

Noise and Vibration Feasibility Study

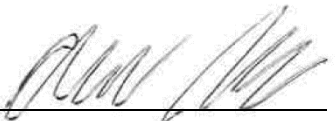
147 Spadina Avenue

Toronto, Ontario

Prepared for:


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August 17, 2021



ACOUSTICS



NOISE



VIBRATION

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Appendix A: Road Traffic Data

VERSION CONTROL

Ver.	Date	Version Description / Changelog	Prepared By
0	2021-08-17	Noise Feasibility Study to support ZBA/SPA application.	A. Rogers D. McCumber

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1 INTRODUCTION AND SUMMARY

Howe Gastmeier Chapnik Limited (HGC Engineering) was retained by Hullmark Developments to perform a Noise and Vibration Feasibility Study for the proposed mixed-use development at 147 Spadina Avenue, in Toronto, Ontario, to support ZBA and SPA applications. This study is based on the architectural drawings “Issued for ZBA”, dated August 10, 2021, prepared by Audax Architecture Inc.

The site is located on the northeast corner of Richmond Street West and Spadina Avenue. Figure 1 shows a key plan of the site. The development plan provides for the construction of a 25-storey mixed-use tower, with three levels of underground parking. The site plan is shown in Figure 2.

The subject area is an urbanized part of Toronto, where traffic on surrounding roadways is the primary source of noise with potential impact on the proposed development. Traffic volumes for the roadways were obtained from the City of Toronto, and adjusted as warranted to account for future potential growth. Traffic volumes for the streetcar line were obtained from the Toronto Transit Commission (TTC). The projected data was used to estimate future sound levels (L_{EQ}) at the proposed building facades. The estimated sound levels were evaluated with respect to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP), and used to develop preliminary noise control recommendations.

This assessment also considers the potential impact of ground-borne vibration produced by TTC streetcars on Spadina Avenue, which operate on tracks located approximately 20 m west of the proposed development. Site measurements and analysis of ground-borne vibration from streetcars indicate that associated vibrations impacting the proposed development are expected to be within the target vibration criteria.

It was noted during a site visit that there are no significant commercial or industrial sources of noise in the immediately surrounding environment.

The results of the study indicate that the expected noise impacts can be addressed by including standard design features within the development, as summarized conceptually herein. Details can be further specified as the building design is developed for tender and construction. Warning clauses for noise are required, and recommended wording for those clauses is provided herein.

2 SITE DESCRIPTION

The subject property is located in Toronto, Ontario, on the northeast corner of Richmond Street West and Spadina Avenue. Queen Street West is approximately 65 metres to the north. According to the architectural drawings dated July 21, 2021, the development will consist of a 25-storey mixed-use tower, above three levels of underground parking. The ground floor is shown to include the residential lobby, a loading bay, a garbage room, and commercial space. The 2nd and 3rd floors include indoor amenity space, with outdoor amenity on the 3rd floor. Residential suites begin on the 3rd floor and comprise the balance of the tower.

A site visit was conducted on June 2, 2021, to measure vibration levels on the site, and to make observations of the acoustical environment. Road traffic on Spadina Avenue and Richmond Street West were confirmed to be the dominant sources of noise in the area, with contributions from streetcar traffic on Spadina Avenue, the tracks for which are located approximately 20 m to the west of the proposed development. During the site visit, no other noise sources of particular concern were noted in the environment immediately surrounding the site.

The site is surrounded by mid-rise and high-rise residential buildings and low-rise commercial buildings. To the west and east are high-rise residential buildings, to the north and south are low-rise commercial buildings. This site is in a busy downtown core area where there are hundreds of buildings, mechanical sources and human activities which contribute to the overall noise environment, and a large network of surrounding roadways and laneways, all of which contribute to “urban hum”. In terms of the classifications provided for in Ministry of the Environment (MECP) guidelines, this area is considered to be a Class 1 “urban” acoustical environment.

3 NOISE AND VIBRATION CRITERIA

3.1 Road and Streetcar Noise

Guidelines for acceptable levels of road traffic noise impacting residential developments are contained in the MECP publication NPC-300, “Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning” [1], August, 2013 (release date October 21, 2013), and are listed in Table 1 below. The values in Table 1 are energy equivalent (average) sound levels [LEQ] in units of A-weighted deciBels [dBA].

Table 1: MECP Road and Streetcar Traffic Noise Criteria (dBA)

Area	Day (7:00 – 23:00)	Night (23:00 – 7:00)
Outdoor Living Area	55*	--
Inside Living/Dining Rooms	45	45
Inside Bedrooms	45	40

*Up to 60 dBA with a warning clause

These criteria apply to the surrounding vehicular traffic. Daytime refers to the period between 07:00 and 23:00, while night-time refers to the period between 23:00 and 07:00. Corridors and washrooms are usually not considered to be noise-sensitive areas.

The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace, a garden, or common areas associated with high-rise multi-unit buildings where passive outdoor recreation is expected to occur. Balconies and elevated terraces (e.g., rooftops) with a depth of less than 4 meters are not considered OLAs under MECP guidelines, and accordingly the noise criteria are not applicable there. Larger private terraces require consideration only if they are the only OLA for the occupant; in general, common outdoor amenity terraces associated with high-rise buildings are the only OLA's that require consideration.

In cases where a minor excess (up to 5 dB) over the sound level limit in an OLA is anticipated, MECP guidelines allow the excess to be addressed by including a warning clause in the titles, deeds or tenancy agreements for the affected dwellings. Where OLA sound levels exceed 60 dBA, physical noise control measures, such as an acoustical barrier, are required.

Where the road traffic noise level (L_{EQ}) is greater than 60 dBA at night or 65 dBA during the day, windows must be designed to achieve the indoor sound level criteria listed above. Otherwise, any glazing meeting the Ontario Building Code is considered adequate under MECP guidelines.

If the daytime sound levels exceed 55 dBA but not 65 dBA, or the nighttime levels exceed 50 dBA but not 60 dBA, the dwelling should be designed with the provision for installation of a heating and cooling system which will allow windows to remain closed. If the daytime levels exceed 65 dBA or the nighttime levels exceed 60 dBA, such a heating and cooling system is required.

Warning clauses to notify future residents of possible excesses are required when nighttime road traffic sound levels exceed 50 dBA at the plane of the windows or when daytime sound levels exceed 55 dBA in the outdoor living areas or at the plane of the windows.

3.2 Ground-Borne Vibration

Vibration from the passage of streetcars may be transmitted via the ground and then transferred up through the structure. Vibration intrusions that are potentially unacceptable in the residential suites could take the form of either vibration which is clearly perceptible to the touch and/or which produces radiated noise levels in excess of the ambient acoustic environment. From a vibration impact perspective, the lower residential suites in a building are the critical receptors.

Vibration levels are typically measured in terms of oscillatory velocity or acceleration. For perceptible vibration we refer to The American National Standards Institute (ANSI) criteria and International Standards Organization (ISO) criteria – ANSI-S3.29/ISO-2631-2 – for human perception of tactile vibration while seated. Conformance with these criteria does not guarantee that vibration levels will be imperceptible to all individuals under all conditions, but is nonetheless a reasonable standard for acceptability. Note that these criteria are for the base structure only and do not account for amplification by lightweight structures, finishes, furniture, etc.

The ANSI/ISO criteria do not address noise; vibrations at frequencies over 20 Hz are of concern for re-radiated noise, even at levels well below the tactile perceptibility threshold. For re-radiated noise we refer to equivalent noise criterion (NC) curves. Experience suggests that while ground-borne noise from streetcar pass-bys will be audible in the building to some extent, if the levels are confined to about NC-30 (35 dBA) or lower in residential spaces, the audibility of the pass-bys may be considered reasonable. The commercial space is expected to be less sensitive to noise; a target of NC-40 (45 dBA) or more (depending on the specific uses) would typically be considered reasonable for such spaces.



4 TRAFFIC NOISE ASSESSMENT

4.1 Road Traffic Data

Traffic data summaries for the key roads surrounding the site were obtained from the City of Toronto Traffic Safety Unit (see Appendix A). These data were provided in the form of 8-hour intersection turning counts; in order to obtain 24-hour traffic volumes required to predict future sound levels during both the 16-hour daytime and 8-hour night-time periods, the following assumptions were made:

- The 24-hour traffic volumes were assumed to be double the obtained 8-hour daily peak volumes,
- The prediction considered traffic that will exist in 10 years (2031), assuming traffic annual growth of 2.5% on all roadways, as required by the MECP,
- Daytime (7:00 – 23:00) vs night-time (23:00 – 7:00) traffic volumes were determined based on an assumed 90% day / 10% night split,
- Half of all trucks were assumed to be heavy, the other half medium, and buses were counted as medium trucks.

The resulting future road traffic volumes for the roads used in this assessment are listed in Table 2, in addition to commercial vehicle (truck) percentages and the posted speed limit for each roadway.

Table 2: 2031 Projected Road Traffic Data

Road Name	AADT	Day / Night Split (% / %)	Commercial Vehicle Percentages		Posted Speed Limit (km/h)
			Medium Truck %	Heavy Truck %	
Spadina Avenue (N of Queen)	30,209	90 / 10	6.0	2.1	40
Spadina Avenue (N or Richmond)	30,869	90 / 10	5.8	2.1	40
Spadina Avenue (S of Richmond)	32,254	90 / 10	5.6	2.0	40
Richmond Street (E of Spadina)	17,985	90 / 10	2.0	1.5	40
Richmond Street (W of Spadina)	12,483	90 / 10	1.8	1.3	40
Queen Street (E of Spadina)	21,351	90 / 10	5.9	1.8	40
Queen Street (W of Spadina)	19,817	90 / 10	3.8	2.0	40

4.2 Streetcar Traffic Data

Streetcar traffic counts were obtained from the TTC and are provided in Appendix A. The streetcar traffic volumes have been escalated to the year 2031 assuming a conservative growth rate of 2.5% per year. These projected volumes for the 510 Spadina streetcar line on Spadina Avenue result in 402 pass-bys during the daytime and 116 pass-bys during the night-time.

4.3 Prediction Results

The sound propagation portion of the modelling has been completed using methods from ISO Standard 9613-2, “Acoustics - Attenuation of Sound During Propagation Outdoors” [2], which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures. The *Cadna-A (version 2021 MRI: build 183.5110)* software package was also used for this purpose, as it is well equipped to process calculations in complex, three-dimensional environments. ISO 9613-2 is a widely recognized standard for predicting sound propagation in the environment, and is accepted by many Ontario municipalities, and the MECP.

The surrounding buildings were incorporated into the model. The road and streetcar noise sources have been included in the model using line sources, calibrated to be equal at a reference distance of 15 m to levels predicted in STAMSON 5.04, a computer algorithm developed by the MECP, based on the volumes presented in Table 2 and Section 4.2.

The model was used to predict traffic noise levels at each of the building façades. Predicted daytime and night-time sound levels at the building façades are shown graphically in Figure 3 and Figure 4, respectively, and are summarized in the following table.

Table 3: Maximum Sound Level Predictions [dBA] from Future Traffic

Location	Day (16-hr avg)			Night (8-hr avg)		
	Road Traffic	Streetcar Traffic	Total	Road Traffic	Streetcar Traffic	Total
North Façade	65	64	67	58	61	63
East Façade	60	52	61	54	49	55
South Façade	67	62	68	60	59	63
West Façade	67	66	69	60	64	65

Outdoor amenity terraces are shown on the 3rd floor on the northeast and east side of the building. The receptor locations at the outdoor amenity spaces are represented by prediction locations R1 and R2 on Figure 5, and the predicted sound level is summarized in the table below.

Table 4: Predicted Traffic Sound Level [dBA] at the Outdoor Living Area

Location	Description	Sound Level ($L_{eq,16hr}$)
R1	3 rd Floor Northeast Balcony	48
R2	3 rd Floor East Balcony	46

4.4 Recommendations

The maximum predicted sound levels at the building façades were found to be up to 69 dBA during daytime hours, and up to 65 dBA during nighttime hours. The following sections outline preliminary recommendations for building façade constructions and ventilation requirements to achieve the noise criteria discussed in Section 3.

4.4.1 Outdoor Living Areas

Since there are common outdoor amenity spaces on the 3rd floor at the east and northeast corner of the building provided for the use of all residents, private terraces and balconies in the development do not require assessment. The common outdoor amenity areas are subject to the MECP criteria outlined in Table 1. The outdoor amenity terraces are represented by prediction locations R1 and R2 on Figure 5.

Assuming a standard 1.07 m high solid guard or parapet around the perimeter of the outdoor amenity spaces, the predicted future average daytime sound level is 55 dBA or less at both receptor locations. No additional noise abatement is required for this amenity space to comply with the MECP criteria outlined in Section 3.

4.4.2 Ventilation Requirements

Maximum predicted sound levels at the facades of the proposed building exceed 65 dBA during the day and/or 60 dBA at night. To address these traffic noise levels, the MECP guidelines recommend that all associated residential units be equipped with central air conditioning to allow windows to remain closed.

4.4.3 Minimum Building Façade Constructions

For the purposes of this preliminary analysis, typical window-to-floor areas were conservatively assumed to be 80% (i.e., 60% fixed, 20% operable elements relative to floor area). Based upon these assumptions and the maximum predicted sound levels, it was determined that the residential glazing

along the west façade must achieve a rating of at least STC-34 in order to achieve the target indoor sound level criteria. The other façades are somewhat less impacted. However, in an urban environment such as this, we do not typically recommend less than STC-33, which can be achieved using standard glazing assemblies. Awning windows, and swing or sliding doors to balconies should have tight seals sufficient to achieve similar acoustical performance ratings. If more glazing is incorporated, higher STC requirements may apply. Acoustical criteria for different façades can be optimized as part of the detail design of the building envelope, if required.

The above recommendation assumes that exterior wall assemblies have sufficient sound insulation such that sound transmitted through them is negligible in comparison to the glazing. Precast or masonry exterior walls should meet these requirements, as should spandrel or metal panels backed by an independent drywall assembly.

5 VIBRATION ASSESSMENT

HGC Engineering conducted vibration measurements at the site on June 2, 2021. Vibration measurements were conducted at two at-grade locations on the site. These locations are labelled as V1 and V2 on Figure 5.

From the measured data, the maximum vibration levels, as a function of one-third octave frequency (Hz), were extracted for each pass-by of a streetcar. Figure 6 summarizes the measurements. The measured levels are presented in dBG, which refers to decibels of acceleration relative to the acceleration of gravity, as a function of one-third octave band frequencies (Hz). A curve is plotted on the figure representing the ANSI criteria for human perception of vibration in structures.

In order to estimate future vibration levels, the vibration levels measured at the locations noted above, were extrapolated by including expected reductions due to heavier below-grade foundation systems, in accordance with Federal Transit Administration (FTA) guidelines. These predictions are shown graphically in Figure 7 for the lowest residential floor (3rd floor) and the ground floor commercial area. The maximum predicted ground-borne vibration levels are within at the ANSI criteria for tactile human perception of vibration.

The actual degree of vibration transmission into the new structure will depend on the design of the foundation. Assuming typical spread of vibrations through a concrete structure and typical amplification factors due to local structural resonances, estimated re-radiated sound levels in the

ground floor commercial space are within NC-40, and on the 3rd floor, where residential units begin, are within NC-30. Levels are expected to be even lower on upper floors of the development. Thus, additional controls to address ground-borne vibration and noise are not expected to be required.

As outlined above, the criteria for both sound and vibration are considered to be reasonable standards for acceptability. However, conformance with these standards does not imply that vibration levels will be imperceptible and/or sound levels will be inaudible. Therefore, appropriate warning clauses should be included in all purchase or lease agreements, and/or in Development Agreements with the municipality.

6 IMPACT OF THE DEVELOPMENT ON THE ENVIRONMENT

Sound levels from stationary (non-traffic) sources of noise such as rooftop air-conditioners, cooling towers, exhaust fans, etc. should not exceed the minimum one-hour L_{EQ} ambient (background) sound level from road traffic, at any potentially impacted residential point of reception, to comply with provincial noise guidelines (i.e., NPC-300) and to avoid complaints. Typical minimum ambient sound levels in the area are expected to be in the range of the MECP exclusionary minimum thresholds of 50 dBA during the day and 45 dBA at night (depending on exposure to the roadways). Thus, any electro-mechanical equipment associated with this development (e.g., cooling towers, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges.

7 IMPACT OF THE DEVELOPMENT ON ITSELF

Section 5.9.1 of the Ontario Building Code (OBC) specifies the minimum required sound insulation characteristics for demising partitions, in terms of STC or ASTC values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls should meet or exceed STC-50 or ASTC-47. Walls separating a suite from a noisy space such as a refuse chute, or elevator shaft, should meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity or commercial spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.



Noise levels from the development's own mechanical and electrical systems will need to be reasonably limited to prevent impacts on suites within the building. These systems should be reviewed at the detail design stage to help prevent the occurrence of any excessive impacts.

The loading bay on the ground floor of the development is enclosed, and is therefore not expected to be a significant noise concern.

8 RECOMMENDED WARNING CLAUSES

MECP guidelines recommend that appropriate warning clauses be used in the Development Agreements and in purchase, sale, and lease agreements (typically by reference to the Development Agreements), to inform future owners and occupants about potential noise concerns from sources in the area. The actual wording of the warning clause depends on the nature of the excess. For residential uses, the recommended clauses are as follows:

- (a) 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 traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Ministry of Environment, Conservation and Parks.
- (b) This development is located near the Toronto Transit Commission's 510 Spadina streetcar line on Spadina Avenue. Noise and vibration from streetcar operations may occasionally be perceptible and/or audible in the building.
- (c) This dwelling unit has been supplied with a heating and cooling 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 Ministry of the Environment, Conservation and Parks.
- (d) Purchasers/tenants are advised that due to the proximity of this development to nearby retail/commercial facilities, sound levels from the facilities may at times be audible.

These sample clauses are provided only as examples, and can be modified by the owner's legal representative, in consultation with the City, in order to suit site-specific requirements.

9 SUMMARY OF RECOMMENDATIONS

The following list summarizes the recommendations made in this report. The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

1. The provision for future installation of a heating and cooling system that will allow windows to remain closed is required. Such a system is expected to be provided in any event.
2. Recommended minimum glazing constructions to ensure adequate indoor sound levels from traffic noise and other transient noises are outlined in Section 4.4.3.
3. Noise warning clauses should be included in the purchase and tenancy agreements to inform future residents that noise from nearby road and streetcar traffic and retail/commercial facilities which may, on occasion, interfere with some activities. Recommended wording for these clauses is provided in Section 8. Such clauses are often included by reference to the Development Agreements in which they are contained.
4. Demising assemblies must be selected to meet the minimum requirements of the Ontario Building Code (OBC). Where B19R certification is needed, an acoustical consultant is required to review details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself are maintained within acceptable levels. Outdoor sound emissions should also be checked to ensure that any potential impacts on adjacent properties are suitably minimized.

10 CONCLUSION

The results of this study indicate that the proposed development is feasible on this site from a noise and vibration impact perspective, with the inclusion of standard acoustical features. Preliminary design recommendations are provided herein, and can be developed in greater detail as the design proceeds through tender and construction.



11 REFERENCES

1. Ontario Ministry of the Environment, Conservation and Parks Publication NPC-300, *Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning*, August, 2013.
2. International Organization for Standardization, *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation*, ISO-9613-2, Switzerland, 1996.



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Figure 1: Key Plan

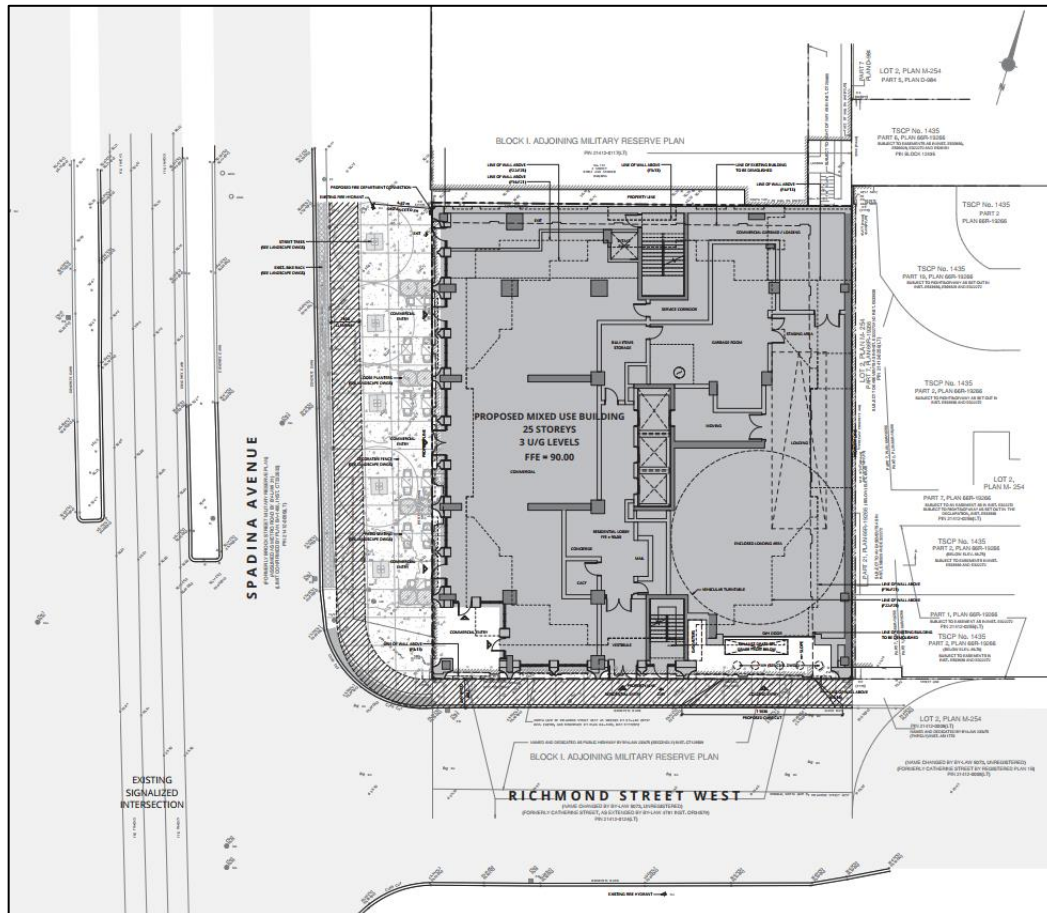


Figure 2: Site Plan

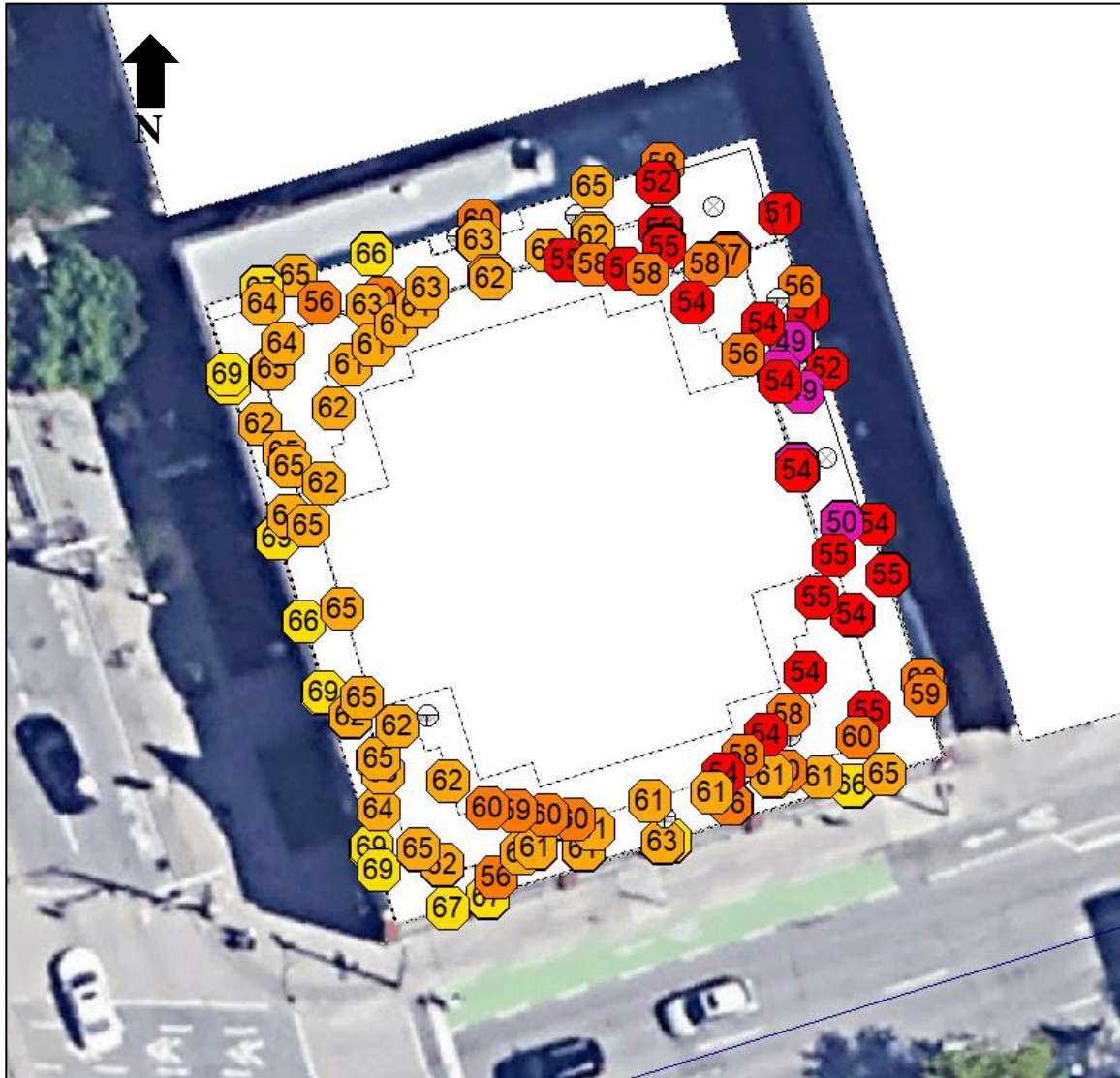


Figure 3: Daytime Sound Level Predictions at Building Façades from Road Traffic

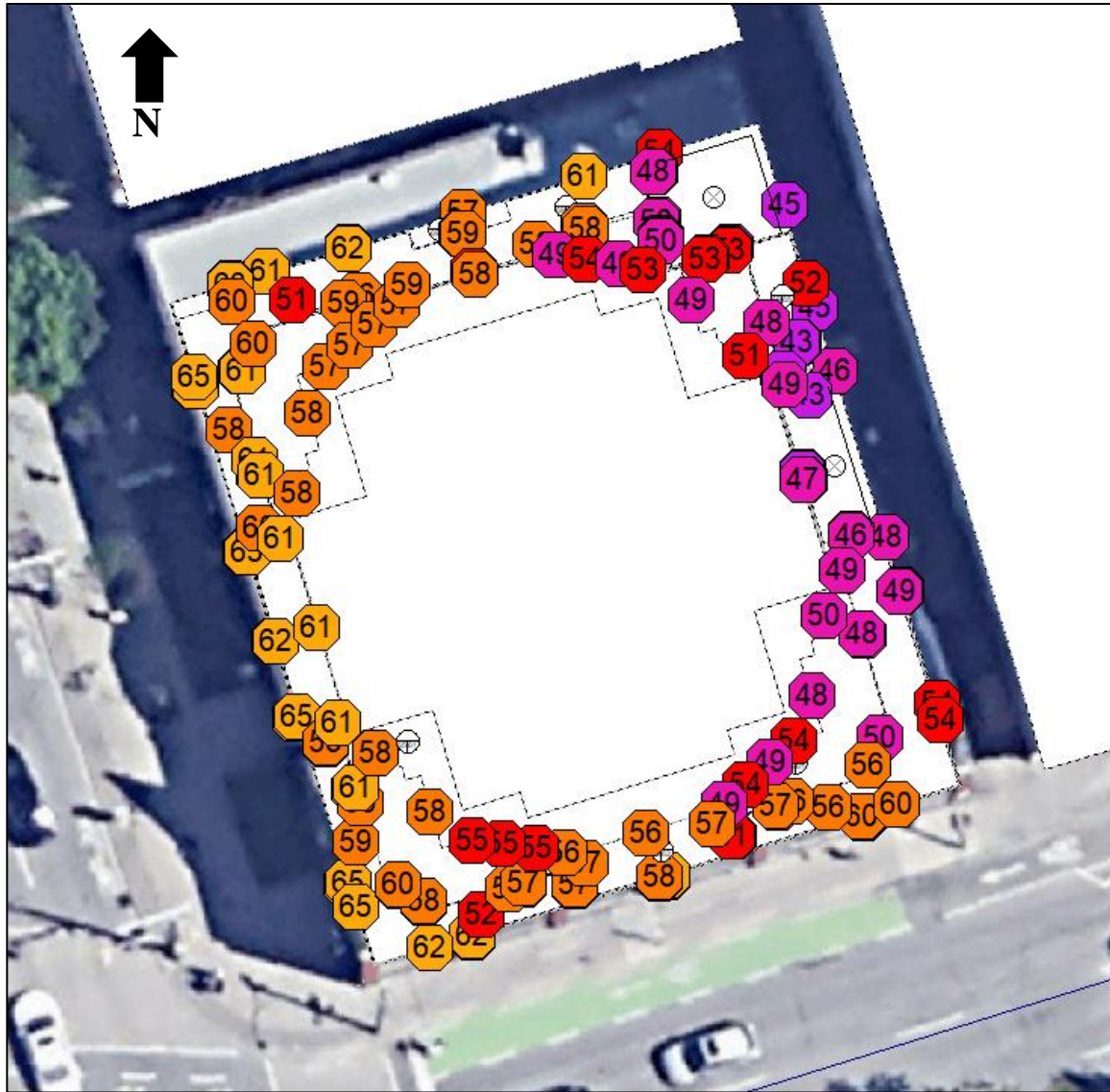


Figure 4: Nighttime Sound Level Predictions at Building Façades from Road Traffic



Figure 5: Outdoor Amenity Area Prediction Location

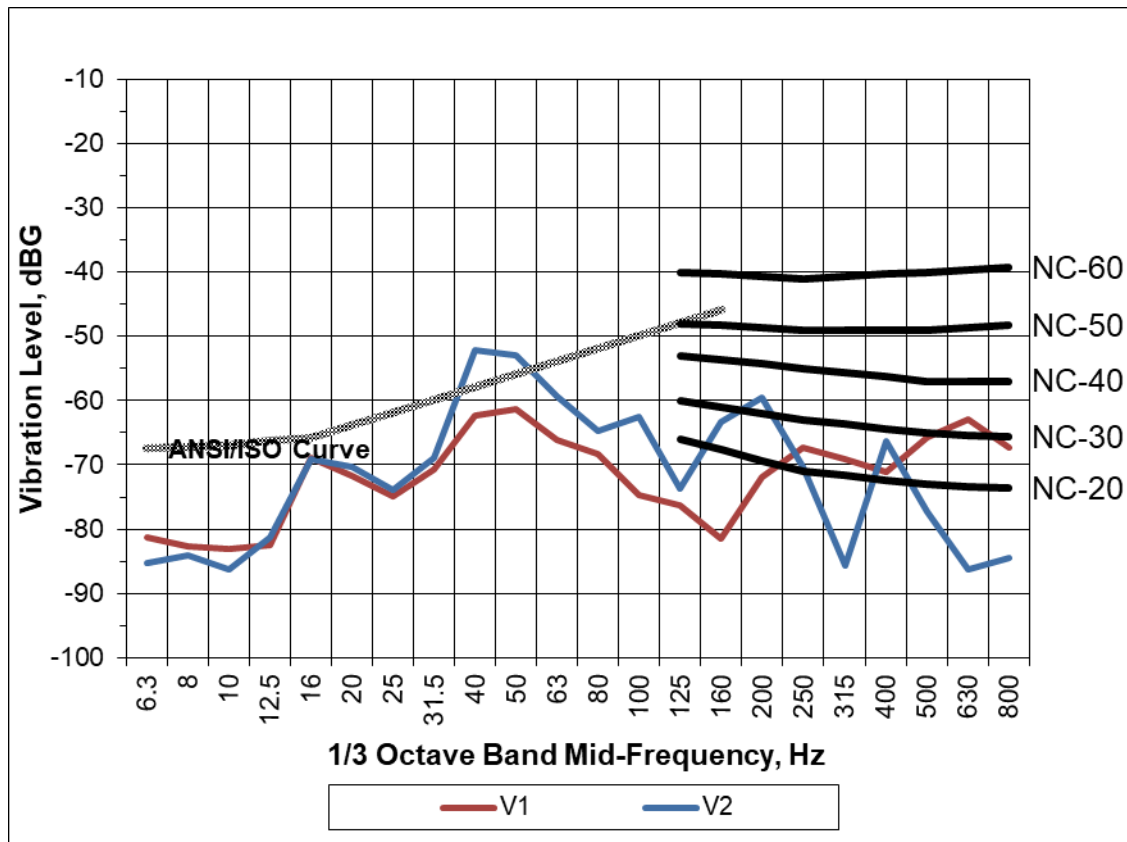


Figure 6: Maximum Measured Vibration Levels from Streetcars

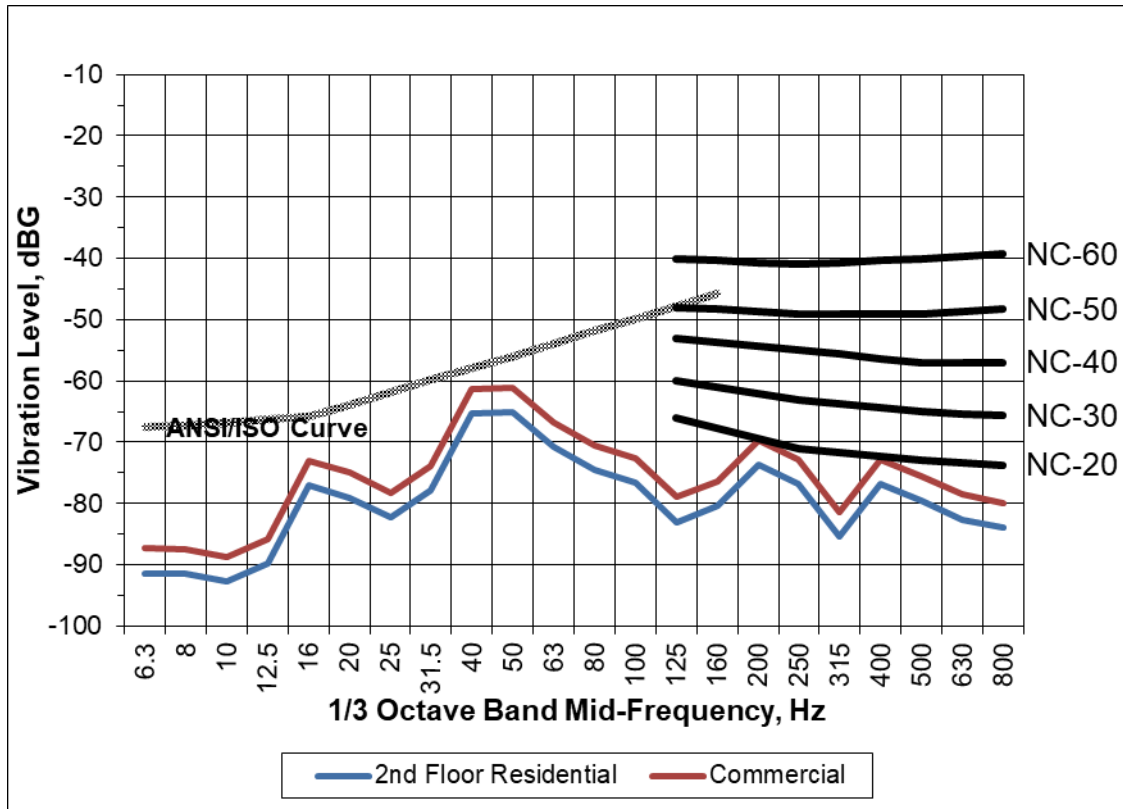


Figure 7: Predicted Vibration Levels from Streetcars

APPENDIX A

Road Traffic Data



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Turning Movement Count Summary Report

RICHMOND ST AT SPADINA AVE (PX 275)

Survey Date: 2016-Sep-15 (Thursday)

Survey Type: Routine Hours

Time Period	Vehicle Type	Exits	NORTHBOUND				Total	Exits	EASTBOUND				Total	Exits	SOUTHBOUND				Total	Exits	WESTBOUND				Total	Peds	Bike	Other
			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total				
08:30-09:30 AM PEAK	CAR	855	0	795	0	795	0	0	0	0	0	646	0	464	67	531	411	182	344	60	586	N	303	205	0			
	TRK	36	0	28	0	28	0	0	0	0	0	23	0	19	0	19	2	4	2	8	14	S	447	98	0			
	BUS	27	0	27	0	27	0	0	0	0	0	33	0	33	0	33	1	0	1	0	1	E	528	224	0			
TOTAL:		918	0	850	0	850	0	0	0	0	0	702	0	516	67	583	414	186	347	68	601							
17:00-18:00 PM PEAK	CAR	836	0	698	0	698	0	0	0	0	580	0	370	44	414	801	210	757	138	1,105	N	350	40	0				
	TRK	12	0	11	0	11	0	0	0	0	11	0	5	0	5	10	6	10	1	17	S	732	221	0				
	BUS	40	0	40	0	40	0	0	0	0	37	0	34	0	34	2	3	2	0	5	E	978	499	0				
TOTAL:		888	0	749	0	749	0	0	0	0	628	0	409	44	453	813	219	769	139	1,127								
OFF HR AVG	CAR	734	0	657	0	657	0	0	0	0	647	0	452	50	502	449	195	399	77	671	N	342	63	0				
	TRK	33	0	29	0	29	0	0	0	0	35	0	24	3	27	17	11	14	4	29	S	391	55	0				
	BUS	25	0	25	0	25	0	0	0	0	29	0	28	0	28	1	1	1	0	2	E	786	112	0				
TOTAL:		792	0	711	0	711	0	0	0	0	711	0	504	53	557	467	207	414	81	702								
07:30-09:30 2 HR AM	CAR	1,544	0	1,432	0	1,432	0	0	0	0	1,220	0	829	92	921	683	391	591	112	1,094	N	468	307	0				
	TRK	72	0	62	0	62	0	0	0	0	46	0	33	0	33	11	13	11	10	34	S	653	165	0				
	BUS	56	0	56	0	56	0	0	0	0	56	0	56	0	56	3	0	3	0	3	E	788	335	0				
TOTAL:		1,672	0	1,550	0	1,550	0	0	0	0	1,322	0	918	92	1,010	697	404	605	122	1,131								
16:00-18:00 2 HR PM	CAR	1,558	1	1,342	0	1,343	0	0	0	0	1,154	0	736	80	816	1,631	418	1,550	216	2,184	N	590	62	0				
	TRK	30	0	22	0	22	0	0	0	0	24	0	11	0	11	24	13	24	8	45	S	1,127	340	0				
	BUS	70	0	70	0	70	0	0	0	0	69	0	63	0	63	6	6	6	0	12	E	1,703	801	0				
TOTAL:		1,658	1	1,434	0	1,435	0	0	0	0	1,247	0	810	80	890	1,661	437	1,580	224	2,241								
07:30-18:00 8 HR SUM	CAR	6,036	1	5,400	0	5,401	0	0	0	0	4,962	0	3,373	372	3,745	4,111	1,589	3,738	636	5,963	N	2,427	620	0				
	TRK	230	0	198	0	198	0	0	0	0	208	0	139	11	150	101	69	90	32	191	S	3,343	723	0				
	BUS	227	0	227	0	227	0	0	0	0	241	0	232	0	232	11	9	11	0	20	E	5,636	1,584	0				
TOTAL:		6,493	1	5,825	0	5,826	0	0	0	0	5,411	0	3,744	383	4,127	4,223	1,667	3,839	668	6,174								

Total 8 Hour Vehicle Volume: 16,127

Total 8 Hour Bicycle Volume: 2,927

Total 8 Hour Intersection Volume: 19,054

Comment: TIFF

Turning Movement Count Summary Report

RICHMOND ST AT SPADINA AVE (PX 275)

Survey Date: 2016-Sep-16 (Friday)

Survey Type: Routine Hours

Time Period	Vehicle Type	Exits	NORTHBOUND				Total	Exits	EASTBOUND				Total	Exits	SOUTHBOUND				Total	Exits	WESTBOUND				Total	Peds	Bike	Other
			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total				
08:30-09:30 AM PEAK	CAR	755	0	708	0	708	0	0	0	0	0	680	0	476	67	543	377	204	310	47	561	N	377	87	0			
	TRK	38	0	36	0	36	0	0	0	0	0	30	0	21	1	22	9	9	8	2	19	S	416	99	0			
	BUS	21	0	21	0	21	0	0	0	0	0	37	0	36	0	36	2	1	2	0	3	E	670	166	0			
TOTAL:		814	0	765	0	765	0	0	0	0	0	747	0	533	68	601	388	214	320	49	583							
16:15-17:15 PM PEAK	CAR	807	1	688	0	689	0	0	0	0	0	630	0	422	48	470	804	208	755	119	1,082	N	851	127	0			
	TRK	15	0	12	0	12	0	0	0	0	0	12	0	8	1	9	6	4	5	3	12	S	591	134	0			
	BUS	29	0	29	0	29	0	0	0	0	0	26	0	24	1	25	7	2	6	0	8	E	1,018	596	0			
TOTAL:		851	1	729	0	730	0	0	0	0	0	668	0	454	50	504	817	214	766	122	1,102							
OFF HR AVG	CAR	672	1	590	0	591	0	0	0	0	0	665	0	469	56	525	486	196	429	82	707	N	342	59	0			
	TRK	41	0	34	0	34	0	0	0	0	0	32	0	23	4	27	22	9	18	7	34	S	502	67	0			
	BUS	20	0	20	0	20	0	0	0	0	0	26	0	25	0	25	1	1	1	0	2	E	907	147	0			
TOTAL:		733	1	644	0	645	0	0	0	0	0	723	0	517	60	577	509	206	448	89	743							
07:30-09:30 2 HR AM	CAR	1,457	0	1,352	0	1,352	0	0	0	0	0	1,176	0	805	84	889	683	371	599	105	1,075	N	593	139	0			
	TRK	78	0	71	0	71	0	0	0	0	0	58	0	45	3	48	18	13	15	7	35	S	623	160	0			
	BUS	47	0	47	0	47	0	0	0	0	0	65	0	62	0	62	5	3	5	0	8	E	942	264	0			
TOTAL:		1,582	0	1,470	0	1,470	0	0	0	0	0	1,299	0	912	87	999	706	387	619	112	1,118							
16:00-18:00 2 HR PM	CAR	1,691	4	1,445	0	1,449	0	0	0	0	0	1,231	0	832	107	939	1,523	399	1,412	246	2,057	N	1,698	264	0			
	TRK	27	0	24	0	24	0	0	0	0	0	19	0	10	4	14	12	9	8	3	20	S	1,237	317	0			
	BUS	54	0	54	0	54	0	0	0	0	0	50	0	48	2	50	12	2	10	0	12	E	2,132	1,227	0			
TOTAL:		1,772	4	1,523	0	1,527	0	0	0	0	0	1,300	0	890	113	1,003	1,547	410	1,430	249	2,089							
07:30-18:00 8 HR SUM	CAR	5,833	9	5,155	1	5,165	1	0	0	0	0	5,065	0	3,513	413	3,926	4,147	1,552	3,725	678	5,955	N	3,658	638	0			
	TRK	266	0	229	0	229	0	0	0	0	0	203	0	147	21	168	114	56	93	37	186	S	3,867	745	0			
	BUS	181	0	181	0	181	0	0	0	0	0	220	0	211	3	214	21	9	18	0	27	E	6,703	2,079	0			
TOTAL:		6,280	9	5,565	1	5,575	1	0	0	0	0	5,488	0	3,871	437	4,308	4,282	1,617	3,836	715	6,168							

Total 8 Hour Vehicle Volume: 16,051

Total 8 Hour Bicycle Volume: 3,462

Total 8 Hour Intersection Volume: 19,513

Comment: TIFF

Turning Movement Count Summary Report

RICHMOND ST AT SPADINA AVE (PX 275)

Survey Date: 2016-Sep-17 (Saturday)

Survey Type: Routine Hours

Time Period	Vehicle Type	Exits	NORTHBOUND				Total	Exits	EASTBOUND				Total	Exits	SOUTHBOUND				Total	Exits	WESTBOUND				Total	Peds	Bike	Other
			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total				
08:30-09:30 AM PEAK	CAR	549	0	508	0	508	0	0	0	0	0	410	0	307	18	325	189	103	171	41	315	N	49	24	0			
	TRK	16	0	16	0	16	0	0	0	0	0	15	0	12	0	12	4	3	4	0	7	S	95	11	0			
	BUS	25	0	25	0	25	0	0	0	0	0	26	0	26	0	26	1	0	1	0	1	E	134	18	0			
TOTAL:		590	0	549	0	549	0	0	0	0	0	451	0	345	18	363	194	106	176	41	323		W	180	0	0		
17:00-18:00 PM PEAK	CAR	761	0	631	0	631	0	0	0	0	0	775	0	555	58	613	602	220	544	130	894	N	204	30	0			
	TRK	4	0	3	0	3	0	0	0	0	0	8	0	8	0	8	3	0	3	1	4	S	229	30	0			
	BUS	30	0	30	0	30	0	0	0	0	0	37	0	37	1	38	1	0	0	0	0	E	552	54	0			
TOTAL:		795	0	664	0	664	0	0	0	0	0	820	0	600	59	659	606	220	547	131	898		W	595	0	0		
OFF HR AVG	CAR	792	0	712	0	712	0	0	0	0	0	690	0	523	43	566	432	167	389	80	636	N	164	42	0			
	TRK	10	0	9	0	9	0	0	0	0	0	13	0	11	0	11	4	2	4	1	7	S	273	34	0			
	BUS	23	0	23	0	23	0	0	0	0	0	26	0	25	0	25	1	1	1	0	2	E	502	49	0			
TOTAL:		825	0	744	0	744	0	0	0	0	0	729	0	559	43	602	437	170	394	81	645		W	567	2	0		
07:30-09:30 2 HR AM	CAR	944	1	875	1	877	1	0	0	0	0	748	0	584	37	621	334	164	296	69	529	N	68	39	0			
	TRK	33	0	32	0	32	0	0	0	0	0	32	0	26	1	27	7	6	6	1	13	S	125	22	0			
	BUS	44	0	44	0	44	0	0	0	0	0	46	0	46	0	46	1	0	1	0	1	E	192	34	0			
TOTAL:		1,021	1	951	1	953	1	0	0	0	0	826	0	656	38	694	342	170	303	70	543		W	267	0	0		
16:00-18:00 2 HR PM	CAR	1,523	0	1,277	0	1,277	0	0	0	0	0	1,536	0	1,150	121	1,271	1,203	386	1,082	246	1,714	N	383	53	0			
	TRK	14	0	13	0	13	0	0	0	0	0	16	0	14	0	14	5	2	5	1	8	S	436	46	0			
	BUS	51	0	51	0	51	0	0	0	0	0	62	0	62	1	63	2	0	1	0	1	E	1,107	119	0			
TOTAL:		1,588	0	1,341	0	1,341	0	0	0	0	0	1,614	0	1,226	122	1,348	1,210	388	1,088	247	1,723		W	1,095	0	0		
07:30-18:00 8 HR SUM	CAR	5,632	2	4,999	1	5,002	1	0	0	0	0	5,044	0	3,825	329	4,154	3,263	1,219	2,932	633	4,784	N	1,106	261	0			
	TRK	88	0	82	0	82	0	0	0	0	0	98	0	82	2	84	28	16	26	6	48	S	1,654	205	0			
	BUS	186	0	186	0	186	0	0	0	0	0	212	0	208	2	210	6	4	4	0	8	E	3,305	350	0			
TOTAL:		5,906	2	5,267	1	5,270	1	0	0	0	0	5,354	0	4,115	333	4,448	3,297	1,239	2,962	639	4,840		W	3,628	6	0		

Total 8 Hour Vehicle Volume: 14,558

Total 8 Hour Bicycle Volume: 822

Total 8 Hour Intersection Volume: 15,380

Comment: TIFF

Turning Movement Count Summary Report

QUEEN ST AT SPADINA AVE (PX 276)

Survey Date: 2016-Sep-15 (Thursday)

Survey Type: Routine Hours

Time Period	Vehicle Type	Exits	NORTHBOUND				EASTBOUND				SOUTHBOUND				WESTBOUND				Total	Peds	Bike	Other			
			Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left					Thru	Right	Total
08:30-09:30 AM PEAK	CAR	715	39	641	117	797	699	0	516	73	589	513	66	439	28	533	331	1	264	74	339	N	510	175	0
	TRK	33	1	28	6	35	18	0	11	1	12	16	1	15	3	19	15	0	11	5	16	S	510	119	0
	BUS	14	0	14	12	26	23	0	11	0	11	30	0	19	1	20	10	11	9	0	20	E	578	27	0
TOTAL:		762	40	683	135	858	740	0	538	74	612	559	67	473	32	572	356	12	284	79	375				
17:00-18:00 PM PEAK	CAR	795	64	710	55	829	397	3	292	61	356	401	50	337	45	432	409	3	300	82	385	N	1,639	118	0
	TRK	12	1	11	1	13	8	0	7	3	10	7	0	4	1	5	5	0	3	1	4	S	1,304	227	0
	BUS	13	0	13	25	38	31	0	5	0	5	35	1	12	0	13	4	23	4	0	27	E	1,865	84	0
TOTAL:		820	65	734	81	880	436	3	304	64	371	443	51	353	46	450	418	26	307	83	416				
OFF HR AVG	CAR	679	62	557	95	714	412	42	263	73	378	498	54	394	56	504	356	31	238	80	349	N	1,195	66	0
	TRK	28	3	23	5	31	24	2	17	7	26	33	2	25	3	30	18	1	12	3	16	S	1,106	67	0
	BUS	15	0	14	11	25	18	0	7	0	7	26	0	15	0	15	7	11	7	1	19	E	1,419	46	0
TOTAL:		722	65	594	111	770	454	44	287	80	411	557	56	434	59	549	381	43	257	84	384				
07:30-09:30 2 HR AM	CAR	1,299	79	1,169	231	1,479	1,385	0	1,019	128	1,147	906	135	777	44	956	595	1	472	130	603	N	786	264	0
	TRK	65	5	56	11	72	38	0	22	4	26	30	5	26	6	37	29	0	18	9	27	S	783	194	0
	BUS	29	0	29	26	55	46	0	20	0	20	52	0	30	1	31	21	22	20	0	42	E	834	41	0
TOTAL:		1,393	84	1,254	268	1,606	1,469	0	1,061	132	1,193	988	140	833	51	1,024	645	23	510	139	672				
16:00-18:00 2 HR PM	CAR	1,466	118	1,291	110	1,519	767	3	566	123	692	841	91	714	79	884	830	4	633	172	809	N	2,757	182	0
	TRK	29	2	24	6	32	23	0	17	8	25	20	0	12	3	15	15	0	10	5	15	S	2,413	358	0
	BUS	28	0	28	41	69	55	0	12	0	12	60	2	25	0	27	9	35	9	0	44	E	2,933	165	0
TOTAL:		1,523	120	1,343	157	1,620	845	3	595	131	729	921	93	751	82	926	854	39	652	177	868				
07:30-18:00 8 HR SUM	CAR	5,480	445	4,688	720	5,853	3,796	170	2,636	543	3,349	3,738	440	3,066	347	3,853	2,849	129	2,057	622	2,808	N	8,321	710	0
	TRK	208	18	173	36	227	155	8	105	41	154	184	14	138	20	172	114	5	76	27	108	S	7,618	818	0
	BUS	116	0	113	112	225	176	0	61	0	61	215	3	116	1	120	59	99	58	3	160	E	9,441	390	0
TOTAL:		5,804	463	4,974	868	6,305	4,127	178	2,802	584	3,564	4,137	457	3,320	368	4,145	3,022	233	2,191	652	3,076				

Total 8 Hour Vehicle Volume: 17,090

Total 8 Hour Bicycle Volume: 2,362

Total 8 Hour Intersection Volume: 19,452

Comment: TIFF

Turning Movement Count Summary Report

QUEEN ST AT SPADINA AVE (PX 276)

Survey Date: 2016-Sep-16 (Friday)

Survey Type: Routine Hours

Time Period	Vehicle Type	Exits	NORTHBOUND				EASTBOUND				SOUTHBOUND				WESTBOUND				Peds	Bike	Other				
			Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left	Thru	Right	Total	Exits	Left				Thru	Right	Total	
08:30-09:30 AM PEAK	CAR	667	49	589	108	746	720	1	553	86	640	522	59	435	46	540	327	1	232	77	310	N	456	168	0
	TRK	30	0	28	7	35	21	0	13	2	15	21	1	19	1	21	14	0	13	2	15	S	496	115	0
	BUS	19	0	17	9	26	20	0	11	1	12	30	0	19	0	19	11	10	11	2	23	E	542	23	0
TOTAL:		716	49	634	124	807	761	1	577	89	667	573	60	473	47	580	352	11	256	81	348				
16:45-17:45 PM PEAK	CAR	841	67	737	69	873	397	1	289	67	357	449	39	376	37	452	452	6	348	103	457	N	634	93	0
	TRK	13	3	11	4	18	8	0	4	6	10	18	0	11	0	11	12	1	9	2	12	S	1,171	213	0
	BUS	19	0	17	9	26	15	0	6	0	6	26	0	13	0	13	6	13	6	2	21	E	1,138	105	0
TOTAL:		873	70	765	82	917	420	1	299	73	373	493	39	400	37	476	470	20	363	107	490				
OFF HR AVG	CAR	642	69	513	74	656	417	35	293	78	406	514	50	396	55	501	359	40	235	94	369	N	755	76	0
	TRK	31	4	24	7	35	22	2	12	7	21	27	3	18	4	25	19	2	11	5	18	S	865	79	0
	BUS	13	0	13	11	24	16	0	5	0	5	25	0	14	0	14	5	11	5	0	16	E	860	52	0
TOTAL:		686	73	550	92	715	455	37	310	85	432	566	53	428	59	540	383	53	251	99	403				
07:30-09:30 2 HR AM	CAR	1,275	81	1,136	217	1,434	1,372	2	1,037	135	1,174	873	118	737	70	925	573	1	422	137	560	N	713	245	0
	TRK	61	5	56	12	73	44	1	30	5	36	47	2	42	4	48	30	0	21	4	25	S	764	179	0
	BUS	35	1	33	20	54	44	0	24	2	26	58	0	34	0	34	29	22	28	2	52	E	822	38	0
TOTAL:		1,371	87	1,225	249	1,561	1,460	3	1,091	142	1,236	978	120	813	74	1,007	632	23	471	143	637				
16:00-18:00 2 HR PM	CAR	1,609	136	1,403	137	1,676	797	1	586	125	712	860	74	728	82	884	892	7	674	205	886	N	1,325	176	0
	TRK	27	6	22	8	36	23	0	13	8	21	28	2	19	1	22	23	1	16	5	22	S	2,300	350	0
	BUS	32	0	30	22	52	34	0	12	0	12	53	0	30	0	30	14	23	14	2	39	E	2,231	174	0
TOTAL:		1,668	142	1,455	167	1,764	854	1	611	133	745	941	76	777	83	936	929	31	704	212	947				
07:30-18:00 8 HR SUM	CAR	5,447	492	4,589	648	5,729	3,835	141	2,794	573	3,508	3,791	393	3,049	371	3,813	2,900	169	2,037	717	2,923	N	5,056	723	0
	TRK	213	27	175	47	249	153	9	90	42	141	185	16	134	22	172	128	9	79	29	117	S	6,524	846	0
	BUS	119	1	114	85	200	141	0	55	2	57	208	1	119	0	120	63	87	62	5	154	E	6,493	420	0
TOTAL:		5,779	520	4,878	780	6,178	4,129	150	2,939	617	3,706	4,184	410	3,302	393	4,105	3,091	265	2,178	751	3,194				

Total 8 Hour Vehicle Volume: 17,183

Total 8 Hour Bicycle Volume: 2,419

Total 8 Hour Intersection Volume: 19,602

Comment: TIFF

Turning Movement Count Summary Report

QUEEN ST AT SPADINA AVE (PX 276)

Survey Date: 2016-Sep-17 (Saturday)

Survey Type: Routine Hours

Time Period	Vehicle Type	Exits	NORTHBOUND				Total	Exits	EASTBOUND				Total	Exits	SOUTHBOUND				Total	Exits	WESTBOUND				Total	Peds	Bike	Other
			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total			Left	Thru	Right	Total				
08:30-09:30 AM PEAK	CAR	503	55	428	64	547	267	25	174	57	256	327	29	252	32	313	217	18	130	50	198	N	187	38	0			
	TRK	18	0	17	1	18	4	0	2	1	3	13	1	10	2	13	7	2	5	1	8	S	139	16	0			
	BUS	18	0	17	7	24	13	0	5	0	5	27	1	14	0	15	4	13	4	1	18	E	148	9	0			
TOTAL:		539	55	462	72	589	284	25	181	58	264	367	31	276	34	341	228	33	139	52	224							
16:00-17:00 PM PEAK	CAR	693	69	567	104	740	439	35	275	122	432	664	60	487	52	599	377	55	256	91	402	N	860	29	0			
	TRK	7	0	7	1	8	3	0	2	0	2	5	0	5	0	5	2	0	2	0	2	S	853	24	0			
	BUS	14	0	14	9	23	17	0	8	0	8	25	0	14	0	14	6	11	6	0	17	E	962	22	0			
TOTAL:		714	69	588	114	771	459	35	285	122	442	694	60	506	52	618	385	66	264	91	421							
OFF HR AVG	CAR	743	82	613	85	780	393	38	261	95	394	556	47	420	69	536	386	41	235	92	368	N	653	38	0			
	TRK	14	1	11	1	13	8	1	6	1	8	12	1	10	1	12	6	1	4	2	7	S	691	40	0			
	BUS	16	0	16	11	27	19	0	8	0	8	26	0	15	0	15	9	11	9	0	20	E	718	26	0			
TOTAL:		773	83	640	97	820	420	39	275	96	410	594	48	445	70	563	401	53	248	94	395							
07:30-09:30 2 HR AM	CAR	863	90	743	107	940	440	39	286	101	426	618	47	479	62	588	370	38	218	81	337	N	279	56	0			
	TRK	28	2	27	4	33	11	0	4	2	6	25	3	21	2	26	15	2	11	1	14	S	208	26	0			
	BUS	28	3	27	13	43	23	0	9	0	9	50	1	30	0	31	10	20	7	1	28	E	215	16	0			
TOTAL:		919	95	797	124	1,016	474	39	299	103	441	693	51	530	64	645	395	60	236	83	379							
16:00-18:00 2 HR PM	CAR	1,422	141	1,157	192	1,490	883	73	582	218	873	1,255	109	940	105	1,154	770	97	524	192	813	N	1,685	68	0			
	TRK	9	1	9	1	11	3	0	2	1	3	15	0	13	0	13	4	1	3	0	4	S	1,732	55	0			
	BUS	32	0	31	22	53	34	0	12	0	12	50	0	29	1	30	14	21	13	1	35	E	1,927	57	0			
TOTAL:		1,463	142	1,197	215	1,554	920	73	596	219	888	1,320	109	982	106	1,197	788	119	540	193	852							
07:30-18:00 8 HR SUM	CAR	5,256	559	4,353	640	5,552	2,898	264	1,913	699	2,876	4,096	345	3,100	444	3,889	2,683	297	1,680	639	2,616	N	4,576	275	0			
	TRK	91	5	81	7	93	40	3	28	8	39	88	5	75	4	84	39	5	30	7	42	S	4,704	240	0			
	BUS	125	3	122	79	204	132	0	52	0	52	202	1	119	1	121	59	83	55	3	141	E	5,012	178	0			
TOTAL:		5,472	567	4,556	726	5,849	3,070	267	1,993	707	2,967	4,386	351	3,294	449	4,094	2,781	385	1,765	649	2,799							

Total 8 Hour Vehicle Volume: 15,709

Total 8 Hour Bicycle Volume: 915

Total 8 Hour Intersection Volume: 16,624

Comment: TIFF



Northbound on Spadina Ave at Queen St West North Side

510 SPADINA

Stop Number 7355



Branch Legend







- 510 SPADINA To SPADINA STATION
- 510X SPADINA To NORTH-510 SPADINA SHORT TURN
- 310 SPADINA SPADINA To KING








Effective June 15, 2021








Monday through Friday







4 am	4:42	4:43	4:55		
5 am	5:05	5:12	5:14	5:23	5:32
	5:40	5:49	5:58		
6 am	6:07	6:16	6:25	6:34	6:43
	6:52				
7 am	7:01	7:10	7:19	7:23	7:28
	7:37	7:41	7:46	7:50	7:55
8 am	8:03	8:07	8:11	8:17	8:22
	8:27	8:32	8:38	8:43	8:48
	8:53	8:59			
9 am	9:04	9:09	9:14	9:20	9:27
	9:33	9:39	9:46	9:52	9:58


10 am	10:04 10:36	10:11 10:42	10:17 10:48	10:23 10:54	10:29
11 am	11:01 11:32	11:07 11:38	11:13 11:44	11:19 11:51	11:26 11:57
noon	12:03 12:34	12:09 12:41	12:16 12:47	12:22 12:53	12:28 12:59
1 pm	1:06 1:37	1:12 1:43	1:18 1:49	1:24 1:56	1:31
2 pm	2:02 2:33 2:57	2:08 2:39	2:14 2:46	2:21 2:49	2:27 2:52
3 pm	3:02 3:30 3:58	3:08 3:36	3:14 3:41	3:19 3:47	3:25 3:52
4 pm	4:03 4:31 4:58	4:09 4:36	4:14 4:42	4:20 4:47	4:25 4:53
5 pm	5:04 5:31 5:59	5:09 5:37	5:15 5:42	5:20 5:48	5:26 5:53
6 pm	6:04 6:32 6:59	6:10 6:37	6:15 6:43	6:21 6:48	6:26 6:54
7 pm	7:05 7:32	7:10 7:38	7:16 7:43	7:21 7:49	7:27 7:55
8 pm	8:02 8:34	8:08 8:41	8:15 8:47	8:21 8:54	8:28
9 pm	9:00 9:48	9:11 9:57	9:20	9:29	9:39

10 pm  10:06  10:15  10:24  10:33  10:42
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11 pm  11:00  11:09  11:18  11:27  11:36
 11:45  11:54

12 am  12:03  12:12  12:21  12:30  12:39
 12:48  12:57

1 am  1:06  1:15  1:24  1:33  1:42
 1:51








2 am  2:01  2:12  2:27  2:42  2:57







3 am  3:12  3:27  3:42






4 am  4:12











Saturday



4 am  4:42  4:46

5 am  5:02  5:12  5:17  5:32  5:43
 5:51  5:59


6 am  6:14  6:21  6:29  6:37  6:44
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7 am  7:07  7:17  7:27  7:37  7:47
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8 am  8:07  8:17  8:27  8:32  8:37
 8:40  8:43  8:47  8:52  8:57

9 am  9:00  9:03  9:07  9:11  9:16
 9:17  9:24  9:26  9:28  9:32
 9:36  9:40  9:44  9:48  9:52
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10 am

 10:00	 10:04	 10:08	 10:12	 10:16
 10:20	 10:24	 10:28	 10:32	 10:36
 10:40	 10:44	 10:47	 10:51	 10:56

















11 am

 11:00	 11:04	 11:06	 11:12	 11:14
 11:16	 11:20	 11:24	 11:28	 11:31
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 11:54	 11:58			

noon

 12:02	 12:06	 12:10	 12:13	 12:17
 12:21	 12:25	 12:28	 12:32	 12:36
 12:40	 12:43	 12:47	 12:51	 12:55
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1 pm

 1:02	 1:06	 1:10	 1:13	 1:17
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2 pm

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3 pm

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4 pm

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5 pm

 5:02	 5:06	 5:10	 5:13	 5:17
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3 am
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4 am
N 4:12

Sunday

4 am
N 4:42 4:44

5 am	5:00 5:56	N 5:12	5:15	5:30	5:40
6 am	6:11	6:26	6:41	6:56	
7 am	7:11	7:26	7:41	7:56	
8 am	8:11 8:56	8:26 8:59	8:36	8:41	8:54
9 am	9:05 9:27 9:50	9:11 9:31 9:54	9:16 9:36 9:59	9:21 9:41	9:24 9:45
10 am	10:04 10:22 10:46	10:09 10:27 10:50	10:13 10:32 10:52	10:18 10:37 10:53	10:20 10:41 10:55
11 am	11:00 11:18 11:33 11:52	11:05 11:19 11:38 11:56	11:10 11:24 11:42 11:59	11:14 11:28 11:45	11:17 11:31 11:49
noon	12:03 12:20 12:38 12:55	12:06 12:24 12:41 12:59	12:10 12:27 12:45	12:13 12:31 12:48	12:17 12:34 12:52
1 pm	1:02 1:20 1:37 1:55	1:06 1:23 1:41 1:58	1:09 1:27 1:44	1:13 1:30 1:48	1:16 1:34 1:51
2 pm	2:02 2:19 2:37 2:54	2:05 2:23 2:40 2:58	2:09 2:26 2:44	2:12 2:30 2:47	2:16 2:33 2:51

3 pm

3:01	3:05	3:08	3:12	3:15
3:19	3:22	3:26	3:29	3:33
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4 pm

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4:36	4:39	4:43	4:46	4:50
4:53	4:57			

5 pm

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5:18	5:21	5:25	5:28	5:32
5:35	5:39	5:42	5:46	5:49
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6 pm

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7 pm

7:03	7:06	7:10	7:13	7:15
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8 pm

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8:50	8:55			

9 pm

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9:47	9:52	9:57		

10 pm

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11 pm

11:08	11:18	11:28	11:38	11:48
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12 am ■ 12:08 ■ 12:18 ■ 12:28 ■ 12:38 ■ 12:48
■ 12:58

1 am ■ 1:08 ■ 1:18 ■ 1:30 ■ X 1:32 ■ 1:44
■ 1:59

2 am ■ X 2:00 ■ 2:14 ■ 2:29 ■ N 2:42 ■ N 2:57

3 am ■ N 3:12 ■ N 3:27 ■ N 3:42

4 am ■ N 4:12

Holiday

Call 416-393-INFO (416-393-4636) for more information on available service.



Southbound on Spadina Ave at Queen St West South Side

510 SPADINA

Stop Number 8129



Branch Legend

- A** 510A SPADINA To UNION STATION
- B** 510B SPADINA To QUEENS QUAY
- C** 510C SPADINA To KING
- N** 310 SPADINA SPADINA To KING

Effective June 15, 2021

Monday through Friday

4 am	N 4:40				
5 am	N 5:05	B 5:11	B 5:23	B 5:33	N 5:35
	B 5:42	B 5:51			
6 am	B 6:00	B 6:09	B 6:18	B 6:28	B 6:38
	B 6:47	B 6:56			
7 am	B 7:05	B 7:14	B 7:23	B 7:33	B 7:42
	B 7:51	B 7:58			
8 am	B 8:03	B 8:09	B 8:14	B 8:19	B 8:24
	B 8:30	B 8:35	B 8:40	B 8:45	B 8:51
	B 8:56				

9 am **B** 9:01 **B** 9:06 **B** 9:12 **B** 9:17 **B** 9:22
 B 9:27 **B** 9:33 **B** 9:38 **B** 9:43 **B** 9:48
 B 9:54

10 am **B** 10:00 **B** 10:07 **B** 10:13 **B** 10:19 **B** 10:25
 B 10:32 **B** 10:38 **B** 10:44 **B** 10:50 **B** 10:57

11 am **B** 11:03 **B** 11:09 **B** 11:15 **B** 11:22 **B** 11:28
 B 11:34 **B** 11:40 **B** 11:47 **B** 11:53 **B** 11:59

noon **B** 12:05 **B** 12:12 **B** 12:18 **B** 12:24 **B** 12:30
 B 12:37 **B** 12:43 **B** 12:49 **B** 12:55

1 pm **B** 1:02 **B** 1:08 **B** 1:14 **B** 1:20 **B** 1:27
 B 1:33 **B** 1:39 **B** 1:45 **B** 1:52 **B** 1:58

2 pm **B** 2:04 **B** 2:10 **B** 2:17 **B** 2:23 **B** 2:29
 B 2:35 **B** 2:42 **B** 2:48 **B** 2:54

3 pm **B** 3:00 **B** 3:07 **B** 3:12 **B** 3:19 **B** 3:24
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4 pm **B** 4:03 **B** 4:08 **B** 4:14 **B** 4:19 **B** 4:25
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5 pm **B** 5:03 **B** 5:09 **B** 5:14 **B** 5:20 **B** 5:25
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6 pm **B** 6:04 **B** 6:09 **B** 6:15 **B** 6:20 **B** 6:26
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7 pm **B** 7:04 **B** 7:10 **B** 7:15 **B** 7:21 **B** 7:26
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8 pm **B** 8:00 **B** 8:06 **B** 8:13 **B** 8:19 **B** 8:26
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9 pm **B** 9:05 **B** 9:11 **B** 9:18 **C** 9:22 **B** 9:27
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10 pm **B** 10:02 **B** 10:11 **B** 10:20 **B** 10:29 **B** 10:38
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11 pm **B** 11:05 **B** 11:14 **B** 11:23 **B** 11:32 **B** 11:41
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12 am **B** 12:08 **B** 12:17 **B** 12:26 **B** 12:35 **B** 12:44
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1 am **B** 1:02 **B** 1:11 **B** 1:20 **B** 1:29 **B** 1:38
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2 am **A** 2:05 **B** 2:14 **A** 2:24 **B** 2:34 **A** 2:42
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3 am **N** 3:10 **N** 3:25 **N** 3:40

4 am **N** 4:10

Saturday

4 am **N** 4:40

5 am **N** 5:05 **A** 5:10 **A** 5:26 **N** 5:35 **A** 5:41
 A 5:56

6 am **A** 6:11 **A** 6:23 **A** 6:33 **A** 6:43 **A** 6:53

7 am **A** 7:03 **A** 7:13 **A** 7:23 **A** 7:33 **A** 7:43
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8 am **A** 8:03 **A** 8:13 **A** 8:23 **A** 8:33 **A** 8:43
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9 am **B** 9:00 **A** 9:02 **A** 9:06 **B** 9:10 **A** 9:14
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10 am **A** 10:02 **B** 10:06 **A** 10:10 **B** 10:14 **A** 10:18
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11 am **B** 11:01 **A** 11:06 **B** 11:09 **A** 11:15 **B** 11:19
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noon **A** 12:00 **B** 12:03 **A** 12:07 **B** 12:11 **A** 12:15
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1 pm **A** 1:00 **B** 1:03 **A** 1:07 **B** 1:11 **A** 1:15
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2 pm **A** 2:00 **B** 2:03 **A** 2:07 **B** 2:11 **A** 2:15
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3 pm **A** 3:00 **B** 3:03 **A** 3:07 **B** 3:11 **A** 3:15
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4 pm **A** 4:00 **B** 4:03 **A** 4:07 **B** 4:11 **A** 4:15
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5 pm **A** 5:00 **B** 5:03 **A** 5:07 **B** 5:11 **A** 5:15
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6 pm **A** 6:00 **B** 6:03 **A** 6:07 **B** 6:11 **A** 6:15
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 A 6:37 **A** 6:40 **A** 6:44 **C** 6:46 **A** 6:49
 A 6:54 **C** 6:56 **A** 6:59

7 pm **A** 7:04 **A** 7:09 **C** 7:11 **A** 7:14 **A** 7:19
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8 pm **A** 8:04 **A** 8:09 **A** 8:14 **A** 8:19 **A** 8:24
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9 pm **A** 9:04 **A** 9:09 **A** 9:14 **A** 9:19 **A** 9:24
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10 pm **A** 10:00 **C** 10:04 **A** 10:09 **A** 10:18 **C** 10:23
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12 am **A** 12:01 **A** 12:10 **A** 12:20 **A** 12:29 **A** 12:38
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1 am **A** 1:06 **A** 1:16 **A** 1:25 **A** 1:34 **A** 1:44
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2 am **A** 2:14 **A** 2:29 **C** 2:36 **A** 2:44 **N** 2:55

3 am **N** 3:10 **N** 3:25 **N** 3:40

4 am **N** 4:10

Sunday

4 am	N 4:40				
5 am	N 5:05 A 5:55	A 5:09	A 5:25	N 5:35	A 5:40
6 am	A 6:10	A 6:25	A 6:40	A 6:55	
7 am	A 7:10	A 7:25	A 7:40	A 7:55	
8 am	A 8:10	A 8:25	A 8:39	A 8:52	
9 am	A 9:02 B 9:34 A 9:58	A 9:11 A 9:39	A 9:20 B 9:43	B 9:25 A 9:48	A 9:30 B 9:53
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11 am	A 11:04 B 11:21 A 11:41 B 11:58	B 11:07 A 11:27 B 11:44	A 11:13 B 11:30 A 11:48	B 11:14 A 11:34 B 11:51	A 11:21 B 11:37 A 11:55
noon	A 12:02 B 12:19 A 12:37 B 12:54	B 12:05 A 12:23 B 12:40 A 12:58	A 12:09 B 12:26 A 12:44	B 12:12 A 12:30 B 12:47	A 12:16 B 12:33 A 12:51
1 pm	B 1:01 A 1:19 B 1:36 A 1:54	A 1:05 B 1:22 A 1:40 B 1:57	B 1:08 A 1:26 B 1:43	A 1:12 B 1:29 A 1:47	B 1:15 A 1:33 B 1:50

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7 pm **B** 7:00 **A** 7:02 **C** 7:03 **A** 7:07 **B** 7:10
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8 pm **A** 8:02 **B** 8:07 **A** 8:11 **C** 8:12 **B** 8:16
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 A 10:24 **C** 10:29 **A** 10:34 **C** 10:39 **A** 10:44
 C 10:49 **A** 10:54 **C** 10:56

11 pm **A** 11:04 **C** 11:05 **A** 11:14 **A** 11:24 **A** 11:34
 A 11:44 **A** 11:54

12 am **A** 12:04 **A** 12:14 **A** 12:24 **A** 12:34 **A** 12:44
 A 12:54

1 am **A** 1:04 **A** 1:14 **A** 1:23 **A** 1:33 **C** 1:34
 A 1:44 **A** 1:56

2 am **A** 2:09 **A** 2:24 **A** 2:39 **N** 2:54

3 am **N** 3:10 **N** 3:25 **N** 3:40

4 am **N** 4:10

Holiday

Call 416-393-INFO (416-393-4636) for more information on available service.