Dr

TMC No: 0570600000 **Intersection ID:** 5157 **Count ID:** 35702018202 **Count Date:** 11/20/2019, Wed

Time	NORTH APPROACH										EAST APPROACH										SOUTH APPROACH										WEST APPROACH										Total
	Left	Cars Thru	Right	Left	Trucks Thru	Right	Left	Heavies Thru	Right	Ped	Left	Cars Thru	Right	Left	Trucks Thru	Right	Left	Heavies Thru	Right	Ped	Left	Cars Thru	Right	Left	Trucks Thru	Right	Left	Heavies Thru	Right	Ped	Left	Cars Thru	Right	Left	Trucks Thru	Right	Left	Heavies Thru	Right	Ped	
Period 1																																								
06:00	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*
06:15	0	113	2	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	23	0	2	12	0	0	0	0	0	1	0	15	0	0	0	0	0	2	189
06:30	0	98	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	27	0	1	10	0	0	0	0	0	4	0	12	0	0	2	0	0	0	179
06:45	1	117	4	0	29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	35	0	1	11	0	0	0	0	0	6	0	12	5	0	1	0	0	0	227
07:00	0	97	8	0	25	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	40	0	0	13	0	0	0	0	0	15	0	14	4	0	1	0	0	0	226
07:15	0	111	4	0	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	40	0	1	11	0	0	0	0	0	11	0	17	1	0	3	0	0	0	221
07:30	0	105	9	0	33	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	44	0	2	22	0	0	0	0	0	12	0	14	1	0	3	0	0	1	255
07:45	0	127	9	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	53	0	2	9	0	0	0	0	0	16	0	19	4	0	2	0	0	2	289
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09:15	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*
Period 2																																								
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Period 3																																								
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17:30	**0**	**146**	**31**	**0**	**14**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**21**	**133**	**0**	**3**	**13**	**0**	**0**	**0**	**0**	**2**	**31**	**0**	**19**	**6**	**0**	**2**	**0**	**0**	**0**	**424**
17:45	0	110	22	0	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	130	0	3	25	0	0	0	0	0	26	0	8	3	0	1	0	0	1	359
18:00	0	100	29	0	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	90	0	1	9	0	0	0	0	0	26	0	18	5	0	1	0	0	1	305
18:15	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*
18:30	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*

ATR Count Report

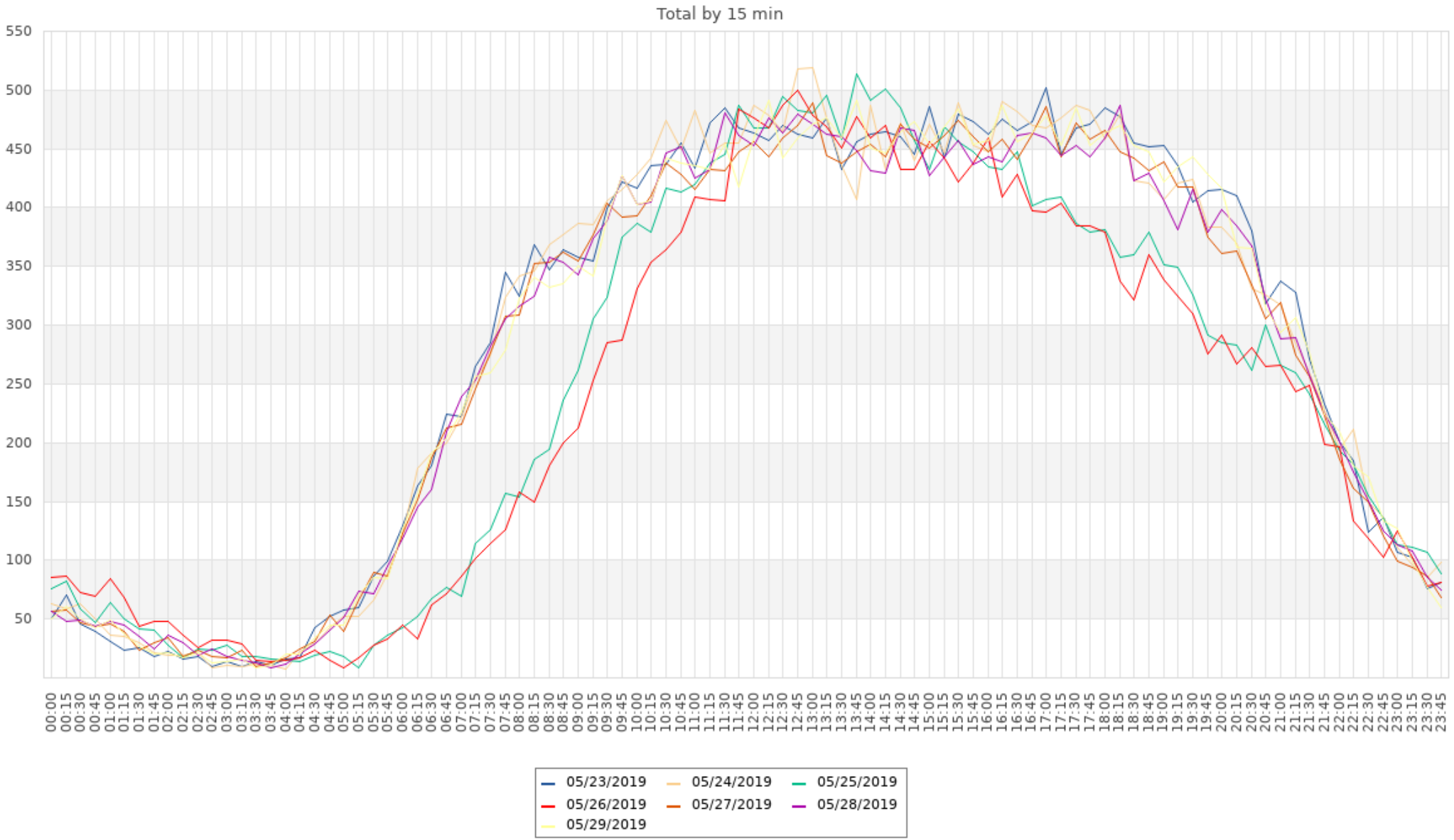
Regional Highway 2 200 m. W. of Bowmanville Av. (R.R.57)

ATR No: 7029 **Affiliated PCS No:** 353 **Start Date:** 05/23/2019 **End Date:** 05/29/2019

Start	2019-May-23		Fri		Sat		Sun		Mon		Tue		Wed		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	50	464	63	487	76	468	85	476	57	456	57	453	50	459	63	466
12:15	70	457	59	478	82	468	87	468	58	443	48	476	61	491	66	469
12:30	46	470	63	465	59	495	73	487	47	459	49	463	50	442	55	469
12:45	39	462	50	518	47	483	69	500	44	470	44	480	43	459	48	482
01:00	31	459	36	519	64	481	84	478	46	489	48	471	49	471	51	481
01:15	23	476	35	476	50	496	68	469	40	444	45	462	37	476	43	471
01:30	26	433	30	436	42	458	44	451	23	438	35	460	27	459	32	448
01:45	18	456	21	407	41	514	48	477	30	447	25	449	20	491	29	463
02:00	22	462	19	487	28	491	48	459	34	454	36	431	21	451	30	462
02:15	16	465	19	433	17	501	36	470	18	443	30	429	17	446	22	455
02:30	18	460	21	472	25	485	26	433	23	471	19	468	21	465	22	465
02:45	10	445	9	440	23	457	32	433	18	458	25	466	13	473	19	453
03:00	14	486	11	471	28	432	32	456	17	451	18	427	14	454	19	454
03:15	10	442	10	446	18	469	29	442	23	461	15	443	16	469	17	453
03:30	14	479	12	489	18	456	15	422	10	474	13	457	9	484	13	466
03:45	11	473	11	453	16	447	14	438	13	460	9	437	11	454	12	452
04:00	16	462	8	448	15	435	15	459	17	448	12	443	20	457	15	450
04:15	17	475	22	490	14	432	17	409	25	458	20	439	20	487	19	456
04:30	43	466	29	482	19	447	24	428	31	441	29	461	34	456	30	454
04:45	52	473	43	470	22	402	15	397	53	462	41	463	45	464	39	447
05:00	58	502	52	468	18	407	9	396	40	486	51	459	45	478	39	457
05:15	60	445	52	476	9	409	17	404	66	443	74	444	71	453	50	439
05:30	86	468	66	487	28	387	28	385	90	472	72	453	85	485	65	448
05:45	99	471	89	483	36	379	33	384	86	458	95	443	84	453	75	439
06:00	129	485	122	458	43	381	45	379	123	466	119	459	127	463	101	442
06:15	163	477	178	479	52	358	33	337	152	447	145	487	156	470	126	436
06:30	181	455	191	423	67	360	62	321	187	442	160	423	191	453	148	411
06:45	224	452	200	421	77	379	72	360	213	431	209	429	204	448	171	417
07:00	222	453	222	407	69	351	86	339	216	439	239	406	226	422	183	402
07:15	265	436	253	421	114	349	101	325	246	418	253	381	256	435	213	395
07:30	285	405	275	424	126	326	114	310	277	418	282	415	259	443	231	392
07:45	345	414	324	383	157	292	126	276	308	375	305	379	279	428	263	364
08:00	325	415	342	383	154	285	158	292	309	361	316	398	323	416	275	364
08:15	368	410	346	370	186	283	150	267	352	363	325	384	341	366	295	349
08:30	347	380	368	331	194	262	180	281	354	334	358	367	332	365	305	331
08:45	364	318	377	326	236	300	200	265	362	305	354	322	335	315	318	307
09:00	358	337	387	317	262	266	213	266	355	319	343	288	350	294	324	298
09:15	355	328	386	284	305	260	253	244	377	274	374	289	342	306	342	284
09:30	399	271	406	260	324	241	285	249	404	256	389	257	391	277	371	259
09:45	422	233	415	228	375	216	287	199	392	223	427	225	427	224	392	221
10:00	416	201	428	194	387	193	331	197	393	186	403	201	403	209	394	197
10:15	436	185	442	211	379	182	354	133	410	161	405	175	406	180	405	175
10:30	437	124	474	150	417	155	364	119	438	149	446	151	442	171	431	146
10:45	455	137	450	137	413	136	379	102	428	121	452	125	438	134	431	127
11:00	434	107	483	111	420	113	409	125	415	99	425	113	436	127	432	114
11:15	472	102	446	96	438	111	407	102	432	94	432	108	432	99	437	102
11:30	485	76	455	85	445	107	406	78	431	86	481	85	454	77	451	85
11:45	468	81	455	98	487	89	484	81	447	68	461	75	418	60	460	79
Total	9204	18433	9255	18278	6922	16894	6447	16268	8930	17821	9013	17819	8831	18359	8372	17696
Day	27637		27533		23816		22715		26751		26832		27190		26068	
Total%	33.3%	66.7%	33.61%	66.39%	29.06%	70.94%	28.38%	71.62%	33.38%	66.62%	33.59%	66.41%	32.48%	67.52%	32.12%	67.88%
Splits Peak	11:15	04:15	11:45	00:15	11:45	01:45	11:45	00:30	11:45	04:45	11:30	00:15	11:30	01:00	10:30	03:00
Vol.	1889	1916	1885	1980	1918	1991	1915	1934	1805	1863	1871	1890	1822	1897	9527	10049
P.H.F.	0.97	0.95	0.97	0.95	0.97	0.97	0.98	0.97	0.98	0.96	0.97	0.98	0.93	0.97	0.78	0.77

ATR Count Report

ATR No:	7029	Affiliated PCS No:	353	Start Date:	05/23/2019	End Date:	05/29/2019



ATR Count Report

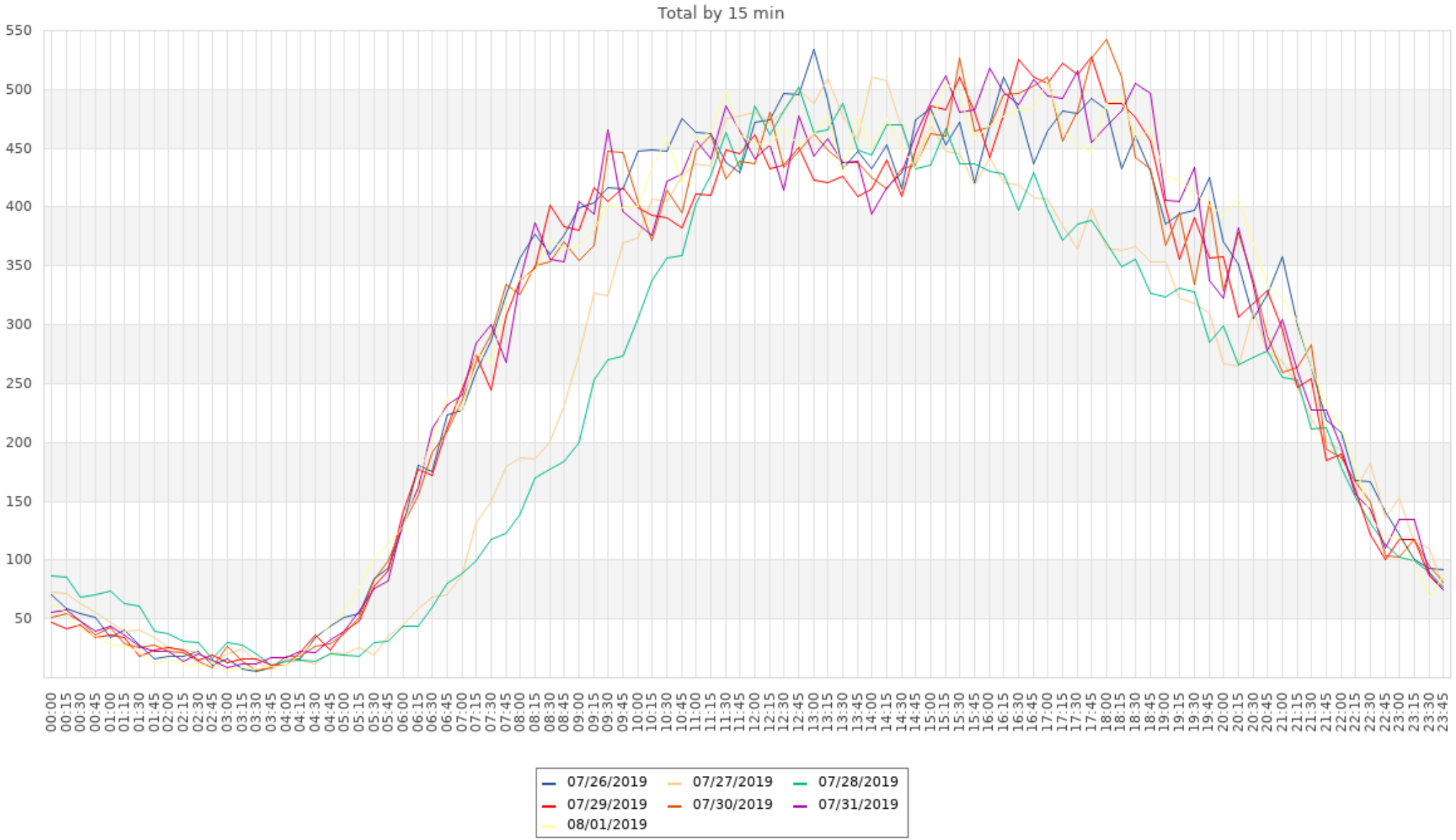
Regional Highway 2 200 m. W. of Bowmanville Av. (R.R.57)

ATR No: 7029 **Affiliated PCS No:** 353 **Start Date:** 07/26/2019 **End Date:** 08/01/2019

Start	2019-Jul-26		Sat		Sun		Mon		Tue		Wed		Thu		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	70	472	73	481	87	486	47	461	51	437	56	441	63	454	64	462
12:15	59	474	72	472	85	461	42	433	54	481	58	453	56	453	61	461
12:30	54	497	63	482	68	482	45	436	48	434	48	414	41	468	52	459
12:45	51	496	56	500	71	502	34	451	36	447	39	477	35	452	46	475
01:00	34	534	47	488	74	463	36	423	43	462	44	443	28	462	44	468
01:15	41	491	40	509	63	466	34	421	29	449	36	458	28	477	39	467
01:30	28	433	41	477	61	488	18	426	26	438	27	438	21	429	32	447
01:45	16	448	34	457	40	449	23	409	28	438	22	439	12	476	25	445
02:00	18	433	26	510	37	444	26	415	22	425	22	394	16	451	24	439
02:15	18	453	23	507	31	470	24	440	21	415	14	416	12	475	20	454
02:30	22	415	21	467	30	470	15	409	14	432	20	429	10	450	19	439
02:45	11	474	13	439	16	432	19	449	9	436	15	461	13	434	14	446
03:00	16	484	20	470	30	436	13	486	27	462	9	489	5	470	17	471
03:15	7	453	25	447	28	467	16	483	14	460	12	512	9	506	16	475
03:30	5	472	14	445	20	437	16	511	6	526	12	481	8	495	12	481
03:45	9	421	6	419	11	437	11	481	9	465	17	483	10	458	10	452
04:00	15	470	15	442	14	430	11	442	18	468	17	518	11	469	14	463
04:15	16	510	15	421	15	428	21	478	18	496	22	498	19	477	18	473
04:30	34	483	12	419	14	397	36	525	27	497	21	487	31	483	25	470
04:45	44	437	21	408	20	429	24	511	29	503	32	508	45	484	31	469
05:00	51	465	20	407	19	398	39	505	37	511	39	494	57	507	37	470
05:15	55	482	26	384	18	372	48	522	51	456	57	492	77	465	47	453
05:30	84	479	19	364	30	386	78	513	83	482	76	516	103	453	68	456
05:45	93	492	35	399	31	389	91	528	99	526	82	455	113	446	78	462
06:00	129	483	45	365	44	370	141	488	130	542	134	469	128	488	107	458
06:15	180	433	59	363	44	349	177	488	155	510	161	482	169	495	135	446
06:30	175	460	68	366	60	356	172	476	191	442	211	505	203	458	154	438
06:45	223	430	70	353	80	327	213	456	209	433	232	497	238	466	181	423
07:00	227	386	88	354	89	324	246	401	236	367	240	406	226	426	193	381
07:15	260	394	131	323	99	331	275	356	268	395	284	405	277	423	228	375
07:30	286	397	149	318	117	328	245	391	292	334	300	434	267	412	237	373
07:45	326	425	179	310	123	285	308	357	334	405	268	338	321	402	266	360
08:00	357	371	187	267	139	299	337	358	326	329	337	323	339	393	289	334
08:15	377	351	186	265	170	266	348	307	350	378	387	382	346	407	309	337
08:30	360	305	201	312	177	272	402	318	354	338	356	333	373	368	318	321
08:45	376	326	231	277	184	278	383	329	371	290	353	278	364	333	323	302
09:00	399	358	275	269	200	255	380	296	355	260	405	304	367	323	340	295
09:15	404	300	327	248	253	253	417	247	367	264	394	261	381	303	363	268
09:30	417	264	325	220	270	211	405	254	448	283	466	227	402	264	390	246
09:45	415	219	370	201	273	213	417	185	446	194	396	228	399	232	388	210
10:00	448	208	374	193	305	178	399	190	405	187	386	195	401	212	388	195
10:15	449	168	407	159	338	154	393	160	372	167	376	156	433	180	395	163
10:30	448	167	405	183	357	131	391	122	414	150	422	143	459	137	414	148
10:45	475	141	426	136	359	113	382	100	395	104	428	110	420	120	412	118
11:00	464	122	437	153	403	102	411	117	448	102	457	135	457	119	440	121
11:15	462	100	435	115	427	99	410	117	461	118	441	135	465	98	443	112
11:30	438	93	475	110	463	90	449	87	424	95	486	89	499	68	462	90
11:45	429	92	477	78	433	77	445	75	439	81	465	75	461	87	450	81
Total	9375	18261	7064	16752	6320	16280	8913	17833	8989	17914	9182	18106	9218	18408	8438	17652
Day	27636		23816		22600		26746		26903		27288		27626		26090	
Total%	33.92%	66.08%	29.66%	70.34%	27.96%	72.04%	33.32%	66.68%	33.41%	66.59%	33.65%	66.35%	33.37%	66.63%	32.34%	67.66%
Splits Peak	11:45	00:30	11:45	00:30	11:45	00:00	11:30	05:00	11:45	05:30	11:00	04:00	11:00	04:15	10:30	03:00
Vol.	1872	2018	1912	1979	1862	1931	1788	2068	1791	2060	1849	2011	1882	1951	9477	10330
P.H.F.	0.94	0.94	0.99	0.97	0.96	0.96	0.97	0.98	0.93	0.95	0.95	0.97	0.94	0.96	0.76	0.77

ATR Count Report

ATR No:	7029	Affiliated PCS No:	353	Start Date:	07/26/2019	End Date:	08/01/2019



ATR Count Report

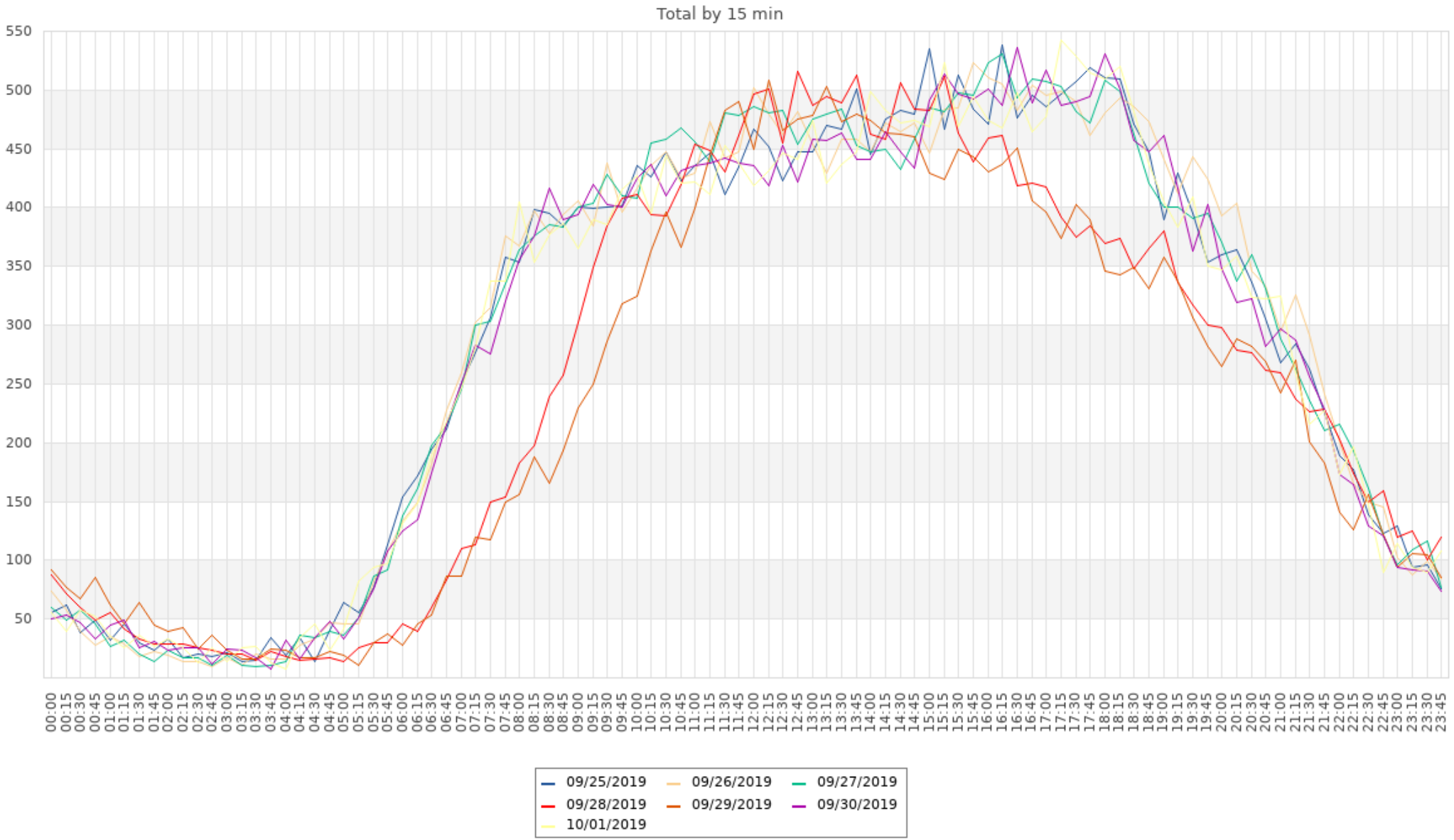
Regional Highway 2 200 m. W. of Bowmanville Av. (R.R.57)

ATR No: 7029 **Affiliated PCS No:** 353 **Start Date:** 09/25/2019 **End Date:** 10/01/2019

Start	2019-Sep-25		Thu		Fri		Sat		Sun		Mon		Tue		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	56	467	74	502	60	486	88	497	92	450	50	436	56	419	68	465
12:15	62	452	58	479	49	481	72	501	77	508	53	419	40	431	59	467
12:30	38	423	39	462	58	483	60	455	67	466	47	453	58	446	52	455
12:45	49	448	28	482	46	454	49	516	85	475	33	422	52	441	49	463
01:00	32	447	35	454	27	475	56	487	62	478	45	458	35	474	42	468
01:15	46	470	29	429	32	480	42	494	46	503	49	457	26	421	39	465
01:30	30	467	18	458	20	484	33	489	64	473	26	463	36	437	32	467
01:45	24	501	22	458	14	453	29	513	45	480	31	441	27	447	27	470
02:00	33	445	19	448	24	448	29	462	39	474	23	441	33	499	29	460
02:15	17	475	14	472	17	450	29	458	43	464	26	465	26	483	25	467
02:30	20	483	14	465	17	432	26	506	25	462	26	447	13	472	20	467
02:45	18	480	10	472	11	458	24	484	36	460	12	434	26	474	20	466
03:00	21	535	17	446	19	485	20	483	23	429	25	491	14	469	20	477
03:15	14	467	11	484	11	482	20	512	16	424	24	514	26	523	17	487
03:30	15	513	20	485	10	498	15	464	16	450	17	497	27	469	17	482
03:45	34	484	16	523	11	496	22	439	25	443	7	492	13	495	18	482
04:00	19	471	16	511	14	523	18	459	24	430	32	501	8	474	19	481
04:15	34	538	28	505	36	531	15	461	17	437	16	487	34	468	26	490
04:30	14	476	33	483	34	493	16	419	17	451	34	536	46	498	28	479
04:45	41	496	47	504	39	509	17	421	22	406	48	489	24	465	34	470
05:00	64	486	46	496	36	507	14	418	19	396	33	517	42	477	36	471
05:15	56	497	46	499	51	503	26	392	11	374	51	487	82	543	46	471
05:30	77	507	82	490	87	482	30	375	30	403	76	490	94	529	68	468
05:45	113	519	107	461	92	472	30	385	37	390	108	494	97	515	83	462
06:00	154	510	134	481	138	508	46	370	28	346	125	531	131	509	108	465
06:15	172	509	150	493	161	499	39	374	46	343	135	501	148	520	122	463
06:30	194	471	182	486	198	462	60	348	53	349	174	457	189	482	150	436
06:45	211	447	228	473	215	421	83	365	86	331	216	447	218	437	180	417
07:00	251	390	259	441	246	401	110	380	86	358	251	461	247	405	207	405
07:15	277	429	302	412	300	401	113	336	120	337	283	416	281	383	239	388
07:30	307	395	315	443	303	391	149	317	117	306	276	363	337	409	258	375
07:45	358	354	376	424	335	395	154	300	149	282	320	403	338	350	290	358
08:00	354	360	367	393	364	371	183	298	156	265	356	348	405	347	312	340
08:15	398	364	397	404	376	337	198	279	188	288	376	319	354	359	327	336
08:30	395	336	378	346	386	360	239	277	166	282	416	322	377	324	337	321
08:45	385	305	394	333	383	331	257	262	193	269	390	282	387	323	341	301
09:00	400	268	406	295	400	288	302	259	230	242	394	297	365	325	357	282
09:15	399	284	384	326	404	263	349	237	250	270	420	287	390	258	371	275
09:30	401	263	438	292	428	236	384	226	286	201	403	256	386	216	389	241
09:45	402	225	396	241	410	210	408	229	318	183	401	229	415	228	393	221
10:00	436	189	416	201	408	216	411	203	325	141	425	173	427	173	407	185
10:15	426	177	436	166	455	193	394	174	363	126	437	164	395	197	415	171
10:30	447	139	448	149	458	161	393	149	396	156	410	129	444	147	428	147
10:45	423	123	425	145	468	121	420	159	366	122	431	121	421	90	422	126
11:00	436	129	429	103	456	96	454	120	399	94	436	94	422	114	433	107
11:15	446	94	473	88	439	109	449	125	444	106	438	92	411	94	443	101
11:30	411	96	442	99	481	116	430	100	483	105	442	91	453	90	449	100
11:45	435	76	447	84	478	77	461	120	490	85	438	74	438	108	455	89
Total	9445	18480	9451	18786	9505	18528	7266	17097	6676	16313	9285	18188	9314	18257	8707	17950
Day	27925		28237		28033		24363		22989		27473		27571		26657	
Total%	33.82%	66.18%	33.47%	66.53%	33.91%	66.09%	29.82%	70.18%	29.04%	70.96%	33.8%	66.2%	33.78%	66.22%	32.66%	67.34%
Splits Peak	11:45	05:30	11:45	03:30	11:45	04:00	11:45	00:45	11:30	01:00	11:00	04:15	11:30	05:15	10:30	03:00
Vol.	1777	2045	1890	2024	1928	2056	1914	1986	1931	1934	1754	2029	1741	2096	9514	10631
P.H.F.	0.95	0.99	0.94	0.97	0.99	0.97	0.96	0.96	0.95	0.96	0.99	0.95	0.96	0.97	0.77	0.78

ATR Count Report

ATR No:	7029	Affiliated PCS No:	353	Start Date:	09/25/2019	End Date:	10/01/2019



ATR Count Report

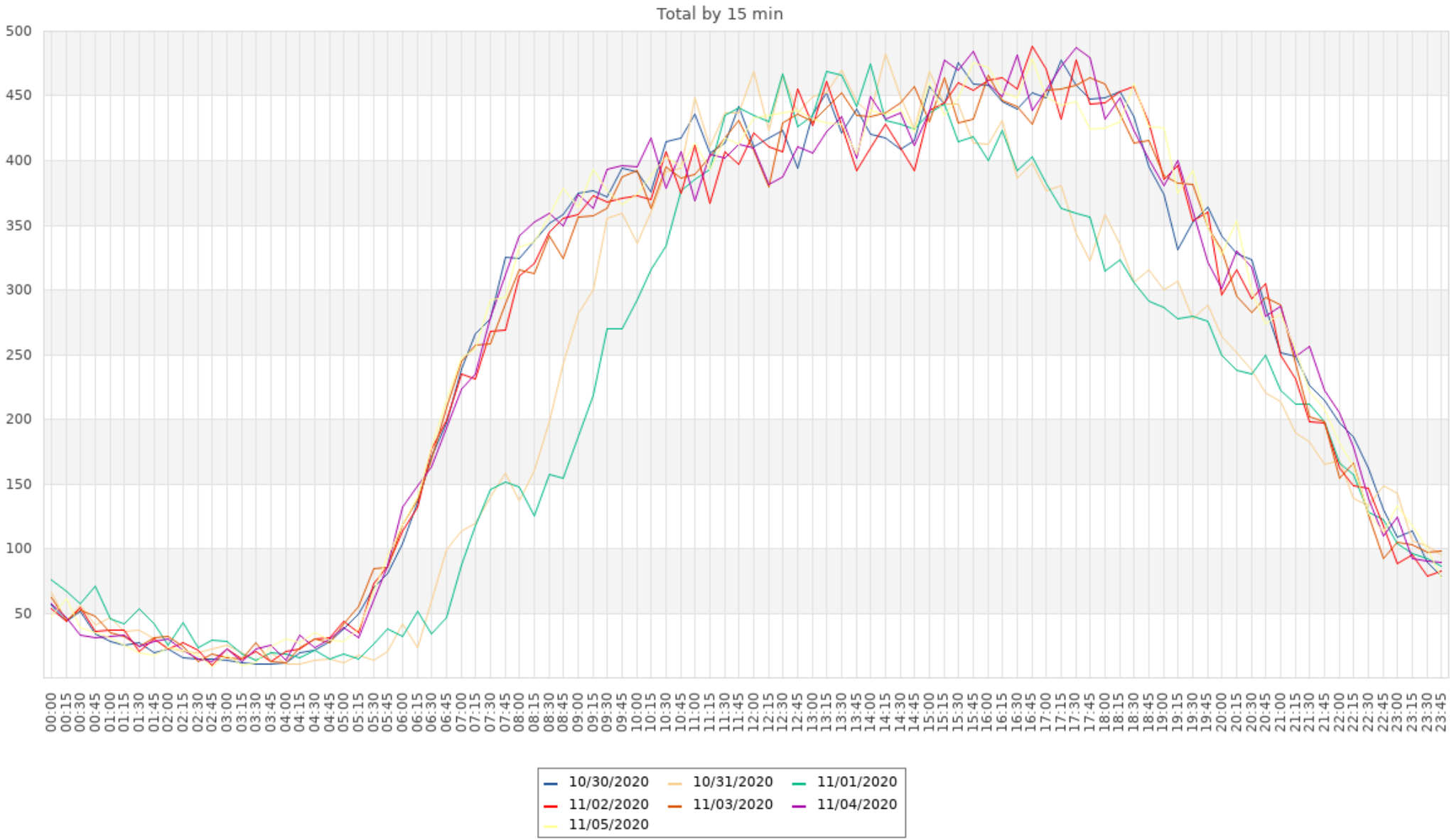
Regional Highway 2 200 m. W. of Bowmanville Av. (R.R.57)

ATR No: 7029 **Affiliated PCS No:** 353 **Start Date:** 10/30/2020 **End Date:** 11/05/2020

Start	2020-Oct-30		Sat		Sun		Mon		Tue		Wed		Thu		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	56	411	66	469	76	435	53	421	62	408	57	410	48	433	60	427
12:15	44	417	44	423	67	430	44	411	45	380	47	382	61	435	50	411
12:30	51	423	56	466	57	467	54	407	52	429	33	387	39	437	49	431
12:45	34	394	41	437	71	426	36	455	48	436	31	411	35	439	42	428
01:00	28	436	47	450	46	435	37	427	35	430	32	406	31	432	37	431
01:15	25	452	36	452	42	469	37	461	32	441	33	422	25	429	33	447
01:30	27	421	37	470	53	466	20	427	24	452	24	434	19	428	29	443
01:45	19	440	30	446	42	442	30	392	31	435	28	402	17	405	28	423
02:00	22	420	23	436	25	475	22	410	32	434	30	450	23	439	25	438
02:15	16	417	20	483	43	431	27	428	24	437	21	432	21	436	25	438
02:30	15	409	19	450	23	428	21	410	13	445	15	437	17	440	18	431
02:45	15	416	22	424	29	424	10	392	18	457	13	412	9	422	17	421
03:00	14	457	25	469	28	437	22	439	16	430	22	438	17	460	21	447
03:15	12	444	19	444	18	444	15	445	15	464	13	478	10	435	15	451
03:30	11	476	14	444	14	415	20	460	27	429	22	470	12	449	17	449
03:45	11	459	19	414	19	418	13	454	13	432	25	484	24	476	18	448
04:00	12	458	11	413	18	400	20	462	12	466	14	459	30	472	17	447
04:15	19	446	11	431	16	423	22	464	23	447	33	450	27	453	22	445
04:30	21	440	14	386	21	392	30	455	30	442	23	482	35	449	25	435
04:45	28	452	15	398	15	403	31	488	27	428	30	439	29	479	25	441
05:00	38	449	12	377	18	383	44	471	42	454	39	454	28	450	32	434
05:15	50	478	17	381	15	363	35	432	55	455	31	473	38	443	34	432
05:30	70	458	14	344	26	359	73	478	84	458	60	487	67	446	56	433
05:45	81	448	20	322	38	356	86	444	85	464	86	480	94	424	70	420
06:00	104	449	42	358	32	315	114	445	118	459	132	432	118	425	94	412
06:15	136	453	23	335	51	323	132	453	138	436	149	449	140	430	110	411
06:30	171	434	59	306	34	306	177	457	169	414	163	423	178	459	136	400
06:45	197	395	99	316	47	291	199	429	209	416	193	401	215	426	166	382
07:00	239	374	114	300	87	286	235	385	245	388	223	381	248	425	199	363
07:15	266	331	119	307	117	278	231	396	257	383	235	400	254	375	211	353
07:30	278	352	140	278	146	280	268	353	258	382	279	361	292	392	237	343
07:45	325	364	158	288	151	276	269	360	289	349	312	321	294	349	257	330
08:00	324	342	137	264	148	250	311	296	316	331	342	301	333	327	273	302
08:15	338	328	160	251	125	238	320	316	313	295	352	330	337	353	278	302
08:30	351	323	198	238	157	235	345	293	342	283	359	317	357	299	301	284
08:45	358	286	243	220	154	250	355	305	324	294	350	280	379	274	309	273
09:00	375	251	282	214	186	222	358	250	356	288	374	287	364	282	328	256
09:15	377	249	300	189	218	212	373	231	357	243	363	249	393	253	340	232
09:30	372	226	355	183	270	212	368	198	363	202	393	256	377	221	357	214
09:45	394	215	359	165	270	198	371	197	387	198	396	222	366	208	363	200
10:00	391	197	336	168	292	166	373	162	392	154	395	205	374	182	365	176
10:15	376	186	360	139	316	157	370	149	363	166	417	179	388	164	370	163
10:30	415	162	391	133	334	128	407	147	395	126	379	139	403	127	389	137
10:45	417	130	394	149	377	122	375	117	386	92	407	110	395	113	393	119
11:00	436	109	449	143	385	104	412	88	389	105	369	124	414	133	408	115
11:15	406	114	411	106	393	96	367	95	403	103	405	92	393	117	397	103
11:30	414	89	437	102	435	92	407	79	417	97	402	90	417	100	418	93
11:45	442	79	437	95	441	86	397	83	431	98	413	89	413	78	425	87
Total	8621	16959	6635	15476	5986	15244	8336	16817	8462	16855	8564	17017	8598	17123	7889	16501
Day	25580		22111		21230		25153		25317		25581		25721		24390	
Total%	33.7%	66.3%	30.01%	69.99%	28.2%	71.8%	33.14%	66.86%	33.42%	66.58%	33.48%	66.52%	33.43%	66.57%	32.35%	67.65%
Splits Peak	11:00	03:30	11:45	01:30	11:45	01:15	11:30	04:15	11:15	05:15	11:15	05:00	11:45	04:00	10:30	03:00
Vol.	1698	1839	1795	1835	1773	1852	1636	1878	1659	1836	1630	1894	1718	1853	8772	9881
P.H.F.	0.96	0.97	0.96	0.95	0.95	0.97	0.97	0.96	0.96	0.99	0.99	0.97	0.98	0.97	0.77	0.78

ATR Count Report

ATR No:	7029	Affiliated PCS No:	353	Start Date:	10/30/2020	End Date:	11/05/2020



ATR Count Report

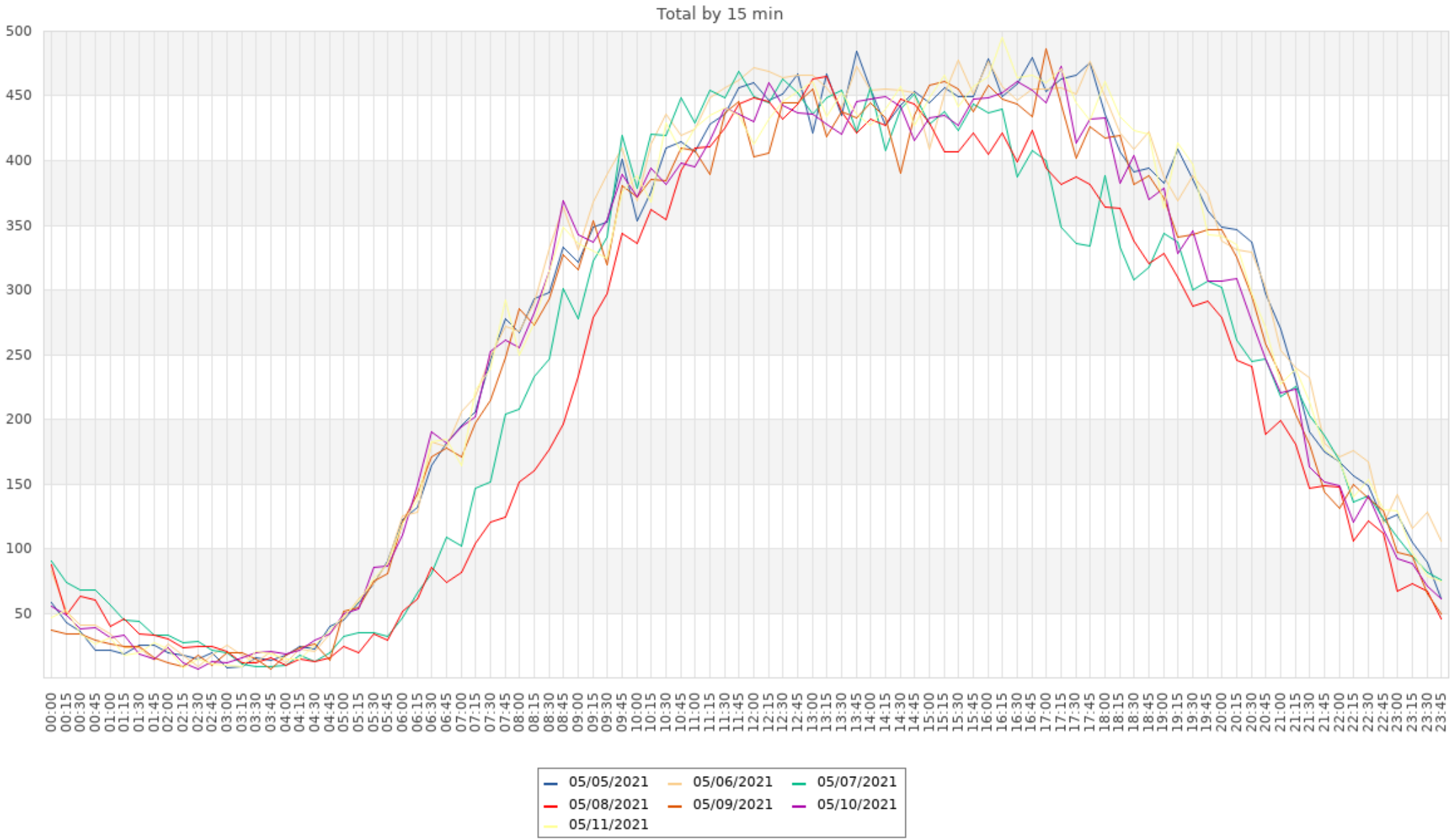
Regional Highway 2 200 m. W. of Bowmanville Av. (R.R.57)

ATR No: 7029 **Affiliated PCS No:** 353 **Start Date:** 05/05/2021 **End Date:** 05/11/2021

Start	2021-May-05		Thu		Fri		Sat		Sun		Mon		Tue		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	58	460	83	472	90	450	87	449	37	403	55	430	47	413	65	440
12:15	43	447	51	469	74	445	49	446	34	406	49	460	52	432	50	444
12:30	36	451	41	464	68	463	63	432	34	445	38	443	34	446	45	449
12:45	21	467	41	466	68	452	60	444	29	445	39	437	26	453	41	452
01:00	21	421	34	466	56	436	40	463	26	455	31	436	31	461	34	448
01:15	18	467	23	456	45	449	46	465	24	418	33	428	17	434	29	445
01:30	25	435	23	441	44	454	34	438	24	438	18	420	19	452	27	440
01:45	25	484	14	473	33	422	33	421	16	433	15	446	27	436	23	445
02:00	19	455	26	454	33	456	30	432	12	445	23	448	22	427	24	445
02:15	17	427	17	455	27	408	23	427	9	433	12	450	8	440	16	434
02:30	15	443	9	454	28	440	24	448	17	390	7	442	15	457	16	439
02:45	19	453	17	452	21	451	24	444	10	435	13	416	11	427	16	440
03:00	8	445	25	409	19	428	20	429	19	458	12	433	10	449	16	436
03:15	9	456	17	451	11	438	12	407	19	461	16	435	9	466	13	445
03:30	16	450	12	478	9	423	12	407	15	455	19	427	20	442	15	440
03:45	14	450	20	451	9	444	16	421	7	438	20	448	18	457	15	444
04:00	17	479	12	477	10	437	10	405	17	458	18	449	15	465	14	453
04:15	24	450	22	457	17	440	15	421	23	448	21	452	15	495	20	452
04:30	22	459	20	447	13	387	13	399	26	444	29	461	25	464	21	437
04:45	40	480	34	455	19	408	16	423	14	434	34	454	37	466	28	446
05:00	45	453	46	455	32	400	24	394	51	486	50	445	48	460	42	442
05:15	58	463	61	456	35	349	19	382	54	444	53	473	59	471	48	434
05:30	73	466	73	451	35	336	34	387	75	402	85	414	77	445	65	414
05:45	90	476	89	477	32	334	29	382	81	426	86	432	88	431	71	423
06:00	122	436	125	450	47	388	51	364	120	417	111	433	119	461	99	421
06:15	132	407	128	421	66	333	61	363	143	419	150	383	138	434	117	394
06:30	164	391	183	409	81	308	85	338	171	382	190	404	183	423	151	379
06:45	182	394	179	422	109	317	74	320	178	388	182	370	184	420	155	376
07:00	195	383	206	387	102	344	82	328	171	371	194	379	164	363	159	365
07:15	206	409	217	369	147	337	104	310	197	341	202	328	222	414	185	358
07:30	246	385	249	388	151	300	120	287	215	343	252	346	239	397	210	349
07:45	278	361	272	374	204	307	124	291	248	347	261	307	292	343	240	333
08:00	267	349	268	338	208	302	151	279	285	347	255	307	250	342	241	323
08:15	293	347	290	331	233	261	160	246	273	325	283	309	275	335	258	308
08:30	298	337	332	329	247	245	177	241	293	295	315	276	315	297	282	289
08:45	333	297	364	302	301	247	196	188	327	258	369	247	349	271	320	259
09:00	321	270	331	253	278	217	233	199	316	234	343	220	336	227	308	231
09:15	349	231	368	240	322	225	279	181	353	204	337	223	330	239	334	220
09:30	352	190	389	232	341	203	297	147	319	181	354	163	324	214	339	190
09:45	401	175	410	182	419	187	344	149	381	144	389	151	376	177	389	166
10:00	353	167	369	171	379	168	336	148	372	131	372	149	388	167	367	157
10:15	376	156	413	176	420	136	362	106	385	150	394	120	368	140	388	141
10:30	410	149	436	167	419	141	354	121	384	139	382	141	429	153	402	144
10:45	415	121	419	119	449	123	392	112	410	129	398	115	407	130	413	121
11:00	407	126	424	142	429	109	410	67	408	97	395	92	425	129	414	109
11:15	428	105	449	116	454	94	411	73	389	94	416	88	435	97	426	95
11:30	436	89	456	128	449	82	425	67	437	65	441	71	441	79	441	83
11:45	456	61	462	106	469	76	444	46	446	50	436	61	435	75	450	68
Total	8153	17273	8549	17538	7552	15600	6405	15137	7894	16351	8197	16262	8154	17116	7842	16466
Day	25426		26087		23152		21542		24245		24459		25270		24308	
Total%	32.07%	67.93%	32.77%	67.23%	32.62%	67.38%	29.73%	70.27%	32.56%	67.44%	33.51%	66.49%	32.27%	67.73%	32.26%	67.74%
Splits Peak	11:45	04:00	11:45	00:00	11:45	00:00	11:45	00:45	11:45	03:00	11:45	04:30	11:00	04:00	10:30	03:00
Vol.	1814	1868	1867	1871	1827	1810	1771	1810	1700	1812	1769	1833	1736	1890	9172	9741
P.H.F.	0.99	0.97	0.99	0.99	0.97	0.98	0.99	0.97	0.95	0.98	0.96	0.97	0.98	0.95	0.77	0.78

ATR Count Report

ATR No:	7029	Affiliated PCS No:	353	Start Date:	05/05/2021	End Date:	05/11/2021



ATR Count Report

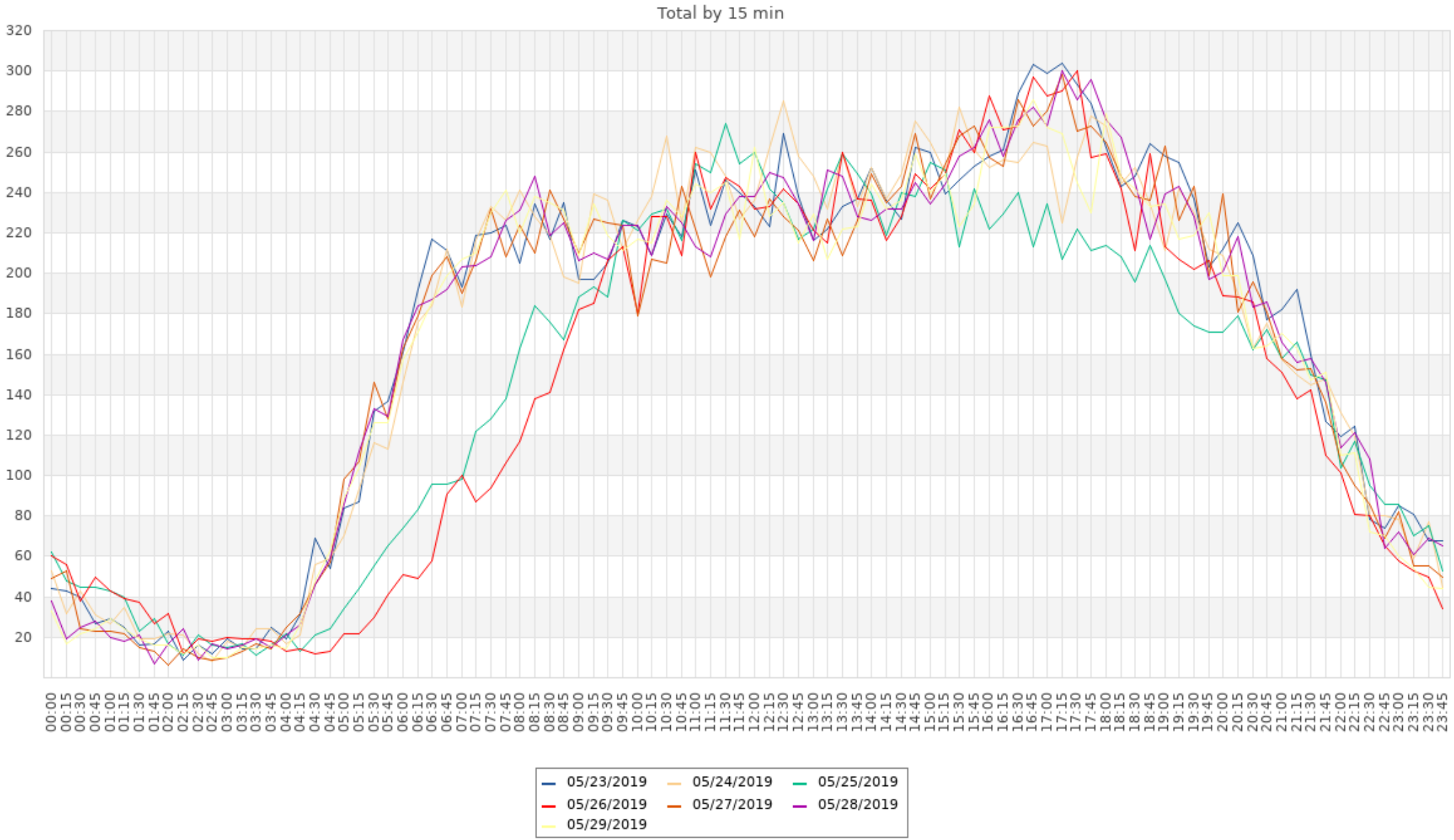
Bowmanville Av. (R.R.57) 200 m. S. of Regional Highway 2/King St.

ATR No: 5711 **Affiliated PCS No:** 332 **Start Date:** 05/23/2019 **End Date:** 05/29/2019

Start	2019-May-23		Fri		Sat		Sun		Mon		Tue		Wed		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	44	233	53	236	62	260	60	232	49	218	38	238	33	262	48	240
12:15	43	223	32	262	48	242	56	233	53	237	19	250	17	228	38	239
12:30	40	269	43	285	45	235	38	242	24	228	25	247	22	235	34	249
12:45	27	238	31	258	45	217	50	234	23	221	28	234	24	215	33	231
01:00	29	216	27	248	43	222	43	221	23	206	20	216	29	229	31	223
01:15	25	222	35	232	40	242	39	215	22	227	18	251	24	207	29	228
01:30	16	233	19	260	23	259	37	260	15	209	21	248	19	222	21	242
01:45	17	237	19	233	29	249	27	237	13	226	7	228	16	223	18	233
02:00	23	252	22	252	17	239	32	236	6	249	17	226	16	244	19	243
02:15	9	236	21	237	11	219	12	216	14	235	24	232	12	232	15	230
02:30	16	227	12	249	21	240	19	228	10	243	9	232	16	236	15	236
02:45	12	262	8	275	16	238	18	249	9	269	17	245	10	259	13	257
03:00	19	260	18	265	15	255	20	242	10	237	14	234	10	240	15	248
03:15	14	239	15	250	17	251	19	249	13	254	16	244	15	249	16	248
03:30	14	246	24	282	11	213	19	271	17	268	19	258	14	223	17	252
03:45	25	253	24	261	16	242	18	260	14	273	15	262	16	234	18	255
04:00	19	258	17	252	22	222	13	288	25	257	21	276	14	272	19	261
04:15	31	261	21	256	13	229	14	271	32	253	26	258	26	272	23	257
04:30	69	289	56	255	21	240	12	273	46	286	46	276	48	273	43	270
04:45	54	303	59	265	24	213	13	297	57	273	59	282	63	286	47	274
05:00	84	299	70	263	34	234	22	288	98	280	86	273	89	272	69	273
05:15	87	304	93	225	44	207	22	290	107	298	112	300	104	269	81	270
05:30	132	293	116	257	55	222	30	300	146	270	133	286	126	245	105	268
05:45	137	284	113	278	65	211	41	257	128	273	129	296	126	230	106	261
06:00	161	262	146	273	74	214	51	259	163	265	167	276	157	279	131	261
06:15	192	243	176	244	83	208	49	242	179	248	184	267	171	247	148	243
06:30	217	248	184	252	96	196	58	211	199	238	187	245	186	242	161	233
06:45	211	264	212	234	96	214	91	259	208	236	192	217	199	233	173	237
07:00	193	258	183	211	98	197	100	213	190	263	203	239	207	234	168	231
07:15	219	255	216	242	122	180	87	207	206	226	204	243	210	217	181	224
07:30	220	237	233	230	128	174	94	202	232	243	208	228	230	219	192	219
07:45	224	203	226	212	138	171	106	206	208	199	226	197	241	230	196	203
08:00	205	212	241	209	163	171	117	189	224	239	231	201	220	199	200	203
08:15	234	225	228	190	184	179	138	188	210	181	248	218	238	199	211	197
08:30	217	209	219	163	176	162	141	186	241	196	219	183	235	163	207	180
08:45	235	177	198	175	167	172	162	158	227	181	225	186	231	164	206	173
09:00	197	182	195	157	188	158	182	151	210	158	206	166	209	170	198	163
09:15	197	192	239	150	193	166	185	138	227	152	210	156	234	163	212	160
09:30	205	160	236	145	188	150	206	142	225	153	207	158	219	147	212	151
09:45	226	127	212	148	226	147	213	110	224	136	224	146	211	151	219	138
10:00	223	119	226	131	221	104	180	101	179	107	224	114	217	110	210	112
10:15	209	124	238	119	229	117	228	81	207	95	209	121	215	111	219	110
10:30	229	78	268	80	232	95	228	80	205	86	233	108	236	72	233	86
10:45	218	74	225	80	216	86	209	65	243	69	225	64	228	70	223	73
11:00	251	85	262	78	254	86	260	58	222	82	213	72	244	60	244	74
11:15	224	81	260	59	250	70	232	53	198	55	208	61	240	54	230	62
11:30	246	68	248	77	274	75	247	50	218	55	229	69	245	45	244	63
11:45	240	68	227	45	254	53	243	34	231	50	238	65	217	44	236	51
Total	6179	10288	6246	10040	4987	9146	4481	9672	6030	9903	6039	10092	6129	9680	5727	9835
Day	16467		16286		14133		14153		15933		16131		15809		15562	
Total%	37.52%	62.48%	38.35%	61.65%	35.29%	64.71%	31.66%	68.34%	37.85%	62.15%	37.44%	62.56%	38.77%	61.23%	36.8%	63.2%
Splits Peak	11:45	04:45	10:30	02:45	11:15	01:15	11:00	04:45	11:45	04:30	11:45	05:15	11:15	04:00	10:30	03:00
Vol.	965	1199	1015	1072	1038	989	982	1175	914	1137	973	1158	964	1103	5115	5530
P.H.F.	0.9	0.99	0.95	0.95	0.95	0.95	0.94	0.98	0.96	0.95	0.97	0.97	0.92	0.96	0.75	0.77

ATR Count Report

ATR No:	5711	**Affiliated PCS No:**	332	**Start Date:**	05/23/2019	**End Date:**	05/29/2019



ATR Count Report

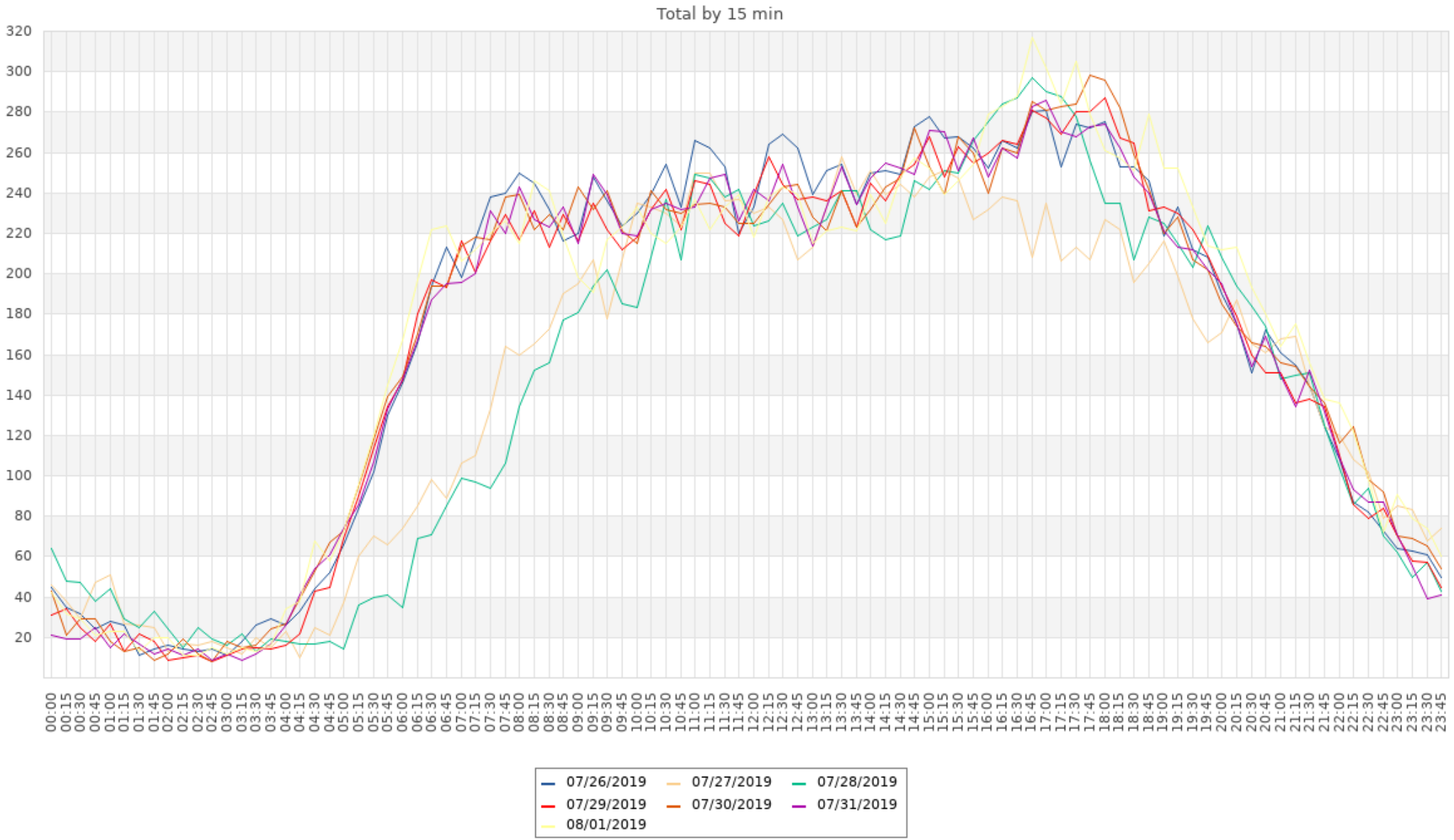
Bowmanville Av. (R.R.57) 200 m. S. of Regional Highway 2/King St.

ATR No: 5711 **Affiliated PCS No:** 332 **Start Date:** 07/26/2019 **End Date:** 08/01/2019

Start	2019-Jul-26		Sat		Sun		Mon		Tue		Wed		Thu		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	45	233	46	230	64	224	31	239	43	225	21	242	42	218	42	230
12:15	35	264	38	233	48	226	34	258	21	234	19	236	32	238	32	241
12:30	32	269	29	227	47	235	25	244	29	243	19	254	29	243	30	245
12:45	24	262	47	207	38	219	18	237	29	244	25	233	21	239	29	234
01:00	28	239	51	213	44	223	27	238	18	228	15	214	23	215	29	224
01:15	26	251	27	233	29	227	13	236	13	221	22	233	23	221	22	232
01:30	11	254	26	258	25	241	22	241	15	241	17	253	13	223	18	244
01:45	14	234	25	239	33	241	18	223	9	223	12	234	20	221	19	231
02:00	16	250	13	251	24	222	9	245	12	232	14	247	20	239	15	241
02:15	14	251	17	239	15	217	10	236	19	243	11	255	11	225	14	238
02:30	13	249	16	244	25	219	11	249	12	247	14	252	11	248	15	244
02:45	14	273	18	238	19	246	8	254	8	272	9	249	15	257	13	256
03:00	11	278	15	248	16	242	11	268	18	253	12	271	12	252	14	259
03:15	18	267	12	251	22	251	14	248	15	239	9	270	15	239	15	252
03:30	26	268	20	247	13	250	15	263	16	268	12	251	13	246	16	256
03:45	29	262	15	227	19	266	14	255	24	260	17	267	16	254	19	256
04:00	26	252	23	232	18	275	16	260	27	240	26	248	34	279	24	255
04:15	33	266	10	238	17	284	22	266	39	262	41	262	38	283	29	266
04:30	44	262	25	236	17	287	43	264	53	260	54	257	68	288	43	265
04:45	52	280	21	208	18	297	45	281	67	285	61	283	58	317	46	279
05:00	66	281	37	235	14	290	69	277	73	281	74	286	73	302	58	279
05:15	84	253	60	206	36	288	90	269	95	283	86	270	96	284	78	265
05:30	102	274	70	213	40	278	114	280	118	284	107	268	120	305	96	272
05:45	130	272	66	207	41	256	134	280	139	298	133	273	145	279	113	266
06:00	146	275	74	227	35	235	147	287	149	296	148	274	167	261	124	265
06:15	166	253	85	222	69	235	180	267	170	282	167	262	197	257	148	254
06:30	194	253	98	196	71	207	197	265	194	259	187	248	222	251	166	240
06:45	213	246	89	205	85	228	193	231	194	242	195	240	224	279	170	239
07:00	198	219	106	216	99	225	216	233	214	220	196	221	206	252	176	227
07:15	217	233	110	199	97	215	201	230	218	228	200	213	212	252	179	224
07:30	238	212	133	178	94	203	216	222	217	207	231	212	220	233	193	210
07:45	240	208	164	166	106	224	229	209	238	202	220	202	226	214	203	204
08:00	250	190	160	171	134	208	217	194	239	185	243	195	215	212	208	194
08:15	245	175	165	187	152	194	231	179	222	174	227	175	246	213	213	185
08:30	232	151	173	165	156	184	213	160	229	166	223	154	241	193	210	168
08:45	216	172	190	161	177	174	229	151	222	164	233	169	219	180	212	167
09:00	220	161	195	168	181	148	216	151	243	156	215	150	198	164	210	157
09:15	248	155	207	169	194	150	235	136	232	154	249	134	191	175	222	153
09:30	236	145	178	145	202	151	222	138	241	144	239	152	217	156	219	147
09:45	224	124	207	124	185	125	212	134	221	136	220	132	223	138	213	130
10:00	230	108	235	120	183	104	218	110	215	116	219	109	233	136	219	115
10:15	239	87	233	108	208	86	232	86	241	124	232	93	220	122	229	101
10:30	254	82	230	102	237	94	242	79	232	98	235	87	215	98	235	91
10:45	233	73	224	79	207	70	222	84	230	92	232	87	223	72	224	80
11:00	266	64	250	85	249	62	246	70	234	70	233	71	237	91	245	73
11:15	262	63	250	83	247	50	244	58	235	69	247	55	222	79	244	65
11:30	253	61	236	68	238	57	225	57	233	65	249	39	233	74	238	60
11:45	220	50	237	74	242	43	219	45	225	54	226	41	239	60	230	52
Total	6333	10004	4956	9178	4530	9676	6015	9887	6200	9969	6096	9823	6194	10277	5759	9831
Day	16337		14134		14206		15902		16169		15919		16471		15590	
Total%	38.76%	61.24%	35.06%	64.94%	31.89%	68.11%	37.83%	62.17%	38.34%	61.66%	38.29%	61.71%	37.61%	62.39%	36.94%	63.06%
Splits Peak	10:30	04:15	11:00	01:30	11:00	04:30	11:45	05:15	08:45	05:15	11:15	04:45	11:45	04:45	10:30	03:00
Vol.	1015	1089	973	987	976	1162	960	1116	938	1161	964	1107	938	1208	5228	5608
P.H.F.	0.95	0.97	0.97	0.96	0.98	0.98	0.93	0.97	0.97	0.97	0.97	0.97	0.97	0.95	0.76	0.78

ATR Count Report

ATR No:	5711	Affiliated PCS No:	332	Start Date:	07/26/2019	End Date:	08/01/2019



ATR Count Report

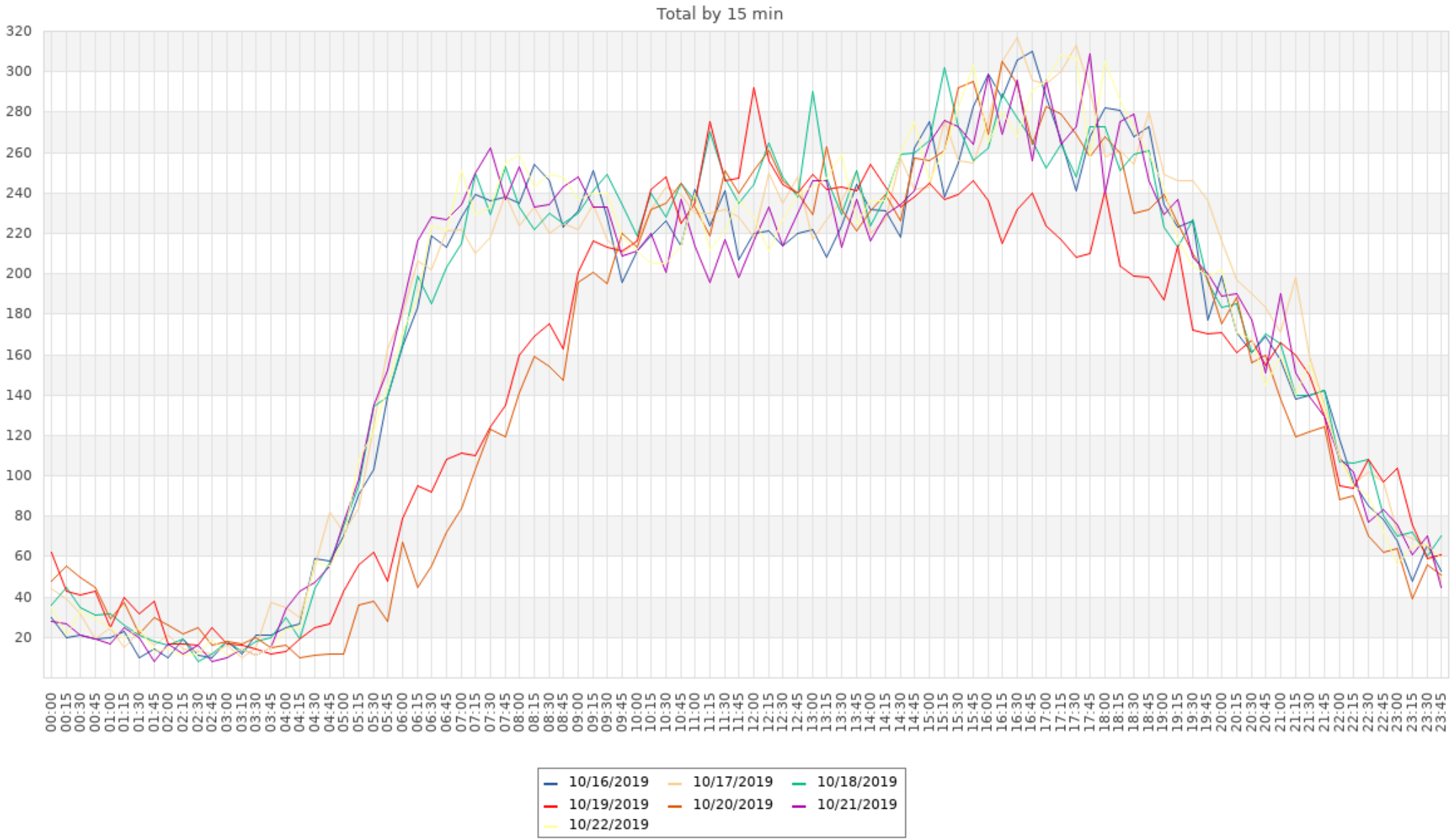
Bowmanville Av. (R.R.57) 200 m. S. of Regional Highway 2/King St.

ATR No: 5711 **Affiliated PCS No:** 332 **Start Date:** 10/16/2019 **End Date:** 10/22/2019

Start	2019-Oct-16		Thu		Fri		Sat		Sun		Mon		Tue		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	30	220	44	218	36	244	62	292	48	251	28	216	35	228	40	238
12:15	20	221	39	250	45	265	43	256	55	261	27	233	21	211	36	242
12:30	21	214	32	235	35	248	41	244	50	246	21	214	33	227	33	233
12:45	19	220	19	248	31	238	43	240	45	240	19	230	29	239	29	236
01:00	20	222	25	217	32	290	25	249	29	229	17	246	25	243	25	242
01:15	23	208	15	227	26	247	40	242	37	263	25	246	19	247	26	240
01:30	10	224	23	236	21	229	32	243	22	232	20	213	25	259	22	234
01:45	14	244	16	251	18	251	38	241	30	221	8	237	13	225	20	239
02:00	10	232	21	220	16	224	17	254	26	231	17	216	14	236	17	230
02:15	19	231	14	227	19	238	17	243	22	239	12	229	11	236	16	235
02:30	11	218	13	257	8	259	16	233	25	226	16	234	12	260	14	241
02:45	10	262	12	242	12	260	25	238	16	257	8	241	19	275	15	254
03:00	18	275	16	243	18	266	17	245	18	256	10	265	11	246	15	257
03:15	12	238	10	276	13	302	16	237	17	261	14	276	14	261	14	264
03:30	21	255	15	256	18	273	14	239	20	292	11	273	11	282	16	267
03:45	21	283	37	255	20	256	12	246	15	295	15	264	15	303	19	272
04:00	25	299	35	276	30	262	13	236	16	269	34	298	24	265	25	272
04:15	27	287	30	305	19	289	19	215	10	305	43	269	25	280	25	279
04:30	59	306	55	317	44	277	25	232	11	294	47	296	58	268	43	284
04:45	58	310	82	296	57	266	27	240	12	264	55	256	55	291	49	275
05:00	70	288	72	294	75	252	43	224	12	283	77	296	68	295	60	276
05:15	91	266	84	300	95	264	56	217	36	279	98	264	108	308	81	271
05:30	103	241	125	313	134	248	62	208	38	269	135	273	122	307	103	266
05:45	139	268	163	291	139	273	48	210	28	258	152	309	144	258	116	267
06:00	164	282	180	258	165	273	79	241	67	268	184	240	171	305	144	267
06:15	183	281	206	261	199	251	95	204	45	260	216	275	188	286	162	260
06:30	219	268	202	254	185	259	92	199	55	230	228	279	224	272	172	252
06:45	213	273	221	280	203	261	108	198	72	232	227	246	221	259	181	250
07:00	228	234	222	249	215	223	111	187	84	239	234	229	251	243	192	229
07:15	239	223	210	246	250	213	110	214	103	225	250	237	229	217	199	225
07:30	236	226	218	246	229	227	124	172	123	210	262	208	233	204	204	213
07:45	238	177	239	236	253	196	135	170	119	197	237	200	255	199	211	196
08:00	235	199	224	216	233	183	160	171	141	175	253	189	259	202	215	191
08:15	254	171	233	197	222	185	169	161	159	188	233	190	243	171	216	180
08:30	246	161	220	190	230	161	175	167	154	156	234	177	249	168	215	169
08:45	223	169	225	183	225	170	163	155	147	160	243	151	248	145	211	162
09:00	231	157	222	171	230	165	201	166	196	138	248	190	237	159	224	164
09:15	251	138	234	198	241	140	216	160	201	119	233	151	240	140	231	149
09:30	228	140	217	159	249	140	213	150	195	122	233	139	240	156	225	144
09:45	196	142	210	135	234	142	211	129	220	124	209	129	218	133	214	133
10:00	211	118	216	110	219	107	216	95	213	88	211	109	211	109	214	105
10:15	219	97	232	96	240	106	242	94	232	90	220	102	205	95	227	97
10:30	226	85	243	102	228	108	248	108	235	70	201	77	205	90	227	91
10:45	214	78	239	97	245	80	225	97	245	62	237	83	214	72	231	81
11:00	242	68	230	72	236	70	235	104	233	64	214	76	240	56	233	73
11:15	224	48	230	69	270	72	275	76	219	39	196	61	212	65	232	61
11:30	241	66	232	65	247	60	246	59	251	56	217	70	221	66	236	63
11:45	207	53	228	48	235	70	247	61	240	51	198	45	237	59	227	55
Total	6219	9886	6330	10388	6444	10083	5047	9262	4587	9784	6327	9947	6362	10121	5902	9924
Day	16105		16718		16527		14309		14371		16274		16483		15826	
Total%	38.62%	61.38%	37.86%	62.14%	38.99%	61.01%	35.27%	64.73%	31.92%	68.08%	38.88%	61.12%	38.6%	61.4%	37.29%	62.71%
Splits Peak	07:45	04:00	10:15	04:15	10:45	02:45	11:15	00:00	11:30	03:45	07:15	05:00	07:45	04:45	10:30	03:00
Vol.	973	1202	944	1212	998	1101	1060	1032	1003	1163	1002	1142	1006	1201	5102	5880
P.H.F.	0.96	0.97	0.97	0.96	0.92	0.91	0.91	0.88	0.96	0.95	0.96	0.92	0.97	0.97	0.78	0.77

ATR Count Report

ATR No:	5711	Affiliated PCS No:	332	Start Date:	10/16/2019	End Date:	10/22/2019



ATR Count Report

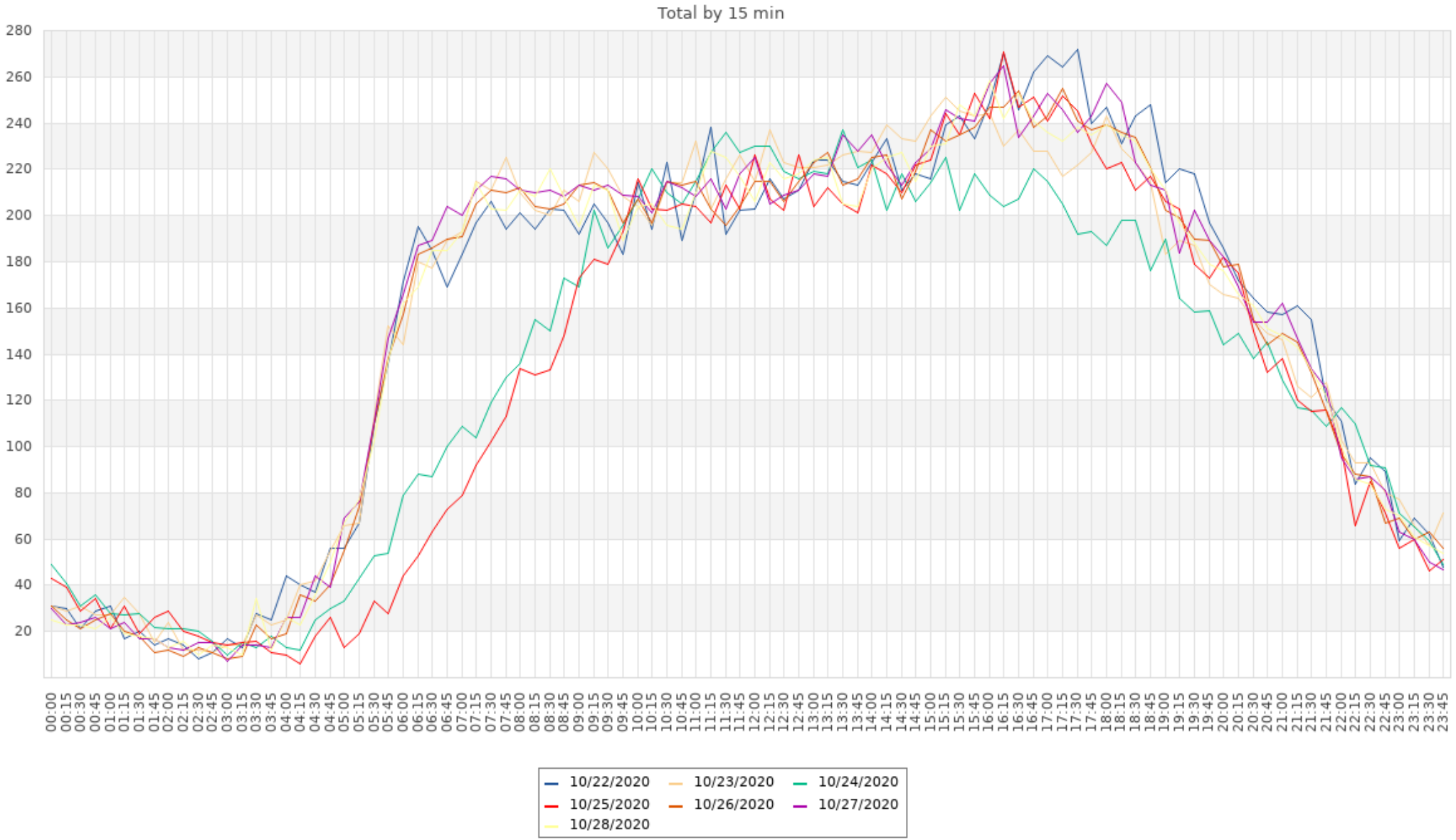
Bowmanville Av. (R.R.57) 200 m. S. of Regional Highway 2/King St.

ATR No: 5711 **Affiliated PCS No:** 332 **Start Date:** 10/22/2020 **End Date:** 10/28/2020

Start	2020-Oct-22		Fri		Sat		Sun		Mon		Tue		Wed		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	31	203	31	215	49	230	43	226	31	215	30	225	25	206	34	217
12:15	30	216	29	237	41	230	39	207	25	215	23	205	23	223	30	219
12:30	21	207	31	223	31	219	29	202	21	206	24	209	23	216	26	212
12:45	29	211	27	221	36	216	34	226	25	215	26	211	21	218	28	217
01:00	31	224	27	221	28	219	21	204	28	223	21	218	26	224	26	219
01:15	17	224	35	222	27	218	31	212	20	227	24	217	19	225	25	221
01:30	20	215	28	226	28	237	19	205	18	213	17	235	18	205	21	219
01:45	14	213	15	228	22	221	26	201	11	216	17	228	17	204	17	216
02:00	17	223	24	227	21	224	29	222	12	225	13	235	13	220	18	225
02:15	14	233	12	239	21	202	20	218	9	226	12	222	16	225	15	224
02:30	8	211	12	233	20	218	18	210	13	207	15	213	10	227	14	217
02:45	11	218	11	232	16	206	15	222	11	219	15	223	14	215	13	219
03:00	17	216	14	243	10	214	14	224	8	237	7	229	13	230	12	228
03:15	13	239	14	251	15	225	15	244	9	232	14	246	10	231	13	238
03:30	28	243	27	245	13	202	16	235	23	235	14	242	34	248	22	236
03:45	25	233	23	243	18	218	11	253	17	238	13	241	12	243	17	238
04:00	44	249	25	244	13	209	10	242	19	247	26	257	26	258	23	244
04:15	40	270	40	230	12	204	6	271	36	247	26	265	23	242	26	247
04:30	37	246	42	237	25	207	18	247	33	254	44	234	36	253	34	240
04:45	56	262	55	228	30	220	26	251	40	238	39	243	50	241	42	240
05:00	56	269	66	228	33	215	13	241	55	243	69	253	67	236	51	241
05:15	67	264	67	217	43	205	19	252	74	255	76	246	77	232	60	239
05:30	110	272	113	222	53	192	33	245	110	241	111	236	103	238	90	235
05:45	136	240	152	227	54	193	28	231	138	237	147	243	137	235	113	229
06:00	171	247	144	243	79	187	44	220	157	239	166	257	162	239	132	233
06:15	195	231	180	229	88	198	53	223	183	236	187	249	169	235	151	229
06:30	185	243	177	223	87	198	63	211	186	234	189	223	185	232	153	223
06:45	169	248	189	214	100	176	73	217	190	221	204	213	185	220	159	216
07:00	183	214	193	183	109	190	79	206	191	202	200	211	193	211	164	202
07:15	197	220	215	189	104	164	92	203	205	199	211	184	214	197	177	194
07:30	206	218	211	187	119	158	102	179	211	190	217	202	203	188	181	189
07:45	194	197	225	170	130	159	113	173	210	189	216	189	202	179	184	179
08:00	201	186	210	166	136	144	134	182	212	178	211	182	211	176	188	173
08:15	194	172	202	164	155	149	131	175	204	179	210	169	208	166	186	168
08:30	203	164	200	155	150	138	133	150	203	155	211	154	220	161	189	154
08:45	202	158	211	149	173	145	148	132	205	144	208	154	208	151	194	148
09:00	192	157	206	146	169	129	173	138	213	149	213	162	195	148	194	147
09:15	205	161	227	126	202	117	181	120	214	145	211	147	213	143	208	137
09:30	197	155	220	121	186	116	179	115	211	132	213	134	211	133	202	129
09:45	183	120	208	128	196	109	193	116	197	115	209	125	189	122	196	119
10:00	214	111	204	103	207	117	216	99	207	97	208	95	204	100	209	103
10:15	194	84	196	93	220	110	203	66	197	88	201	86	205	86	202	88
10:30	223	95	214	93	210	92	202	85	215	87	215	87	196	84	211	89
10:45	189	89	214	80	205	91	205	71	213	67	212	81	194	73	205	79
11:00	210	59	232	77	215	71	204	56	215	69	208	63	210	70	213	66
11:15	238	69	203	66	227	65	197	60	203	60	216	60	228	61	216	63
11:30	192	62	216	57	236	59	213	46	196	63	203	50	225	57	212	56
11:45	202	48	226	71	227	49	203	51	204	56	218	47	217	54	214	54
Total	5611	9309	5843	8972	4589	8275	4067	8785	5628	9005	5780	9100	5660	8981	5310	8918
Day	14920		14815		12864		12852		14633		14880		14641		14228	
Total%	37.61%	62.39%	39.44%	60.56%	35.67%	64.33%	31.64%	68.36%	38.46%	61.54%	38.84%	61.16%	38.66%	61.34%	37.32%	62.68%
Splits Peak	10:30	04:45	11:45	03:15	11:30	01:15	11:30	03:45	10:30	04:30	11:15	03:30	11:00	03:45	10:30	03:00
Vol.	860	1067	901	983	923	900	849	1013	846	990	862	1005	880	996	4649	5215
P.H.F.	0.9	0.98	0.95	0.98	0.98	0.95	0.94	0.93	0.98	0.97	0.96	0.95	0.96	0.97	0.77	0.78

ATR Count Report

ATR No:	5711	Affiliated PCS No:	332	Start Date:	10/22/2020	End Date:	10/28/2020



ATR Count Report

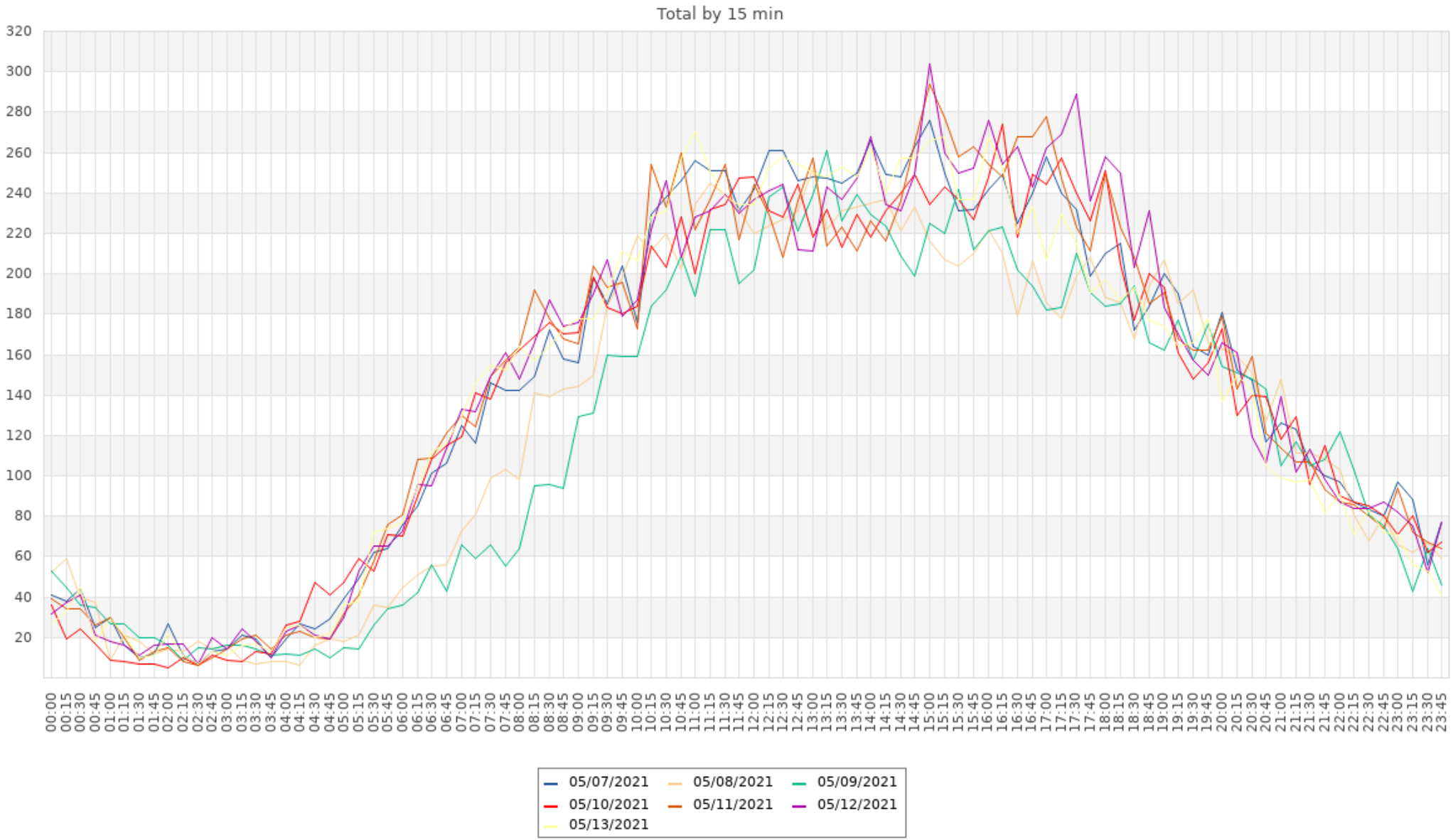
Bowmanville Av. (R.R.57) 200 m. S. of Regional Highway 2/King St.

ATR No: 5711 **Affiliated PCS No:** 332 **Start Date:** 05/07/2021 **End Date:** 05/13/2021

Start	2021-May-07		Sat		Sun		Mon		Tue		Wed		Thu		Average Day	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00	41	242	52	220	53	202	36	248	39	244	32	237	27	234	40	232
12:15	38	261	59	224	45	238	19	231	34	229	37	241	33	252	38	239
12:30	44	261	40	227	36	243	24	228	34	208	41	244	45	258	38	238
12:45	25	246	37	231	35	221	17	244	26	236	21	212	18	254	26	235
01:00	30	248	9	252	27	239	9	218	30	257	18	211	29	250	22	239
01:15	16	247	21	222	27	261	8	232	20	214	16	243	21	248	18	238
01:30	10	245	18	231	20	226	7	213	9	223	11	237	10	253	12	233
01:45	12	250	12	233	20	239	7	229	13	211	16	247	11	248	13	237
02:00	27	266	14	235	16	229	5	218	15	226	17	268	22	262	17	243
02:15	11	249	13	237	9	224	10	231	8	216	17	234	11	240	11	233
02:30	7	248	18	221	15	209	6	240	6	236	7	231	7	257	9	235
02:45	13	263	14	233	14	199	11	249	10	265	20	249	13	257	14	245
03:00	14	276	16	216	16	225	9	234	14	294	14	304	11	266	13	259
03:15	21	250	9	207	16	220	8	243	19	277	24	260	16	268	16	246
03:30	19	231	7	204	14	242	13	237	21	258	18	250	17	237	16	237
03:45	10	232	8	210	11	212	12	227	14	263	10	252	13	237	11	233
04:00	19	242	8	222	12	221	26	248	21	254	23	276	25	267	19	247
04:15	27	249	6	210	11	223	28	274	23	248	26	254	26	253	21	244
04:30	24	225	16	179	14	202	47	218	20	268	21	263	20	220	23	225
04:45	29	240	19	206	10	194	41	249	19	268	19	243	22	233	23	233
05:00	39	258	18	186	15	182	47	244	32	278	30	262	36	207	31	231
05:15	49	240	21	178	14	183	59	257	41	247	53	269	38	229	39	229
05:30	62	232	36	199	26	210	53	240	58	223	65	289	72	215	53	230
05:45	64	199	35	208	34	191	71	226	76	211	65	236	74	191	60	209
06:00	76	210	45	188	36	184	70	251	81	250	73	258	77	197	65	220
06:15	85	215	51	186	42	185	90	205	108	223	96	250	95	187	81	207
06:30	101	172	55	168	56	194	108	177	109	208	95	203	112	193	91	188
06:45	106	184	56	194	43	166	115	200	121	185	114	231	116	177	96	191
07:00	125	200	73	207	66	162	119	193	130	191	133	183	130	174	111	187
07:15	116	190	81	185	59	177	141	161	124	168	132	170	146	164	114	174
07:30	146	164	99	192	66	157	138	148	149	162	149	157	155	166	129	164
07:45	142	160	103	166	55	175	156	156	157	162	161	150	152	178	132	164
08:00	142	181	98	163	64	154	162	173	164	179	148	166	164	137	135	165
08:15	149	152	141	159	95	151	169	130	192	143	166	161	157	150	153	149
08:30	172	147	139	151	96	148	176	140	178	159	187	119	164	142	159	144
08:45	158	117	143	127	94	143	170	139	168	121	174	106	173	105	154	123
09:00	156	126	144	148	129	105	171	118	165	114	176	139	178	99	160	121
09:15	198	123	150	111	131	117	198	129	204	107	190	102	178	97	178	112
09:30	185	106	184	111	160	105	183	96	193	107	207	113	191	98	186	105
09:45	204	100	198	108	159	108	180	115	196	93	179	98	211	82	190	101
10:00	176	97	219	103	159	122	184	90	173	87	187	87	206	91	186	97
10:15	229	87	211	81	184	103	214	87	254	86	222	84	228	71	220	86
10:30	238	83	220	68	192	81	203	85	233	80	246	84	231	83	223	81
10:45	246	80	202	80	209	75	228	80	260	74	208	87	257	72	230	78
11:00	256	97	234	66	189	64	200	71	222	94	228	82	270	71	228	78
11:15	251	88	245	62	222	43	232	80	237	72	231	75	251	56	238	68
11:30	251	56	239	67	222	64	234	62	254	67	239	52	238	53	240	60
11:45	231	77	232	59	195	46	247	67	217	64	230	77	234	41	227	62
Total	4790	9112	4068	8341	3433	8264	4661	8831	4891	9050	4792	9246	4931	8720	4509	8795
Day	13902		12409		11697		13492		13941		14038		13651		13304	
Total%	34.46%	65.54%	32.78%	67.22%	29.35%	70.65%	34.55%	65.45%	35.08%	64.92%	34.14%	65.86%	36.12%	63.88%	33.89%	66.11%
Splits Peak	10:45	02:30	11:00	01:00	11:45	01:00	11:15	04:45	10:45	02:45	11:45	03:00	10:45	02:30	10:30	03:00
Vol.	1004	1037	950	938	878	965	961	990	973	1094	952	1066	1016	1048	5101	5276
P.H.F.	0.98	0.94	0.97	0.93	0.9	0.92	0.97	0.96	0.94	0.93	0.98	0.88	0.94	0.98	0.76	0.76

ATR Count Report

ATR No:	5711	**Affiliated PCS No:**	332	**Start Date:**	05/07/2021	**End Date:**	05/13/2021



Transportation Noise (Day/Night):

O R N A M E N T - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

Road Segment ID	Roadway Name	Link Description	Speed (kph)	Period (h)	Total Traffic Volumes	Auto %	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorption G	PWL (dBA)	Source Height, s (m)	Reference Leq (dBA)
Bowmanville_avg	Bowmanville Avenue	Daytime Impacts	60	16	16074	90.0%	5.0%	5.0%	14467	804	804	0	0.00	**85.5**	**1.5**	**70.4**
	Bowmanville Avenue	Nighttime Impacts	60	8	1926	90.0%	5.0%	5.0%	1733	96	96	0	0.00	**79.3**	**1.5**	**64.2**
Hwy2_W_EB_avg	Highway 2/King Street	Daytime Impacts	60	16	9370	92.0%	5.2%	2.8%	8620	487	262	0	0.00	**81.8**	**1.3**	**66.8**
	Highway 2/King Street	Nighttime Impacts	60	8	630	92.0%	5.2%	2.8%	580	33	18	0	0.00	**73.1**	**1.3**	**58.1**
Hwy2_W_WB_avg	Highway 2/King Street	Nighttime Impacts	60	16	9370	92.0%	5.2%	2.8%	8620	487	262	0	0.00	**81.8**	**1.3**	**66.8**
	Highway 2/King Street	Nighttime Impacts	60	8	630	92.0%	5.2%	2.8%	580	33	18	0	0.00	**73.1**	**1.3**	**58.1**
Hwy2_E_EB_avg	Highway 2/King Street	Nighttime Impacts	50	16	8902	93.0%	4.2%	2.8%	8278	374	249	0	0.00	**79.8**	**1.3**	**64.7**
	Highway 2/King Street	Daytime Ambient	50	8	599	93.0%	4.2%	2.8%	557	25	17	0	0.00	**71.1**	**1.3**	**56.0**
Hwy2_E_WB_avg	Highway 2/King Street	Evening Ambient	50	16	8902	93.0%	4.2%	2.8%	8278	374	249	0	0.00	**79.8**	**1.3**	**64.7**
	Highway 2/King Street	Nighttime Ambient	50	8	599	93.0%	4.2%	2.8%	557	25	17	0	0.00	**71.1**	**1.3**	**56.0**
Aspen_avg	Aspen Springs Drive	Daytime Impacts	50	16	5419	85.8%	8.5%	5.7%	4650	461	309	0	0.00	**80.0**	**1.5**	**64.9**
	Aspen Springs Drive	Nighttime Impacts	50	8	602	85.8%	8.5%	5.7%	517	51	34	0	0.00	**73.5**	**1.5**	**58.4**

800 - 1290 Central Parkway West
Mississauga, Ontario
Canada L5C 4R3

T 905 803 3429
E josie_tomei@cpr.ca

April 12, 2019

Via email: marcusl@novusenv.com

Marcus Li, P.Eng.
Novus Environmental
150 Research Lane
Suite 105
Guelph, On N1G 4T2

Dear Sir/Madam:

Re: Rail Traffic Volumes, CP Mileage 173.52, Belleville Subdivision, 506 Ritson Road South, Oshawa

This is in reference to your request for rail traffic data in the vicinity of 506 Ritson Road South in the City of Oshawa. The study area is located at mile 173.52 of our Belleville Subdivision, which is classified as a Principal Branch line.

The information requested is as follows:

1. Number of freight trains between 0700 & 2300: 6
   Number of freight trains between 2300 & 0700: 3

2. Maximum cars per train freight: 207

3. Number of locomotives per train: 2 (4 max.)

4. Maximum permissible train speed: 60 mph

5. The whistle signal is prohibited approaching public grade crossings through the study area, however, the whistle may be sounded if deemed necessary by the train crew for safety reasons at any time.

6. There is 1 mainline track with continuously welded rail through this area.

The information provided is based on recent rail traffic. Variations of the above may exist on a day-to-day basis. Specific measurements may also vary significantly depending on customer needs.

Yours truly,

Josie Tomei SR/WA
Specialist Real Estate Sales & Acquisitions – Ontario

Keni Mallinen

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: January 25, 2022 1:20 PM
To: Keni Mallinen
Cc: Scott Penton
Subject: RE: Rail Traffic Forecast Request - Belleville Subdivision @ Bowmanville Avenue/Martin Road (future Bowmanville GO Station)

Good afternoon Keni,

The final location of the proposed Bowmanville GO Station has yet to be confirmed. Unfortunately, Metrolinx does not have bus traffic volumes for Prince William Boulevard.

Since the GO rail forecasts from the 2011 study are no longer up to date, I will provide the updated forecast below.
The subject lands (Aspen Springs Drive and Bowmanville Avenue, Bowmanville) are located within 300 metres of the Canadian Pacific Rail's Belleville Subdivision (which will carry Lakeshore East GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 59 trains. The planned detailed trip breakdown is listed below:

Weston Subdivision (which carries Kitchener GO Rail Service)

	1 Diesel Locomotive	2 Diesel Locomotives		1 Diesel Locomotive	2 Diesel Locomotives
Day (0700-2300)	35	15	Night (2300-0700)	5	4

The current track design speed near the subject lands is 60 mph (97 km/h).

There are no *anti-whistling by-laws* in affect near the subject lands

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

Best regards,
Harrison Rong
Project Coordinator, Third Party Projects Review
Metrolinx
20 Bay Street | Suite 600 | Toronto | Ontario | M5J 2W3
T: 416.202.7517 C: 647.328.4891

From: Keni Mallinen <kmallinen@slrconsulting.com>
Sent: January 11, 2022 11:51 AM
To: Rail Data Requests <RailDataRequests@metrolinx.com>
Cc: Scott Penton <spenton@slrconsulting.com>
Subject: Rail Traffic Forecast Request - Belleville Subdivision @ Bowmanville Avenue/Martin Road (future Bowmanville GO Station)

Good day,

We are working on a noise study for a proposed development located near the intersection of Aspen Springs Drive and Bowmanville Avenue (changes into Martin Road) in Bowmanville, Ontario. The CPR Belleville Subdivision and future planned Bowmanville GO Station are in proximity to the site.

We received and reviewed the TPAP Environmental Assessment Study and accompanying Appendix F – Environmental Noise and Vibration Assessment from 2011, which include the Bowmanville GO Station. Can you confirm whether the GO rail traffic forecasts for this part of the Belleville Subdivision are still applicable from the 2011 study? If not, could you please provide revised forecasts?

Furthermore, could you confirm whether the site plan changed since these studies were completed, and what bus traffic volumes are at the bus loop off Prince William Boulevard (if applicable)?

Please let me know if you have any questions regarding this request.

Thank you and best regards,
Keni

SLR

Keni Mallinen
Acoustic Engineer

O +1 226 706 8080
C +1 226 203 7385
E kmallinen@slrconsulting.com

SLR Consulting (Canada) Ltd.
100 Stone Road West, Suite 201, Guelph, ON N1G 5L3

RAILWAY SOURCES

Description	Name	M.	ID	Lw' Day (dBA)	Night (dBA)	Train Class	Correct. Track (dB)	Vmax (km(km/h)	Height A (m)	E (m)	A_att	E_Att	Length (m)	Train Type 1 Type	No. Day	No. Night	Speed (km/h)	Throttle (1 to 8)
CPR - Locomotive Noise	CPR - Locomotive		CPR_loco	72.6	72.7	(local)	0		0		r		1237	FRA_CONV_FRE_LOC	35	18	97	8
CPR - Wheel Noise	CPR - Wheel		CPR_wheel	68.5	68.5	(local)	0		0		r		1810	FTA_COMM_CAR	1799	900	97	0
GO Train - Northbound - Locomotive - Arriving	GO Loco NB Arriving		GO_Loco_NB_Arrive	61.2	57.6	(local)	-3.4		0		r		513	FTA_COMM_LOC_DE	32	7	97	8
GO Train - Northbound - Locomotive - Arriving	GO Loco NB Rev1		GO_Loco_NB_Rev1	57	53.4	(local)	-3.4		0		r		177	FTA_COMM_LOC_DE	32	7	64	1
GO Train - Northbound - Locomotive - Arriving	GO Loco NB Rev2		GO_Loco_NB_Rev2	58.4	54.9	(local)	-3.4		0		r		132	FTA_COMM_LOC_DE	32	7	46	1
GO Train - Northbound - Locomotive - Arriving	GO Loco NB Rev3		GO_Loco_NB_Rev3	60.6	57	(local)	-3.4		0		r		74	FTA_COMM_LOC_DE	32	7	28	1
GO Train - Northbound - Locomotive - Arriving	GO Loco NB Rev4		GO_Loco_NB_Rev4	65.1	61.5	(local)	-3.4		0		r		25	FTA_COMM_LOC_DE	32	7	10	1
GO Train - Northbound - Locomotive - Departing	GO Loco NB Rev5		GO_Loco_NB_Rev5	71.1	67.5	(local)	-3.4		0		r		27	FTA_COMM_LOC_DE	32	7	10	8
GO Train - Northbound - Locomotive - Departing	GO Loco NB Rev6		GO_Loco_NB_Rev6	66.6	63	(local)	-3.4		0		r		76	FTA_COMM_LOC_DE	32	7	28	8
GO Train - Northbound - Locomotive - Departing	GO Loco NB Rev7		GO_Loco_NB_Rev7	64.4	60.9	(local)	-3.4		0		r		126	FTA_COMM_LOC_DE	32	7	46	8
GO Train - Northbound - Locomotive - Departing	GO Loco NB Rev8		GO_Loco_NB_Rev8	63	59.4	(local)	-3.4		0		r		177	FTA_COMM_LOC_DE	32	7	64	8
GO Train - Northbound - Locomotive - Departing	GO Loco NB Departing		GO_Loco_NB_Depart	61.2	57.6	(local)	-3.4		0		r		489	FTA_COMM_LOC_DE	32	7	97	8
GO Train - Southbound - Locomotive - Arriving	GO Loco SB Arriving		GO_Loco_SB_Arrive	61.3	56.9	(local)	-3.4		0		r		489	FTA_COMM_LOC_DE	33	6	97	8
GO Train - Southbound - Locomotive - Arriving	GO Loco SB Rev1		GO_Loco_SB_Rev1	57.1	52.7	(local)	-3.4		0		r		177	FTA_COMM_LOC_DE	33	6	64	1
GO Train - Southbound - Locomotive - Arriving	GO Loco SB Rev2		GO_Loco_SB_Rev2	58.6	54.2	(local)	-3.4		0		r		126	FTA_COMM_LOC_DE	33	6	46	1
GO Train - Southbound - Locomotive - Arriving	GO Loco SB Rev3		GO_Loco_SB_Rev3	60.7	56.3	(local)	-3.4		0		r		76	FTA_COMM_LOC_DE	33	6	28	1
GO Train - Southbound - Locomotive - Arriving	GO Loco SB Rev4		GO_Loco_SB_Rev4	65.2	60.8	(local)	-3.4		0		r		27	FTA_COMM_LOC_DE	33	6	10	1
GO Train - Southbound - Locomotive - Departing	GO Loco SB Rev5		GO_Loco_SB_Rev5	71.2	66.8	(local)	-3.4		0		r		25	FTA_COMM_LOC_DE	33	6	10	8
GO Train - Southbound - Locomotive - Departing	GO Loco SB Rev6		GO_Loco_SB_Rev6	66.7	62.3	(local)	-3.4		0		r		74	FTA_COMM_LOC_DE	33	6	28	8
GO Train - Southbound - Locomotive - Departing	GO Loco SB Rev7		GO_Loco_SB_Rev7	64.6	60.2	(local)	-3.4		0		r		132	FTA_COMM_LOC_DE	33	6	46	8
GO Train - Southbound - Locomotive - Departing	GO Loco SB Rev8		GO_Loco_SB_Rev8	63.1	58.7	(local)	-3.4		0		r		177	FTA_COMM_LOC_DE	33	6	64	8
GO Train - Southbound - Locomotive - Departing	GO Loco SB Departing		GO_Loco_SB_Depart	61.3	56.9	(local)	-3.4		0		r		513	FTA_COMM_LOC_DE	33	6	97	8
GO Train - Northbound - Wheel - Arriving	GO Wheel NB Arriving		GO_Wheel_NB_Arrive	60.8	56.3	(local)	0		0		r		513	FTA_COMM_CAR	300	54	97	8
GO Train - Northbound - Wheel - Arriving	GO Wheel NB Rev1		GO_Wheel_NB_Rev1	57.1	52.7	(local)	0		0		r		177	FTA_COMM_CAR	300	54	64	1
GO Train - Northbound - Wheel - Arriving	GO Wheel NB Rev2		GO_Wheel_NB_Rev2	54.3	49.8	(local)	0		0		r		132	FTA_COMM_CAR	300	54	46	1
GO Train - Northbound - Wheel - Arriving	GO Wheel NB Rev3		GO_Wheel_NB_Rev3	50	45.5	(local)	0		0		r		74	FTA_COMM_CAR	300	54	28	1
GO Train - Northbound - Wheel - Arriving	GO Wheel NB Rev4		GO_Wheel_NB_Rev4	41	36.6	(local)	0		0		r		25	FTA_COMM_CAR	300	54	10	1
GO Train - Northbound - Wheel - Departing	GO Wheel NB Rev5		GO_Wheel_NB_Rev5	41	36.6	(local)	0		0		r		27	FTA_COMM_CAR	300	54	10	8
GO Train - Northbound - Wheel - Departing	GO Wheel NB Rev6		GO_Wheel_NB_Rev6	50	45.5	(local)	0		0		r		76	FTA_COMM_CAR	300	54	28	8
GO Train - Northbound - Wheel - Departing	GO Wheel NB Rev7		GO_Wheel_NB_Rev7	54.3	49.8	(local)	0		0		r		126	FTA_COMM_CAR	300	54	46	8
GO Train - Northbound - Wheel - Departing	GO Wheel NB Rev8		GO_Wheel_NB_Rev8	57.1	52.7	(local)	0		0		r		177	FTA_COMM_CAR	300	54	64	8
GO Train - Northbound - Wheel - Departing	GO Wheel NB Departing		GO_Wheel_NB_Depart	60.8	56.3	(local)	0		0		r		489	FTA_COMM_CAR	300	54	97	8
GO Train - Southbound - Wheel - Arriving	GO Wheel SB Arriving		GO_Wheel_SB_Arrive	60.8	56.3	(local)	0		0		r		489	FTA_COMM_CAR	300	54	97	8
GO Train - Southbound - Wheel - Arriving	GO Wheel SB Rev1		GO_Wheel_SB_Rev1	57.1	52.7	(local)	0		0		r		177	FTA_COMM_CAR	300	54	64	1
GO Train - Southbound - Wheel - Arriving	GO Wheel SB Rev2		GO_Wheel_SB_Rev2	54.3	49.8	(local)	0		0		r		126	FTA_COMM_CAR	300	54	46	1
GO Train - Southbound - Wheel - Arriving	GO Wheel SB Rev3		GO_Wheel_SB_Rev3	50	45.5	(local)	0		0		r		76	FTA_COMM_CAR	300	54	28	1
GO Train - Southbound - Wheel - Arriving	GO Wheel SB Rev4		GO_Wheel_SB_Rev4	41	36.6	(local)	0		0		r		27	FTA_COMM_CAR	300	54	10	1
GO Train - Soutbound - Wheel - Departing	GO Wheel SB Rev5		GO_Wheel_SB_Rev5	41	36.6	(local)	0		0		r		25	FTA_COMM_CAR	300	54	10	8
GO Train - Soutbound - Wheel - Departing	GO Wheel SB Rev6		GO_Wheel_SB_Rev6	50	45.5	(local)	0		0		r		74	FTA_COMM_CAR	300	54	28	8
GO Train - Soutbound - Wheel - Departing	GO Wheel SB Rev7		GO_Wheel_SB_Rev7	54.3	49.8	(local)	0		0		r		132	FTA_COMM_CAR	300	54	46	8
GO Train - Soutbound - Wheel - Departing	GO Wheel SB Rev8		GO_Wheel_SB_Rev8	57.1	52.7	(local)	0		0		r		177	FTA_COMM_CAR	300	54	64	8
GO Train - Soutbound - Wheel - Departing	GO Wheel SB Departing		GO_Wheel_SB_Depart	60.8	56.3	(local)	0		0		r		513	FTA_COMM_CAR	300	54	97	8

Appendix C

STAMSON Output File

Environmental Noise Assessment

10 Aspen Springs Drive

Bowmanville, ON

SLR Project No.: 241.30367.0000

```
STAMSON 5.04        NORMAL REPORT        Date: 07-03-2022 16:04:41
MINISTRY OF ENVIRONMENT CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: ST5val.te            Time Period: 16 hours
Description: STAMSON Validation File - Sample Calculation

Road data, segment # 1: Bowmanville
----------------------------------
Car traffic volume  : 14467 veh/TimePeriod
Medium truck volume :   804 veh/TimePeriod
Heavy truck volume  :   804 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Bowmanville
---------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  28.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: AspenSprings
------------------------------------
Car traffic volume  :  4650 veh/TimePeriod
Medium truck volume :   461 veh/TimePeriod
Heavy truck volume  :   309 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: AspenSprings
----------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  16.60 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Bowmanville
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.68 + 0.00) = 64.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  70.40   0.00  -2.71  -3.01   0.00   0.00   0.00  64.68
-------------------------------------------------------------------------------

Segment Leq : 64.68 dBA
```

Results segment # 2: AspenSprings

Source height = 1.55 m

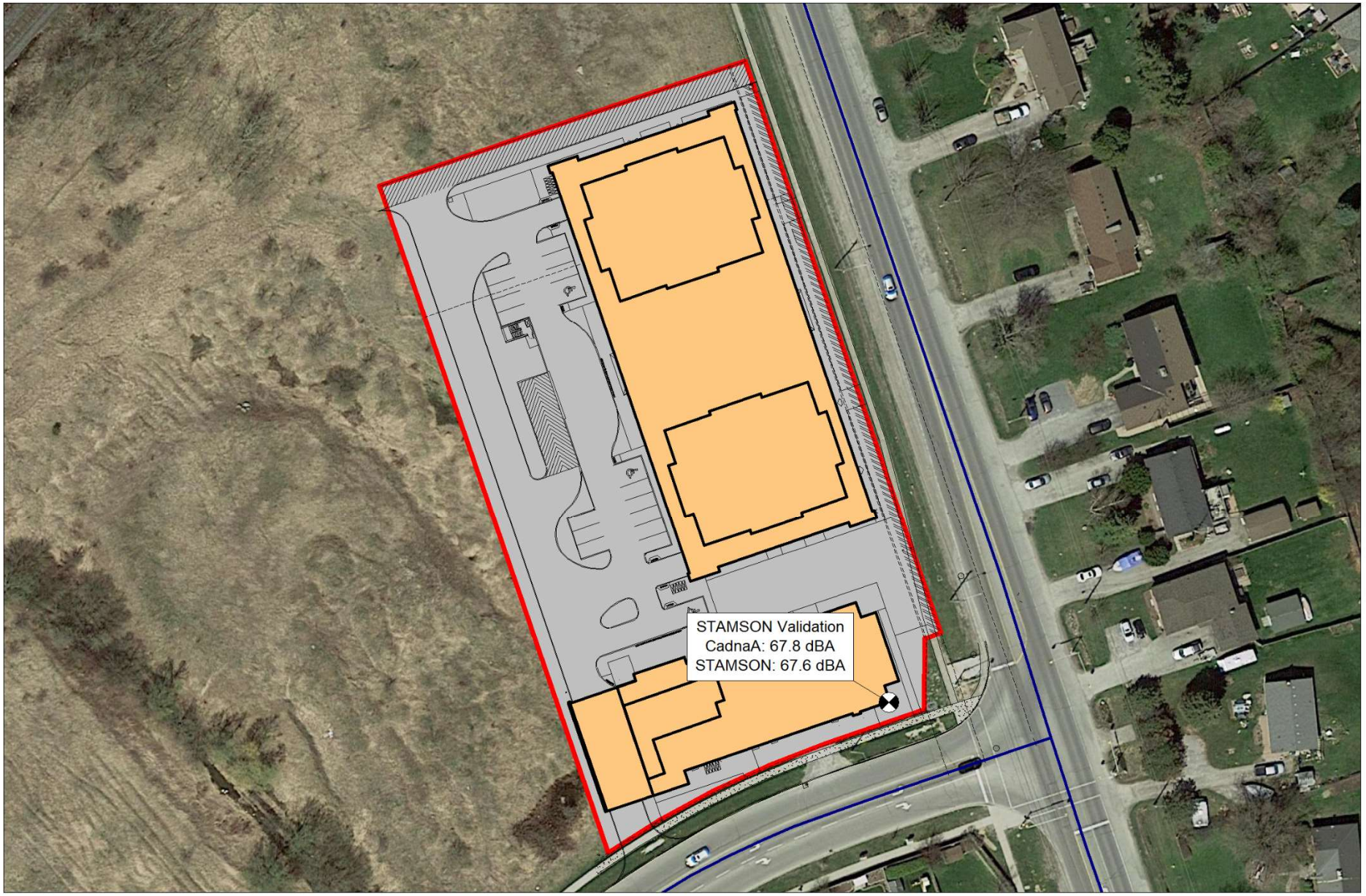
ROAD (0.00 + 64.50 + 0.00) = 64.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	64.94	0.00	-0.44	0.00	0.00	0.00	0.00	64.50

Segment Leq : 64.50 dBA

Total Leq All Segments: 67.60 dBA

TOTAL Leq FROM ALL SOURCES: 67.60



SUNRAY GROUP	True North	Scale: 1:1000	METRES	SLR global environmental solutions
10 ASPEN SPRINGS DRIVE, BOWMANVILLE		Date: May 3, 2022 Rev 1.0	Figure No. **C1**	
COMPARISON OF CADNA/A AND STAMSON – ROAD NOISE		Project No. 241.30367.00000		

Appendix D

Detailed Façade Calculations

Environmental Noise Assessment

10 Aspen Springs Drive

Bowmanville, ON

SLR Project No.: 241.30367.00000

Appendix D – Detailed Façade Calculations

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

10 Aspen Springs Drive, Bowmanville, Project #241.30367.00000

Receptor ID	Source Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Required Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
ROAD - DAYTIME														
Building 1 - Tower A - North Façade LR/DR	Roadways, Daytime	64	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower A - East Façade LR/DR	Roadways, Daytime	68	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower A - South Façade LR/DR	Roadways, Daytime	64	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower A - West Façade LR/DR	Roadways, Daytime	54	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 1 - Tower B - North Façade LR/DR	Roadways, Daytime	64	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - East Façade LR/DR	Roadways, Daytime	68	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower B - South Façade LR/DR	Roadways, Daytime	64	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - West Façade LR/DR	Roadways, Daytime	53	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11
Building 1 - Podium - North Façade LR/DR	Roadways, Daytime	66	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Podium - East Façade LR/DR	Roadways, Daytime	70	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28
Building 1 - Podium - South Façade LR/DR	Roadways, Daytime	66	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Podium - West Façade LR/DR	Roadways, Daytime	56	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14
Building 2 - North Façade LR/DR	Roadways, Daytime	65	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 2 - East Façade LR/DR	Roadways, Daytime	68	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 2 - South Façade LR/DR	Roadways, Daytime	67	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 2 - West Façade LR/DR	Roadways, Daytime	60	45	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Tower A - North Façade BR	Roadways, Daytime	64	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower A - East Façade BR	Roadways, Daytime	68	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower A - South Façade BR	Roadways, Daytime	64	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower A - West Façade BR	Roadways, Daytime	54	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 1 - Tower B - North Façade BR	Roadways, Daytime	64	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - East Façade BR	Roadways, Daytime	68	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower B - South Façade BR	Roadways, Daytime	64	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - West Façade BR	Roadways, Daytime	53	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11
Building 1 - Podium - North Façade BR	Roadways, Daytime	66	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Podium - East Façade BR	Roadways, Daytime	70	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28
Building 1 - Podium - South Façade BR	Roadways, Daytime	66	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Podium - West Façade BR	Roadways, Daytime	56	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14
Building 2 - North Façade BR	Roadways, Daytime	65	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 2 - East Façade BR	Roadways, Daytime	68	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 2 - South Façade BR	Roadways, Daytime	67	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 2 - West Façade BR	Roadways, Daytime	60	45	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18

Appendix D – Detailed Façade Calculations (continued)

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

10 Aspen Springs Drive, Bowmanville, Project #241.30367.00000

Receptor ID	Source Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Required Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
ROAD - NIGHT-TIME														
Building 1 - Tower A - North Façade LR/DR	Roadways, Night-time	58	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower A - East Façade LR/DR	Roadways, Night-time	62	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower A - South Façade LR/DR	Roadways, Night-time	57	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower A - West Façade LR/DR	Roadways, Night-time	46	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 1 - Tower B - North Façade LR/DR	Roadways, Night-time	57	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower B - East Façade LR/DR	Roadways, Night-time	62	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower B - South Façade LR/DR	Roadways, Night-time	58	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower B - West Façade LR/DR	Roadways, Night-time	46	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 1 - Podium - North Façade LR/DR	Roadways, Night-time	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Podium - East Façade LR/DR	Roadways, Night-time	63	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Podium - South Façade LR/DR	Roadways, Night-time	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Podium - West Façade LR/DR	Roadways, Night-time	49	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 2 - North Façade LR/DR	Roadways, Night-time	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 2 - East Façade LR/DR	Roadways, Night-time	62	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 2 - South Façade LR/DR	Roadways, Night-time	61	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 2 - West Façade LR/DR	Roadways, Night-time	53	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower A - North Façade BR	Roadways, Night-time	58	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower A - East Façade BR	Roadways, Night-time	62	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower A - South Façade BR	Roadways, Night-time	57	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower A - West Façade BR	Roadways, Night-time	46	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 1 - Tower B - North Façade BR	Roadways, Night-time	57	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower B - East Façade BR	Roadways, Night-time	62	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower B - South Façade BR	Roadways, Night-time	58	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower B - West Façade BR	Roadways, Night-time	46	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 1 - Podium - North Façade BR	Roadways, Night-time	60	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Podium - East Façade BR	Roadways, Night-time	63	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Podium - South Façade BR	Roadways, Night-time	60	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Podium - West Façade BR	Roadways, Night-time	49	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 2 - North Façade BR	Roadways, Night-time	59	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 2 - East Façade BR	Roadways, Night-time	62	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 2 - South Façade BR	Roadways, Night-time	61	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 2 - West Façade BR	Roadways, Night-time	53	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	D. mixed road traffic, distant aircraft	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16

Appendix D – Detailed Façade Calculations (continued)

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

10 Aspen Springs Drive, Bowmanville, Project #241.30367.00000

Receptor ID	Source Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Required Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
RAIL - LOCOMOTIVE - DAYTIME														
Building 1 - Tower A - North Façade LR/DR	Railway, Loco, Daytime	64	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 1 - Tower A - East Façade LR/DR	Railway, Loco, Daytime	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Tower A - South Façade LR/DR	Railway, Loco, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower A - West Façade LR/DR	Railway, Loco, Daytime	63	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28
Building 1 - Tower B - North Façade LR/DR	Railway, Loco, Daytime	61	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower B - East Façade LR/DR	Railway, Loco, Daytime	57	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - South Façade LR/DR	Railway, Loco, Daytime	53	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Tower B - West Façade LR/DR	Railway, Loco, Daytime	62	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27
Building 1 - Podium - North Façade LR/DR	Railway, Loco, Daytime	65	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	30
Building 1 - Podium - East Façade LR/DR	Railway, Loco, Daytime	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Podium - South Façade LR/DR	Railway, Loco, Daytime	53	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Podium - West Façade LR/DR	Railway, Loco, Daytime	64	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 2 - North Façade LR/DR	Railway, Loco, Daytime	61	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 2 - East Façade LR/DR	Railway, Loco, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 2 - South Façade LR/DR	Railway, Loco, Daytime	52	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17
Building 2 - West Façade LR/DR	Railway, Loco, Daytime	61	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower A - North Façade BR	Railway, Loco, Daytime	64	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 1 - Tower A - East Façade BR	Railway, Loco, Daytime	59	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Tower A - South Façade BR	Railway, Loco, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower A - West Façade BR	Railway, Loco, Daytime	63	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28
Building 1 - Tower B - North Façade BR	Railway, Loco, Daytime	61	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Tower B - East Façade BR	Railway, Loco, Daytime	57	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - South Façade BR	Railway, Loco, Daytime	53	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Tower B - West Façade BR	Railway, Loco, Daytime	62	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27
Building 1 - Podium - North Façade BR	Railway, Loco, Daytime	65	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	30
Building 1 - Podium - East Façade BR	Railway, Loco, Daytime	60	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Podium - South Façade BR	Railway, Loco, Daytime	53	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Podium - West Façade BR	Railway, Loco, Daytime	64	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 2 - North Façade BR	Railway, Loco, Daytime	61	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 2 - East Façade BR	Railway, Loco, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 2 - South Façade BR	Railway, Loco, Daytime	52	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17
Building 2 - West Façade BR	Railway, Loco, Daytime	61	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26

Appendix D – Detailed Façade Calculations (continued)

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

10 Aspen Springs Drive, Bowmanville, Project #241.30367.00000

Receptor ID	Source Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Required Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
RAIL - LOCOMOTIVE - NIGHT-TIME														
Building 1 - Tower A - North Façade LR/DR	Railway, Loco, Night-time	64	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 1 - Tower A - East Façade LR/DR	Railway, Loco, Night-time	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Tower A - South Façade LR/DR	Railway, Loco, Night-time	55	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower A - West Façade LR/DR	Railway, Loco, Night-time	63	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28
Building 1 - Tower B - North Façade LR/DR	Railway, Loco, Night-time	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower B - East Façade LR/DR	Railway, Loco, Night-time	57	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Tower B - South Façade LR/DR	Railway, Loco, Night-time	53	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Tower B - West Façade LR/DR	Railway, Loco, Night-time	61	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 1 - Podium - North Façade LR/DR	Railway, Loco, Night-time	64	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 1 - Podium - East Façade LR/DR	Railway, Loco, Night-time	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Podium - South Façade LR/DR	Railway, Loco, Night-time	53	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Podium - West Façade LR/DR	Railway, Loco, Night-time	63	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28
Building 2 - North Façade LR/DR	Railway, Loco, Night-time	61	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26
Building 2 - East Façade LR/DR	Railway, Loco, Night-time	55	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 2 - South Façade LR/DR	Railway, Loco, Night-time	51	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 2 - West Façade LR/DR	Railway, Loco, Night-time	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower A - North Façade BR	Railway, Loco, Night-time	64	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	35
Building 1 - Tower A - East Façade BR	Railway, Loco, Night-time	59	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 1 - Tower A - South Façade BR	Railway, Loco, Night-time	55	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Tower A - West Façade BR	Railway, Loco, Night-time	63	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34
Building 1 - Tower B - North Façade BR	Railway, Loco, Night-time	60	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	30
Building 1 - Tower B - East Façade BR	Railway, Loco, Night-time	57	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27
Building 1 - Tower B - South Façade BR	Railway, Loco, Night-time	53	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Tower B - West Façade BR	Railway, Loco, Night-time	61	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	31
Building 1 - Podium - North Façade BR	Railway, Loco, Night-time	64	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	35
Building 1 - Podium - East Façade BR	Railway, Loco, Night-time	59	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	29
Building 1 - Podium - South Façade BR	Railway, Loco, Night-time	53	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Podium - West Façade BR	Railway, Loco, Night-time	63	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34
Building 2 - North Façade BR	Railway, Loco, Night-time	61	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	31
Building 2 - East Façade BR	Railway, Loco, Night-time	55	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 2 - South Façade BR	Railway, Loco, Night-time	51	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 2 - West Façade BR	Railway, Loco, Night-time	60	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	F. diesel railway locomotive	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	30

Appendix D – Detailed Façade Calculations (continued)

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

10 Aspen Springs Drive, Bowmanville, Project #241.30367.00000

Receptor ID	Source Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Required Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
RAIL - WHEEL - DAYTIME														
Building 1 - Tower A - North Façade LR/DR	Railway, Wheel, Daytime	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower A - East Façade LR/DR	Railway, Wheel, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower A - South Façade LR/DR	Railway, Wheel, Daytime	52	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 1 - Tower A - West Façade LR/DR	Railway, Wheel, Daytime	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19
Building 1 - Tower B - North Façade LR/DR	Railway, Wheel, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower B - East Façade LR/DR	Railway, Wheel, Daytime	54	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14
Building 1 - Tower B - South Façade LR/DR	Railway, Wheel, Daytime	50	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10
Building 1 - Tower B - West Façade LR/DR	Railway, Wheel, Daytime	57	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17
Building 1 - Podium - North Façade LR/DR	Railway, Wheel, Daytime	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Podium - East Façade LR/DR	Railway, Wheel, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Podium - South Façade LR/DR	Railway, Wheel, Daytime	50	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10
Building 1 - Podium - West Façade LR/DR	Railway, Wheel, Daytime	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19
Building 2 - North Façade LR/DR	Railway, Wheel, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 2 - East Façade LR/DR	Railway, Wheel, Daytime	52	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 2 - South Façade LR/DR	Railway, Wheel, Daytime	49	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 2 - West Façade LR/DR	Railway, Wheel, Daytime	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower A - North Façade BR	Railway, Wheel, Daytime	60	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower A - East Façade BR	Railway, Wheel, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower A - South Façade BR	Railway, Wheel, Daytime	52	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 1 - Tower A - West Façade BR	Railway, Wheel, Daytime	59	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19
Building 1 - Tower B - North Façade BR	Railway, Wheel, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower B - East Façade BR	Railway, Wheel, Daytime	54	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14
Building 1 - Tower B - South Façade BR	Railway, Wheel, Daytime	50	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10
Building 1 - Tower B - West Façade BR	Railway, Wheel, Daytime	57	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17
Building 1 - Podium - North Façade BR	Railway, Wheel, Daytime	60	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Podium - East Façade BR	Railway, Wheel, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Podium - South Façade BR	Railway, Wheel, Daytime	50	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10
Building 1 - Podium - West Façade BR	Railway, Wheel, Daytime	59	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19
Building 2 - North Façade BR	Railway, Wheel, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 2 - East Façade BR	Railway, Wheel, Daytime	52	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 2 - South Façade BR	Railway, Wheel, Daytime	49	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 2 - West Façade BR	Railway, Wheel, Daytime	56	40	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16

Appendix D – Detailed Façade Calculations (continued)

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer)

10 Aspen Springs Drive, Bowmanville, Project #241.30367.00000

Receptor ID	Source Description	Sound Levels		Room / Façade Inputs					Source Inputs		Veneer - Component 1		Glazing - Component 2	
		Façade Sound Level: (dBA)	Required Indoor Sound Level: (dBA)	Glazing as % of Wall Area	Exposed Wall Height (m)	Exposed Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Require Glazing STC (STC)
RAIL - WHEEL - NIGHT-TIME														
Building 1 - Tower A - North Façade LR/DR	Railway, Wheel, Night-time	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19
Building 1 - Tower A - East Façade LR/DR	Railway, Wheel, Night-time	55	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15
Building 1 - Tower A - South Façade LR/DR	Railway, Wheel, Night-time	51	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11
Building 1 - Tower A - West Façade LR/DR	Railway, Wheel, Night-time	58	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Tower B - North Façade LR/DR	Railway, Wheel, Night-time	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower B - East Façade LR/DR	Railway, Wheel, Night-time	53	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13
Building 1 - Tower B - South Façade LR/DR	Railway, Wheel, Night-time	50	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10
Building 1 - Tower B - West Façade LR/DR	Railway, Wheel, Night-time	57	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17
Building 1 - Podium - North Façade LR/DR	Railway, Wheel, Night-time	60	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Podium - East Façade LR/DR	Railway, Wheel, Night-time	55	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15
Building 1 - Podium - South Façade LR/DR	Railway, Wheel, Night-time	50	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10
Building 1 - Podium - West Façade LR/DR	Railway, Wheel, Night-time	59	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19
Building 2 - North Façade LR/DR	Railway, Wheel, Night-time	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 2 - East Façade LR/DR	Railway, Wheel, Night-time	52	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12
Building 2 - South Façade LR/DR	Railway, Wheel, Night-time	49	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9
Building 2 - West Façade LR/DR	Railway, Wheel, Night-time	56	40	70%	2.8	3.0	6.0	Intermediate	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower A - North Façade BR	Railway, Wheel, Night-time	59	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 1 - Tower A - East Façade BR	Railway, Wheel, Night-time	55	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Tower A - South Façade BR	Railway, Wheel, Night-time	51	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16
Building 1 - Tower A - West Façade BR	Railway, Wheel, Night-time	58	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23
Building 1 - Tower B - North Façade BR	Railway, Wheel, Night-time	56	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 1 - Tower B - East Façade BR	Railway, Wheel, Night-time	53	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18
Building 1 - Tower B - South Façade BR	Railway, Wheel, Night-time	50	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15
Building 1 - Tower B - West Façade BR	Railway, Wheel, Night-time	57	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22
Building 1 - Podium - North Façade BR	Railway, Wheel, Night-time	60	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25
Building 1 - Podium - East Façade BR	Railway, Wheel, Night-time	55	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20
Building 1 - Podium - South Façade BR	Railway, Wheel, Night-time	50	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15
Building 1 - Podium - West Façade BR	Railway, Wheel, Night-time	59	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24
Building 2 - North Façade BR	Railway, Wheel, Night-time	56	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21
Building 2 - East Façade BR	Railway, Wheel, Night-time	52	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17
Building 2 - South Façade BR	Railway, Wheel, Night-time	49	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14
Building 2 - West Façade BR	Railway, Wheel, Night-time	56	35	50%	2.8	3.0	3.0	Very Absorptive	0 - 90	B. avg aircraft, railway wheel noise	45	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21

Appendix E

Ventilation, Warning Clause and Barrier Summary

Environmental Noise Assessment

10 Aspen Springs Drive

Bowmanville, ON

SLR Project No.: 241.30367.0000

Ventilation, Warning Clause and Barrier Summary

The following Warning Clauses are recommended for inclusion in agreements registered on Title for the residential units, and included in all agreements of purchase and sale or lease, and all rental agreements.

A summary of the Warning Clause and Ventilation Requirements is included in **Table E1** on the following page.

MECP Type B: "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and rail traffic may on occasions interfere with some activities of the dwelling occupants, as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

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

MECP Type E: "Purchasers/tenants are advised that sound levels due to the proximity of the adjacent industries (commercial plazas/Church), noise from these facilities may at times be audible."

CPR: "Purchasers are advised that Canadian Pacific Railway Company (CPR) or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject thereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future, including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CPR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."

Metrolinx: "Purchasers are advised that Metrolinx (formerly GO Transit) or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject thereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future, including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."

Table E1: Summary of Ventilation and Warning Clause and Barrier Requirements

Residential Units/Locations	Barrier Required	Air Conditioning Requirement [1]	Warning Clause
All Units – Building 1 Podium Structure	-	AC Required	Type B, Type D, Type E, CPR, Metrolinx
All Units – Building 1 Tower A	-	AC Required	Type B, Type D, Type E, CPR, Metrolinx
All Units – Building 1 Tower B	-	AC Required	Type B, Type D, Type E. CPR, Metrolinx
All Units – Building 2	-	AC Required	Type B, Type D, Type E, CPR, Metrolinx
Building 1 Podium Structure – Rooftop OLA (OLA 1)	1.1 m parapet	-	-
Building 2 – Rooftop OLA (OLA 2)	1.1 m parapet	-	-