

October 3, 2024

VIA E-MAIL TO: slauzon@distrikt.com

Sasha Lauzon, M.Pl., MCIP, RPP
Vice President of Development & Planning
Distrikt
90 Wingold Avenue, Unit 1
Toronto, Ontario
M6B 1P5

**Re: Reliance Letter – Noise Feasibility Study, Proposed Mixed-Use/Residential
Development, Oakville TOC Development, 590 Argus Road, Oakville, Ontario**

Dear Sasha,

As requested, we are providing this reliance letter for the proposed mixed-use/residential development located at 590 Argus Road in Oakville, Ontario. Our previous report was entitled, “Noise Feasibility Study, Proposed Mixed-Use/Residential Development, 590 Argus Road, Oakville, Ontario” dated March 25, 2024. The latest site plan for the proposed development prepared by Teeple Architects dated September 20, 2024, is attached.

The building locations are generally the same as those included in the previous report. The heights of the proposed buildings have increased by 2-storeys for Building A, and Building C has been decreased by 2-storeys. The recommendations included in our previous report remain valid. The detailed study will be submitted with the next Oakville TOC submission which will include responses to comments provided by the Town of Oakville including, updated road and rail traffic information, a review of detailed floor plans and building elevations to refine glazing requirements, and a statement regarding air traffic noise. We trust this is sufficient for your current purposes, please feel free to contact us if you have any further questions or concerns.

Yours truly,

HOWE GASTMEIER CHAPNIK LIMITED


Victor Garcia,



Any conclusions or recommendations provided by HGC Engineering in this letter/memo have limitations as detailed on our website: <https://acoustical-consultants.com/limitations/>.

Noise Feasibility Study

Proposed Mixed-Use/Residential Development

590 Argus Road


Oakville, Ontario

Prepared for:

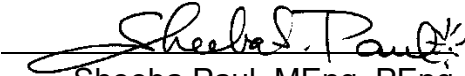
590 Argus LP
1-90 Wingold Avenue
North York, Ontario, M6B 1P5

Prepared by




Victor Garcia, PEng

Reviewed by


Sheeba Paul, MEng, PEng

March 25, 2024

HGC Project No. 02200768

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Figure 1: Key Plan

Figure 2: Proposed Site Plan

Figure 3: Aerial Photo Showing Surrounding Land Uses

Figure 4: Aerial Photo Showing Source and Receptor Locations

Figure 5: Sound Level Contours, dBA, Due to Steady Stationary Noise Sources, Daytime

Figure 6: Sound Level Contours, dBA, Due to Steady Stationary Noise Sources, Nighttime

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Appendix B: Rail Traffic Data

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1 Introduction and Summary

HGC Engineering was retained by 590 Argus LP to conduct a noise feasibility study for a proposed mixed-use/residential development located at 590 Argus Road in Oakville, Ontario. The study is required by the municipality as part of the approvals process.

This report has been updated to include an updated site plan prepared by Teeple Architects Inc. and updates road traffic data for the QEW.

The primary sources of noise are road traffic on the Queen Elizabeth Way (QEW), Trafalgar Road, and Cross Avenue. Rail traffic on the Canadian National (CN) railway to the south of the site is a secondary source of noise. Road traffic data was obtained from the Ministry of Transportation (MTO), Region of Halton, and the Town of Oakville. Rail traffic data was obtained from Metrolinx and CN personnel. Traffic data was used to predict future traffic sound levels at the proposed buildings. The predicted sound levels were evaluated with respect to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP), Region and Town.

The study finds that the traffic noise exceeds the MECP sound level criteria during daytime and nighttime hours at the proposed development. Central air conditioning is required for the proposed buildings. Upgraded building and glazing constructions are required for the proposed buildings. When detailed floor plans and building elevations are available for the proposed buildings, the window glazing requirements should be refined based on actual window to floor area ratios.

Sound level impacts from the existing neighbouring commercial/retail uses were also investigated and were determined to have the potential to exceed the background sound levels in the area during a worst-case operational scenario. Mitigation in the form of architectural solutions, such as utilizing balconies of appropriate height to mitigate sound levels at the façades of the buildings are recommended. Detailed noise studies are recommended for each building as the development proposal proceeds.

Associated acoustical requirements are specified in this report. Warning clauses are recommended to inform future residents of the traffic noise impacts, the presence of the neighbouring commercial facilities and to address sound level excesses.



2 Site Descriptions and Sources of Sound

An aerial photo showing a key plan is attached as Figure 1 also showing the surrounding land uses. A site plan dated March 20, 2024 prepared by Teeple Architects and is included as Figure 2. The proposed development will consist of three residential buildings: 45-storeys (Building A), 50-storeys (Building B), and 57-storeys (Building C) connected by a 2-storey podium. Six levels of underground parking are proposed to be provided beneath the buildings with some commercial/retail space provided on the ground floors. Residential suites begin on the second floor. Outdoor amenity spaces are located on the roofs of the 2-storey and 3-storey podiums along with private terraces on the south sides of each tower.

The site is located at 590 Argus Road in Oakville, Ontario. Currently the subject site includes a Holiday Inn which is to be removed. Figure 3 shows an aerial photo showing the surrounding land uses. The surrounding lands are primarily existing commercial/industrial land uses including: a commercial/office building and the Animal Hospital of Oakville to the northwest; All Fix Automotive, Grandeur Motors, KidLogic, a car wash and various commercial facilities to the southwest; various commercial buildings to southeast; and Oak Land Ford Service to the east. Much of the surrounding lands are proposed to include future mixed-use developments as this is an area in transition. A site visit was conducted to investigate the noise sources associated with the surrounding uses and is further discussed in Section 6.0.

3 Sound Level Criteria

3.1 Road and Rail Traffic Noise

Guidelines for acceptable levels of road and rail traffic noise applicable to residential developments are given in the MECP publication NPC-300, “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, release date October 21, 2013 and are listed in Table 1 below. The Federation of Canadian Municipalities (FCM) and Railway Association of Canada (RAC) “Guidelines for New Development in Proximity to Railway Operations”, dated May 2013 (RAC/FCM guidelines were also reviewed dated November 2006). The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].



Table 1: MECP Road and Rail Traffic Noise Criteria [dBA]

Space	Daytime L_{EQ} (16 hour) Road/Rail	Nighttime L_{EQ} (8 hour) Road/Rail
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA / 40 dBA	45 dBA / 40 dBA
Inside Bedrooms	45 dBA / 40 dBA	40 dBA / 35 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The guidelines in the MECP publication allow the sound level in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

Indoor guidelines for rail noise are 5 dBA more stringent than for road noise, to account for the low frequency (rumbling) character of locomotive sound, and its greater potential to transmit through exterior wall/window assemblies.

A central air conditioning system as an alternative means of ventilation to open windows is required for all dwellings where nighttime sound levels outside bedroom/living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom/living/dining room windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at bedroom/living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom/living/dining room windows are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of bedroom/living/dining room window sound level is greater than 55 dBA due to nighttime and greater than 60 dBA during the daytime hours due to rail traffic noise.

Warning clauses are required to notify future residents of possible excesses when nighttime sound levels exceed 50 dBA at the plane of the bedroom/living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom/living/dining room window due to rail traffic.

4 Traffic Noise Predictions

4.1 Road Traffic Data

Road traffic data for the QEW was obtained from the MTO in the form of summer average daily traffic (SADT) for the year 2019 and is provided in Appendix B. The data was projected to the year 2034 using a 2.5%/year growth rate. A daytime commercial vehicle percentage of 14% was split into 5.4% medium trucks and 8.6% heavy trucks, was used in the analysis. A day/night split of 67%/13% and a posted speed limit of 100 km/h were used in the analysis.

Road traffic data for Cross Avenue was obtained from the Town of Oakville. The data was provided in the form of peak hour turning movement counts for the year 2020 and is provided in Appendix B. The traffic data was projected to the year 2034 using a 2.5% growth rate. A commercial vehicle percentage for Cross Avenue of 5.4% was provided and split into 2.1% medium trucks and 3.3% heavy trucks. A day/night split of 90%/10% was assumed in the analysis. A posted speed limit of 50 km/h was used for Cross Avenue.

Road traffic data for Argus Road was obtained from the Town of Oakville. The data was provided in the form of peak hour turning movement counts for the year 2020 and is provided in Appendix B. The traffic data was projected to the year 2034 using a 2.5% growth rate. A commercial vehicle percentage for Argus Road of 7.8% was provided and split into 3.0% medium trucks and 4.8% heavy trucks. A day/night split of 90%/10% was assumed in the analysis. A posted speed limit of 50 km/h was used for Argus Road.

Ultimate road traffic information for Trafalgar Road was obtained from Region of Halton personnel and is provided in Appendix A. A posted speed limit of 50 km/h was used for Trafalgar Road. An existing commercial vehicle percentage of 2.7% was obtained from the Region of Halton, split into



1.5% medium trucks and 1.2% heavy trucks was also used in the analysis, along with a day-night split of 90%/10%. Table 2 summarizes the road traffic data used in the analysis.

Table 2: Road Traffic Data

		Cars	Medium Trucks	Heavy Trucks	Total
QEW <i>Projected to 2034</i>	Daytime	193 272	12 136	19 328	224 736
	Nighttime	95 194	5 978	9 520	110 692
	Total	288 466	18 114	28 848	335 428
Cross Avenue <i>Projected to 2034</i>	Daytime	17 839	396	622	18 857
	Nighttime	1 982	44	69	2 095
	Total	19 821	440	691	20 952
Argus Road <i>Projected to 2034</i>	Daytime	2 720	89	142	2 951
	Nighttime	302	10	16	328
	Total	3 022	99	158	3 279
Trafalgar Road <i>Ultimate</i>	Daytime	48 164	742	594	49 500
	Nighttime	5 352	82	66	5 500
	Total	53 516	824	660	55 000

4.2 Rail Traffic

Rail traffic data for the CN Oakville Subdivision was obtained from CN railway and Metrolinx/GO Transit personnel and is attached in Appendix B. This line is used for way freight and passenger operations and is classified as a principal main line. The maximum permissible train speed for way freight trains in the area of the site is 97 kph (60 mph), 129 kph (80 mph) for passenger, and 153 kph (95 mph) for GO trains. In conformance with CN and GO Transit assessment requirements, the maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worst-case estimate of train noise. The data was projected to the year 2034 using a 2.5% per year growth rate. Table 3 summarises the Metrolinx and CN rail traffic data used in the analysis.

Table 3: Rail Traffic Data Projected to the Year 2034

Type of Train	Number of Trains Day/ Night	Number of locomotives	Number of cars	Max Speed (KPH)
Way Freight	5.8 / 3.1	4	25	56
Passenger	19.3 / 0.0	2	10	56
GO	362.9 / 55.4	1	12	129

Note: All GO trains are modelled as diesel, as per Metrolinx requirements

4.3 Traffic Noise Predictions

To assess the levels of traffic noise which will impact the site in the future, predictions were made using a numerical computer modeling package (*Cadna-A version 2023 MRI build: 197.5343*) due to the complexity of the site. The model is based on the methods from ISO Standard 9613-2.2, “*Acoustics - Attenuation of Sound During Propagation Outdoors*”, which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures.

The road and rail noise sources have been included in the model as line sources included in *Cadna/A* which have been calibrated to Stamson. Our experience suggests that road and rail sound levels predicted by *Cadna* are reasonably accurate. The model road traffic values have been qualified to be within 1 – 2 dBA of those predicted in STAMSON 5.04, a computer algorithm developed by the MECP.

Predictions of the overall sound levels from all road and rail sources were made at various representative façade locations throughout the site. The predicted sound levels from road and rail traffic impacting the proposed development are summarized in the following tables at each facade. Appendix C shows the figures indicating the predicted sound level from road and rail traffic along each façade of the proposed buildings.

Table 4: Daytime Predicted Future Sound Levels [dBA], Without Mitigation

Building	Façade	Daytime - at Façade LEQ(16)		Daytime - at Façade Total LEQ(16)	Daytime - in OLA LEQ(16)
		Road	Rail		
Tower A 45-Storey	Northwest	79	<55	79	--
	Northeast	77	61	77	--
	Southeast	63	63	66	--
	Southwest	76	60	76	--
	4 th Floor OLA	--	--	--	72*
	7 th Floor Private Terraces	--	--	--	69*
Tower B 50-Storey	Northwest	78	<55	78	--
	Northeast	76	61	76	--
	Southeast	62	63	65	--
	Southwest	74	60	74	--
	7 th Floor Private Terraces	--	--	--	64*
Tower C 57-Storey	Northwest	78	<55	78	--
	Northeast	78	61	78	--
	Southeast	63	63	66	--
	Southwest	71	60	71	--
	4 th Floor OLA	--	--	--	73*
	7 th Floor Private Terraces	--	--	--	69*
2-Storey Podium	3 rd Floor OLA	--	--	--	74*

Note: *With 1.07 m solid parapet wall

Table 5: Nighttime Predicted Future Sound Levels [dBA], Without Mitigation

Building	Façade	Nighttime - at Façade $L_{EQ(8)}$		Nighttime - at Façade Total $L_{EQ(8)}$
		Road	Rail	
Tower A 45-Storey	Northwest	79	<50	79
	Northeast	77	56	77
	Southeast	62	58	64
	Southwest	76	55	76
Tower B 50-Storey	Northwest	78	<50	78
	Northeast	76	56	76
	Southeast	57	58	60
	Southwest	74	55	74
Tower C 57-Storey	Northwest	78	<50	78
	Northeast	78	56	78
	Southeast	58	58	61
	Southwest	71	55	72



5 Traffic Noise Recommendations

The predictions indicate that traffic sound levels exceed MECP limits during daytime and nighttime hours at the proposed façades of the buildings. The following recommendations are provided.

5.1 Outdoor Living Areas

There are several outdoor amenity spaces indicated on the drawings located on the roof of the 2 and 3-storey podiums, and on the south side of the buildings on the 7th floor. The predicted sound level on all of the common outdoor amenity terraces were predicted with a minimum 1.07 m high solid parapet wall. The predicted sound level on the proposed common amenity spaces and terraces throughout the site range from 64 to 73 dBA, well in excess of the MECP limit of 55 dBA.

Acoustic barrier on the common amenity spaces on the 2 and 3-storey podium roofs would need to be well in excess of 5 m in order to reduce the sound level in the amenity spaces to 60 dBA. Barriers exceeding 3 m are not considered feasible technically or economically for the project. Consideration could be given in detail design to integrating some smaller structures, screens or landscaping features to create quieter pockets or zones on this terrace. A unique warning clause is suggested below to advise tenants that noise levels on this terrace will be high.

For private terraces on the south side of each building, acoustic barriers 2.8 m in height for Buildings A and C, and 1.5 m in height for Building B are required to reduce sound levels to 60 dBA. The 5 dBA sound level excess is acceptable to the MECP if it is acceptable to the municipality.

As a general note, the wall component of the barrier should be of a solid construction with a surface density of no less than 20 kg/m². The walls may be constructed from a variety of materials such as wood, brick, pre-cast concrete or other concrete/wood composite systems or transparent materials provided that it is free of gaps or cracks within or below its extent.

The dwelling units may have balconies that are less than 4 m in depth. These balconies are not considered outdoor living areas and do not need to be assessed under MECP guidelines.



5.2 Indoor Living Areas and Ventilation Requirements

Central Air Conditioning

The predicted nighttime sound levels at the proposed buildings will exceed 65 dBA during the daytime hours and 60 dBA during the nighttime hours, and thus air conditioning systems are required so that windows may remain closed.

Window or through-the-wall air conditioning units (similar to motel style) are not recommended for any residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. This can be achieved if the heating and cooling within each unit is housed in its own closet with an access door for maintenance. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable.

5.3 Building Façade Constructions

Future sound levels at the proposed buildings will exceed 65 dBA during the day and 60 dBA during the night due to road and rail traffic noise. MECP guidelines recommend that the windows, walls and doors be designed so that the indoor sound levels comply with MECP noise criteria.

Detailed glazing requirements for different facades and spaces could be considered in value engineering, if required, when detailed floor plans and building elevations are available.

Exterior Wall Constructions

The exterior walls of the proposed buildings may include precast/masonry panel portions, as well as spandrel glass panels within an aluminum window system. In this analysis, it has been assumed that sound transmitted through elements other than the glazing elements is negligible in comparison. For this assumption to be true, spandrel or metal panel sections must have an insulated drywall partition on separate framing behind.



Exterior Doors

There may be swing doors and some glazed sliding patio doors for entry onto the balconies from living/dining/bedrooms and some bedrooms. The glazing areas on the doors are to be counted as part of the total window glazing area. If exterior swing doors are to be used, they shall be insulated metal doors equipped with head, jamb and threshold weather seals.

Acoustical Requirements for Glazing

At the time of this report, detailed floor plans and elevations are under development. Assuming a typical window to floor area of 50% (40% fixed and 10% operable) for the living/dining rooms and 40% (30% fixed and 10% operable) bedrooms, the minimum acoustical requirement for the basic window glazing, including glass in fixed sections, swing or sliding doors, and operable windows, is provided in Table 6.

Table 6: Required Minimum Glazing STC Proposed Building

Building	Façade	Preliminary Glazing STC ^{1, 2}
Tower A 45-Storey	Northwest	STC-44
	Northeast	STC-42
	Southeast	STC-33
	Southwest	STC-41
Tower B 50-Storey	Northwest	STC-43
	Northeast	STC-41
	Southeast	STC-33
	Southwest	STC-39
Tower C 57-Storey	Northwest	STC-43
	Northeast	STC-43
	Southeast	STC-33
	Southwest	STC-36

Note:

¹ Based on 50% window to floor area ratio for living/dining rooms and 40% for bedrooms.

² STC requirement refers to fixed glazing. Small leaks through operable doors and windows are assumed, however, tight weather seals should be provided to reduce such leakage to the extent feasible.
 OBC – Ontario Building Code

The northwest, northeast, and southwest façades of Tower A, Tower B, and Tower C, have significant STC requirements. It is suggested that the window to floor area ratios be minimized as

much as possible along these façades. Sliding patio doors should not be included into bedrooms, swing doors are more suitable for suites with exposure to the QEW.

These calculations assume insignificant sound transmission through the walls in comparison with the windows. Exterior walls that are not glazed should have sufficient acoustical insulation value such that the noise transmitted through is negligible in comparison with the windows. These aspects can be verified as part of the detail design of the envelope, as needed.

Note that acoustic performance varies with manufacturer's construction details, and these are only guidelines to provide some indication of the type of glazing likely to be required. Acoustical test data for the selected assemblies should be requested from the suppliers, to ensure that the stated acoustic performance levels will be achieved by their assemblies.

Further Review

When detailed floor plans and building elevations are available for the buildings, the glazing requirements should be refined based on actual window to floor area ratios.

5.4 Warning Clauses

The guidelines recommend that warning clauses be included in the development agreements, purchase and tenancy agreements and offers of the purchase and sale for the dwelling units. These are provided below.

Suitable wording for future dwellings with minor sound level excesses is given below.

Type 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 and rail traffic may continue to be of concern, occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality's and the Ministry of the Environment, Conservation and Parks' noise criteria.



Suggested wording for future dwellings requiring central air conditioning systems is given below.

Type B:

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, Conservation and Parks.

Suggested wording for future dwellings where terraces cannot be sufficiently mitigated against traffic noise.

Type C:

Due to site constraints, an acoustical barrier to shield the outdoor amenity terrace from the road and rail traffic could not be accommodated. Noise levels on this terrace are expected to be well above the sound level limits of the Ministry of the Environment, Conservation and Parks.

CN requires a standard warning clause as this development is located near a principal mainline. The following sample clause is typical of those included in agreements of purchase and sale or lease on the Lands that are within 300 meters of the railway right-of-way.

Type D:

Warning: Canadian National Railway Company or its assigns or successors in interest has or have a rights-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-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). CNR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way.

GO Transit's standard warning clause for residential developments located within 300 m of a railway right-of-way (principal main line) is given below.

Type E:

Warning: Metrolinx, carrying on business as GO Transit, and its assigns and successors in interest are the owners of lands within 300 metres from the land which is the subject hereof. In addition to the current use of the lands owned by Metrolinx, there may be alterations or expansions of the rail and other facilities on such lands in the future including the possibility



that GO Transit or any railway assigns or successors as aforesaid may expand their 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 dwellings. Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under its lands.

5.5 Impact of the Development on Itself

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2020, specifies the minimum required sound insulation characteristics for demising partitions, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute or elevator shaft must 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.

Tarion's Builder Bulletin B19R requires the internal design of condominium projects to integrate suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC, and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising construction and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

5.6 Impact of the Development on the Environment

Sound levels from noise sources 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. Based on the levels observed during our site visit, the typical minimum ambient sound levels in the area are expected to be 50 dBA or more during the day and 45 dBA or more at night. Thus, any electro-mechanical equipment associated with this development (e.g. emergency generator testing, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges.



6 Assessment of Stationary Sources of Sound at the Proposed Residential Units

6.1 Noise Source Description

The surrounding lands are primarily existing commercial/industrial land uses including: a commercial/office building and the Animal Hospital of Oakville to the northwest; All Fix Automotive, Grandeur Motors, KidLogic, a car wash and various commercial facilities to the southwest; various commercial buildings to southeast; and Oak Land Ford Service to the east. The rooftop mechanical equipment (air conditioning units), automotive repair shops bay doors, car wash bays, are potentially significant stationary sources of sound. A site visit was conducted in January 2022 to investigate the acoustical environment. Sensitive receptor locations were taken at the façades of the proposed buildings.

At the Oakville GO Station to the south, when trains were operated in reverse and when the train is about to leave the station, a warning bell is operated. Communications with GO transit staff indicate that these bells are safety devices used for warning purposes only, and are thus exempt from noise assessment under MECP guidelines. Other occasional noises emitted from this station (such as occasional announcements over the outdoor PA system) are not anticipated to be an issue.

6.2 Criteria for Acceptable Sound Levels

6.2.1 Stationary Noise Criteria

Under MECP guidelines, the acoustical environment in this area is classified as “urban” or “Class I”, as background sound levels are set by significant volumes of road traffic on surrounding roadways during daytime and nighttime hours.

Stationary sources of sound are collectively defined as all sources that emit sound within a commercial or industrial facility boundary. The facilities to the north, northwest and west are therefore classified as a stationary sources of sound.

MECP Guideline NPC-300 is the applicable guideline for use in investigating Land Use Compatibility issues with regard to noise. A commercial facility is classified in NPC-300 as a



stationary source of sound (as compared to sources such as traffic or construction, for example) for noise assessment purposes. A stationary noise source encompasses the noise from all the activities and equipment within the property boundary of a facility including regular on-site truck traffic for deliveries, material handling and mechanical equipment. In terms of background sound, the development is located in an urban acoustical environment which is characterized by an acoustical environment dominated by road traffic and human activity.

Stationary Source (Steady Sound)

NPC-300 is intended for use in the planning of both residential and commercial/industrial land uses and provides the acceptability limits for sound due to commercial operations in that regard. The facade of a residence (i.e., in the plane of a window), or any associated usable outdoor area is considered a sensitive point of reception (within 30 m of a dwelling façade). NPC-300 stipulates that the exclusionary sound level limit for a stationary noise source in urban Class 1 and 2 areas are taken to be 50 dBA during daytime and evening hours (07:00 to 19:00 and 19:00 to 23:00), and 45 dBA during nighttime hours (23:00 to 07:00) at the plane of the windows of noise sensitive spaces. If the background sound levels due to road traffic exceed the exclusionary limits, then that background sound level becomes the criterion. The background sound level is defined as the sound level that occurs when the source under consideration is not operating, and may include traffic noise and natural sounds.

Commercial activities such as the occasional movement of customer/employee vehicles, deliveries to conveniences stores and restaurants and garbage collection are not of themselves considered to be significant noise sources in the MECP guidelines. Accordingly, these sources have not been considered in this study.

Hourly daytime traffic data was obtained for the QEW from the MTO and for Trafalgar Road from the Region of Halton. Hourly daytime traffic data was not available for Cross Avenue. Using the current traffic volumes obtained from the Town, the traffic data was applied to a generic 24 hour traffic pattern developed by the US Department of Transportation, Federal Highways Administration contained in the report titled “Summary of National and Regional Travel Trends 1970 – 1995” dated May 1996. The traffic volumes were then used to predict sound levels at the residential receptors



during the day/nighttime hours to determine the minimum hour background sound levels at those locations due to the traffic on the public roadways.

The minimum hour traffic volumes used in the analysis are summarized in the following table.

Table 7: Minimum Hourly Traffic Volumes on Surrounding Roadways

Roadway	Hourly Data		Commercial Vehicle %
	Day	Night	
QEW	3 921	922	14
Trafalgar Rd	1 099	59	2.7
Cross Ave	395	91	5.4

The predicted quietest daytime hour and nighttime hour sound levels at the facades of the proposed residences, which will be exposed to the commercial facilities are found to be higher than the MECP exclusionary limits in the daytime hours for the majority of facades with exposure to the QEW and Cross Avenue. As such, the sound level limits as summarized in Table 8 are therefore used in the following sections of this report as the applicable criteria for each façade of the proposed residential buildings.

Table 8: Applicable Sound Level Limits, L_{EQ} (dBA) for Class I Areas

Building	Façade	Sound Level Limits	
		Daytime (07:00 to 23:00)	Nighttime (23:00 to 07:00)
Tower A 45-Storey	Northwest	68	62
	Northeast	50	47
	Southeast	51	47
	Southwest	66	59
	4 th Floor OLA	67*	--
	7 th Floor Private Terraces	63*	--
Tower B 50-Storey	Northwest	68	61
	Northeast	51	45
	Southeast	51	45
	Southwest	54	47
	7 th Floor Private Terraces	54*	--
Tower C 57-Storey	Northwest	65	59
	Northeast	64	58
	Southeast	51	45
	Southwest	53	47
	4 th Floor OLA	68*	--
	7 th Floor Private Terraces	62*	--
2-Storey Podium	3 rd Floor OLA	69*	--

Compliance with MECP criteria generally results in acceptable levels of sound at residential receptors although there may be residual audibility during periods of low background sound.

6.3 Stationary Source Assessment

Predictive noise modelling was used to assess the potential sound impact of the nearby land uses at the closest sensitive receptors. The noise prediction model was based on sound emission levels for the nearby noise sources, assumed operational profiles (during the day and night), and established engineering methods for the prediction of outdoor sound propagation. These methods include the effects of distance, air absorption, and acoustical screening by barrier obstacles.

Sound emission data for the rooftop equipment was obtained from HGC Engineering project files for typical commercial facilities. The source levels associated used in the analysis is listed in Table 9 below.

Table 9: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]							
	63	125	250	500	1k	2k	4k	8k
Exhaust Fan	84	88	86	85	80	80	76	74
Car Wash Bay	85	76	75	77	76	79	81	83
Vacuum	86	74	87	82	84	89	90	88
Condenser Fans	84	79	78	77	76	70	63	59
Tractor Trailer Acceleration	101	100	94	96	97	95	91	86
Medium Truck Acceleration	108	90	92	90	94	91	84	77
Medium Truck Reefer	82	77	78	67	67	64	58	50
Medium Truck Idle	72	68	70	65	72	69	60	52
Restaurant Exhaust Fan	86	74	87	82	84	89	90	88
Lennox KG060 (A-Weighted)	--	67	72	77	76	73	68	61
Lennox KG120 (A-Weighted)	--	76	79	84	83	79	73	66
Lennox KG150 (A-Weighted)	--	77	80	85	84	79	74	66
Lennox KG240 (A-Weighted)	--	79	84	88	89	85	82	73
Cooling Tower	95	91	86	86	84	85	86	85

The above outlined sound levels and site features were used as input to a predictive computer model. The software used for this purpose (*Cadna-A Version 2023 MRI build: 197.5343*) is a computer implementation of ISO Standard 9613-2.2 “Acoustics - Attenuation of Sound During Propagation Outdoors.” The ISO method accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as barriers.

The following information and assumptions were used in the analysis.

Commercial Buildings

- The rooftop units were assumed to be located as shown in Figure 4. The majority of rooftop units were assumed to be 1 m to 2.5 m tall with the exception of the condenser fans which were 4.0 m in height.
- Lines indicate truck movements.

- Typical hours of operation for the majority of the commercial buildings are daytime only (07:00 to 23:00).

Receptors

- Façades of proposed residential development.

Assumed daytime worst-case scenario:

- All rooftop HVAC equipment operating for 60 minutes in an hour;
- Two medium trucks arriving for deliveries at the Famijoy idling for 10 minutes each, with one truck with a “reefer” operating for 20 minutes in an hour;
- All car wash bays (coin operated) operating for 30 minutes each;
- All vacuums operating for 15 minutes each at the car wash;

Assumed night-time worst-case scenario:

- All rooftop HVAC equipment operating for 30 minutes in an hour;
- All car wash bays (coin operated) operating for 10 minutes each;
- All vacuums operating for 10 minutes each at the car wash;

6.4 Results

The calculations consider the acoustical effects of distance and shielding by the buildings. The sound levels due to the rooftop mechanical equipment at the façades of the proposed buildings are summarized in the following table and Figures 5 and 6.

Table 10: Predicted Stationary Source Sound Levels at the Proposed Residential Buildings [dBA]

Building	Façade	Criteria Day/Night	Daytime	Nighttime
Tower A 44-Storey	Northwest	68 / 62	43	40
	Northeast	50 / 47	44	41
	Southeast	52 / 47	52	49
	Southwest	66 / 59	52	49
	4 th Floor OLA	67* / --	34*	--
	7 th Floor Private Terraces	63* / --	48*	--
Tower B 58-Storey	Northwest	68 / 61	32	<30
	Northeast	51 / 45	44	41
	Southeast	51 / 45	50	47
	Southwest	54 / 47	47	44
	7 th Floor Private Terraces	54* / --	45*	--
Tower C 50-Storey	Northwest	65 / 59	41	38
	Northeast	64 / 58	49	46
	Southeast	51 / 45	48	45
	Southwest	53 / 47	48	45
	4 th Floor OLA	68* / --	37*	--
	7 th Floor Private Terraces	62* / --	45*	--
2-Storey Podium	3 rd Floor OLA	69* / --	<30*	--

Note: *With a minimum 1.07 m solid parapet wall

The results of this analysis indicate that the predicted steady sound levels due to the surrounding facilities has the potential to be in excess of the sound level criteria by up to 2 dBA during the nighttime period at Buildings A and B during a worst-case operational scenario.

6.5 Discussion and Recommendations with Regard to the Commercial Facilities

While the MECP does not generally accept central air conditioning or mechanical ventilation as mitigation measures for stationary noise sources per se, it is noted that central air conditioning is expected to be installed in the proposed buildings for the residential units so that the windows can remain closed against both traffic and stationary noise.

NPC-300 encourages noise mitigation at the source if possible. In this case, physical noise source mitigation options are quite limited due to the nature of the nearby commercial and residential buildings and the height of the residential receptors.

Sound level excesses may occur along the southeastern façades of the 6-storey podium and Tower A with direct exposure to the commercial/office buildings to the southeast during nighttime hours. The excesses are primarily due to operations of the 586 Argus Road and 587 – 595 Argus Road.

One option is to address the excesses at these façades of the buildings through modification to the buildings themselves, especially if the proposed development is to proceed with the existing commercial uses remaining as is. The following are some conceptual mitigation measures to achieve the criteria.

- Spaces along the southeast façades of the Buildings A and B, could be designed to include windows into non-sensitive spaces (e.g. office space, indoor amenity space, etc.).
- Minor excesses could also include receptor mitigation in the form of architectural solutions such as utilizing balconies of appropriate height (solid parapet made of glass) to shield any windows to sensitive spaces behind for the affected buildings. As this is an area in transition, the surrounding uses may change.
 - It is noted that for the property at 571 – 587 Argus Road, there is currently a development application for a mixed-use/residential development.
 - If the commercial uses ceased operation prior to occupancy of the proposed development, there would be no excesses along the façades of the proposed development. Figure 7 indicates the areas for potential noise mitigation.
- Other options include mitigating noise at the source which implies access to the roofs of the buildings for detailed sound level measurements and potential replacement of existing rooftop units with quieter models or enclosing the rooftop units. These options will need the co-operation of the commercial uses.



- Although the excesses are minor, a Class 4 designation could be sought from the municipality, as it will be difficult to mitigate noise from building of different ownership and co-operation will be required. Class 4 requires air conditioning the buildings and a specific noise warning clause.

A warning clause should be included in purchase and tenancy agreements to inform future occupants of the existing commercial facilities. Suggested wording is included below:

Type F:

Purchasers/tenants are advised that due to the proximity of nearby commercial facilities, sound from those facilities may at times be audible.

If the existing mechanical equipment on the rooftop of the surrounding commercial uses, or if the associated lands are to be redeveloped prior to the anticipated occupancy of the subject development site, the above findings and conclusions should be revisited.

7 Summary and Recommendations

The following recommendations are provided with regard to noise control. Please refer to previous sections of this report where these recommendations are discussed in more detail.

1. Central air conditioning is required for all of the proposed buildings.
2. Upgraded building constructions are required for the façades of the proposed buildings as indicated in Section 5.3.
3. Warning clauses should be included in the property and tenancy agreements and offers of purchase and sale to inform the future owners/residents of the presence of the roadways and railway and the nearby commercial operations.
4. When detailed drawings are available, at SPA or as a condition, a detailed noise study should be conducted to refine the glazing constructions based on actual window to floor area ratios. It is suggested that the window to floor area ratios be minimized as much as possible along the façades with exposure to the QEW. Sliding patio doors should not be included into bedrooms, swing doors are more suitable for suites with exposure to the QEW.



5. Tarion's Builder Bulletin (B19R) requires that the internal design of condominium projects integrates suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC, and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and 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 compliance with the Town's by-law.

Stationary Noise

6. Sound level excesses may be expected at some areas of the building façades due to existing stationary noise sources, primarily rooftop mechanical equipment from surrounding buildings. Conceptual options are provided, including increased balcony barrier heights or a Class 4 designation of the subject lands.
7. To address the potential for audible sound from the neighbouring commercial and residential buildings and nuisance sources, specific noise warning clauses are required as indicated in the above sections of this report.

8 Conclusions

Based on the assessment presented herein, the conceptual development proposal is considered to be feasible from a noise impact perspective. Transportation noise can be mitigated by standard building envelope assemblies. Preliminary noise modelling of the nearby existing commercial facilities indicates results to be within criteria at the majority of residential facades, with the exception of the southwester façades of Tower A and the 6-storey podium, directly facing neighbouring commercial/office buildings. Conceptual recommendations for mitigation were provided to achieve Class I criteria. A Class 4 designation could also be requested from the municipality for the lands. Detailed noise studies are recommended for each building as the development proposal proceeds.



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NOISE



VIBRATION

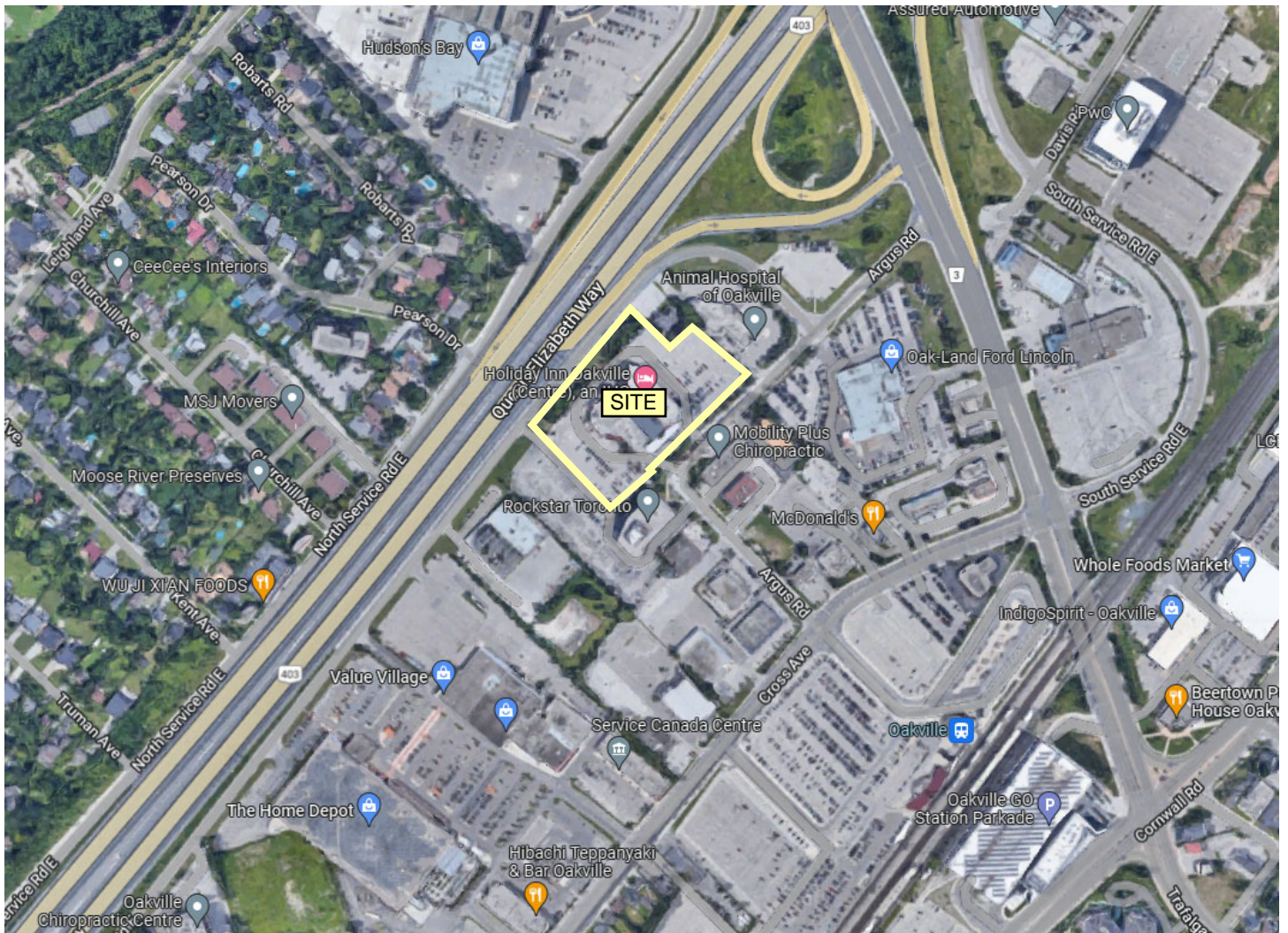


Figure 1 - Key Plan

90 ARGUS ROAD (ESTABLISHED GRADE: EL. 104.860)
 ESTABLISHED GRADE INDICATED IS CALCULATED BASED ON DEFINITION FOR "GRADE ESTABLISHED" PROVIDED IN TOWN OF OAKVILLE CONVEYANCE 2014-014.
 GRADE ESTABLISHED (2021-01) MEANS THE GRADE ELEVATION MEASURED AT:
 A) THE CENTRE POINT OF THE FRONT LOT LINE FOR INTERLOTTED LOTS; AND
 B) THE AVERAGE OF THE CENTRE POINTS OF EACH LOT LINE ADJACENT TO A ROAD FOR CORNER LOTS, THROUGH CORNER LOTS AND INTERLOTTED LOTS HAVING MORE THAN ONE SEPARATE FRONT LOT LINE.

Teepie Architects Inc.
 5 Camden Street, Toronto, ON, Canada M5V 1V2
 T: 416.598.0554
 www.teepiearch.com

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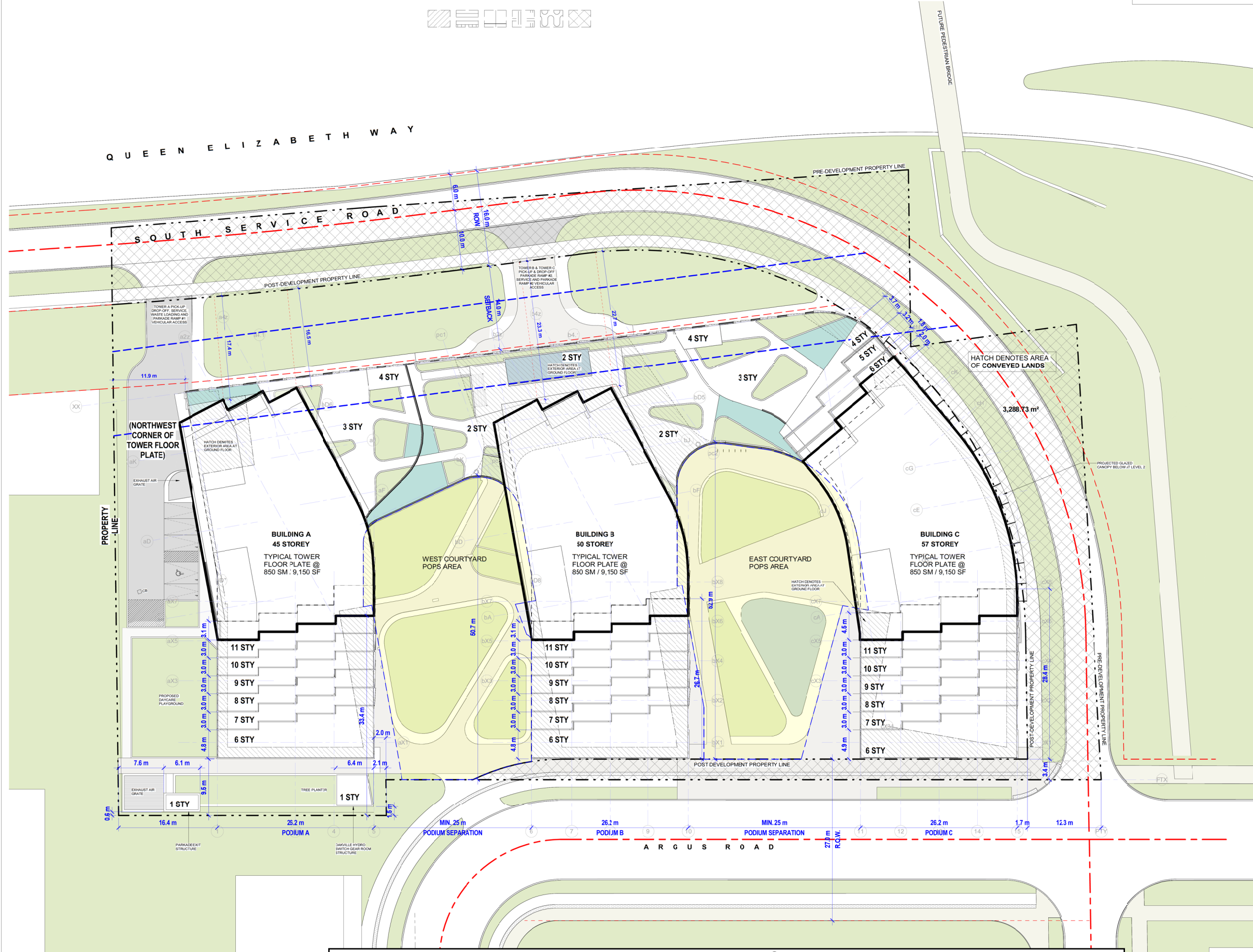
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DO NOT SCALE THIS DRAWING

This drawing shall not be used for construction purposes unless accompanied by:

Teepie Architects Inc.

NO.	DATE	ISSUED FOR:
1	2024-03-20	ISSUE FOR OPA/BA
2	2024-04-26	ISSUED FOR COORDINATION / TRACING
3	2024-05-20	ISSUE FOR OPA/BA - 2nd SUBMISSION



ARCHITECT
Teepie Architects Inc.
 5 Camden Street, Toronto, ON, Canada M5V 1V2
 T: 416.598.0554

STRUCTURAL
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LANDSCAPE
Public City Architecture Inc.
 11-600 Collins Street, Winnipeg, MB, R3D 2R8
 T: 204.470.6323

CIVIL
Trafalgar Engineering Limited
 148 Mosley Road, Oakville, ON, L6R 2G9
 T: 905.338.3366

TRAFFIC
BA Consulting Group Limited
 300-45 St. Clair Avenue West, Toronto, ON, M5V 1K9
 T: 416.981.7710

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 T: 1.800.265.8662

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 T: 416.947.8244

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 T: 416.628.8899

DISTRIKT OAKVILLE
 590 Argus Road, Oakville, ON, Canada

SEAL

SITE PLAN @ ROOF LEVEL

Author	Checker
DRAWN BY	CHECKED BY
22-106	1:200
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	2024-03-20
	FORMAT
	PLOT DATE

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Figure 2 - Proposed Site Plan



Figure 3 - Aerial Photo Showing Surrounding Land Uses

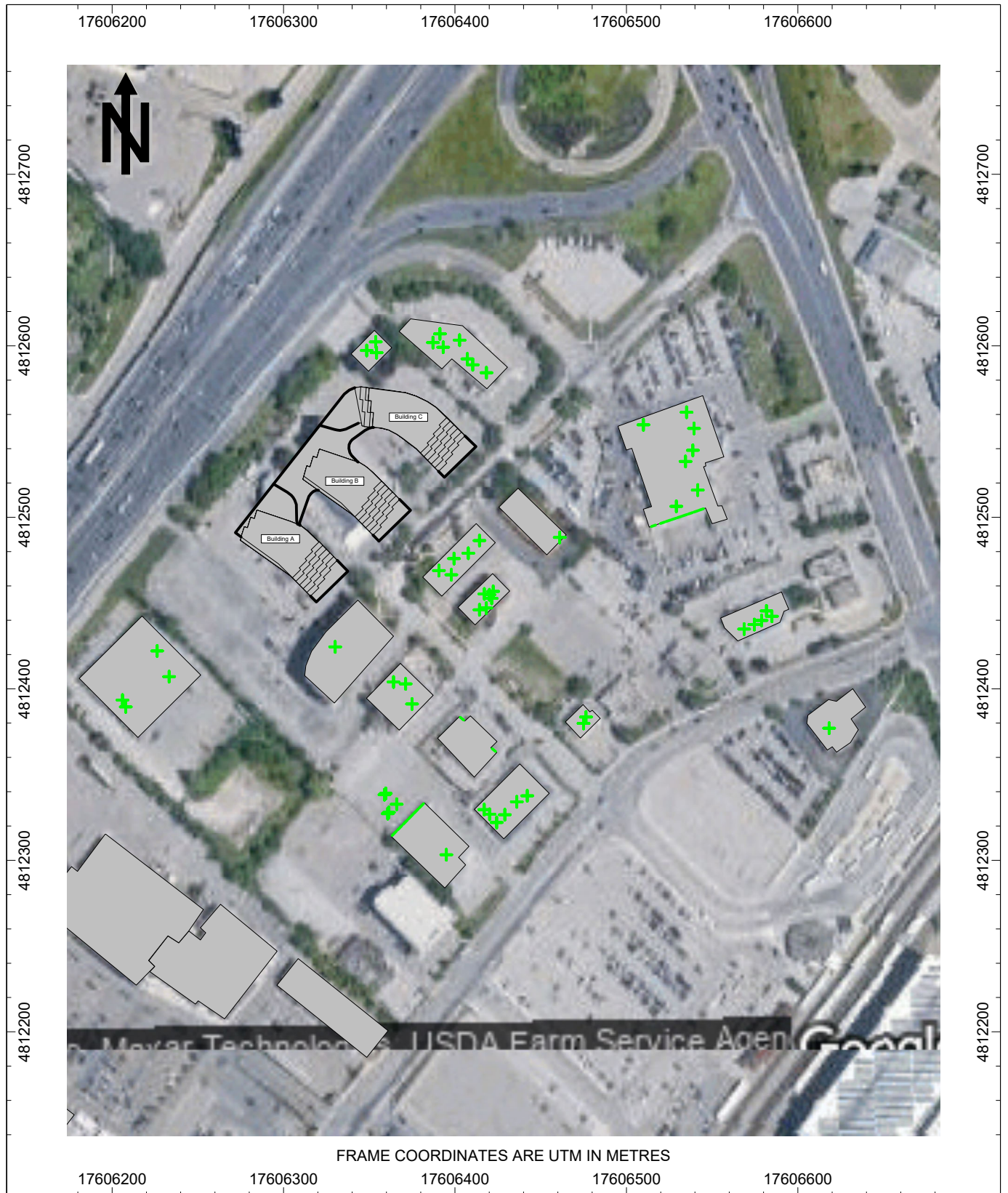


Figure 4: Aerial Photo Showing Source and Receptor Locations

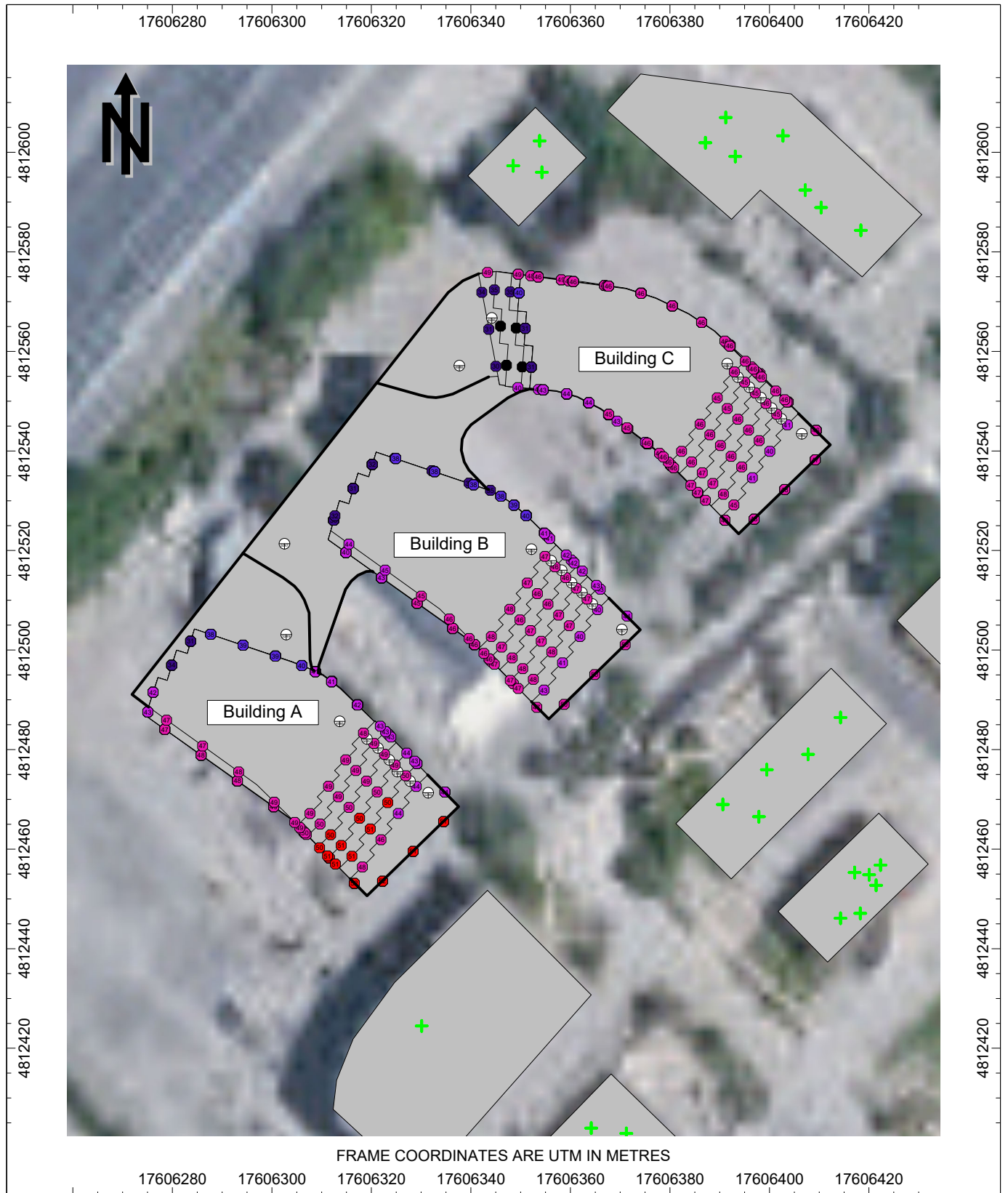


Figure 5: Sound Level Contours, dBA, Due to Stationary Noise Sources, Daytime



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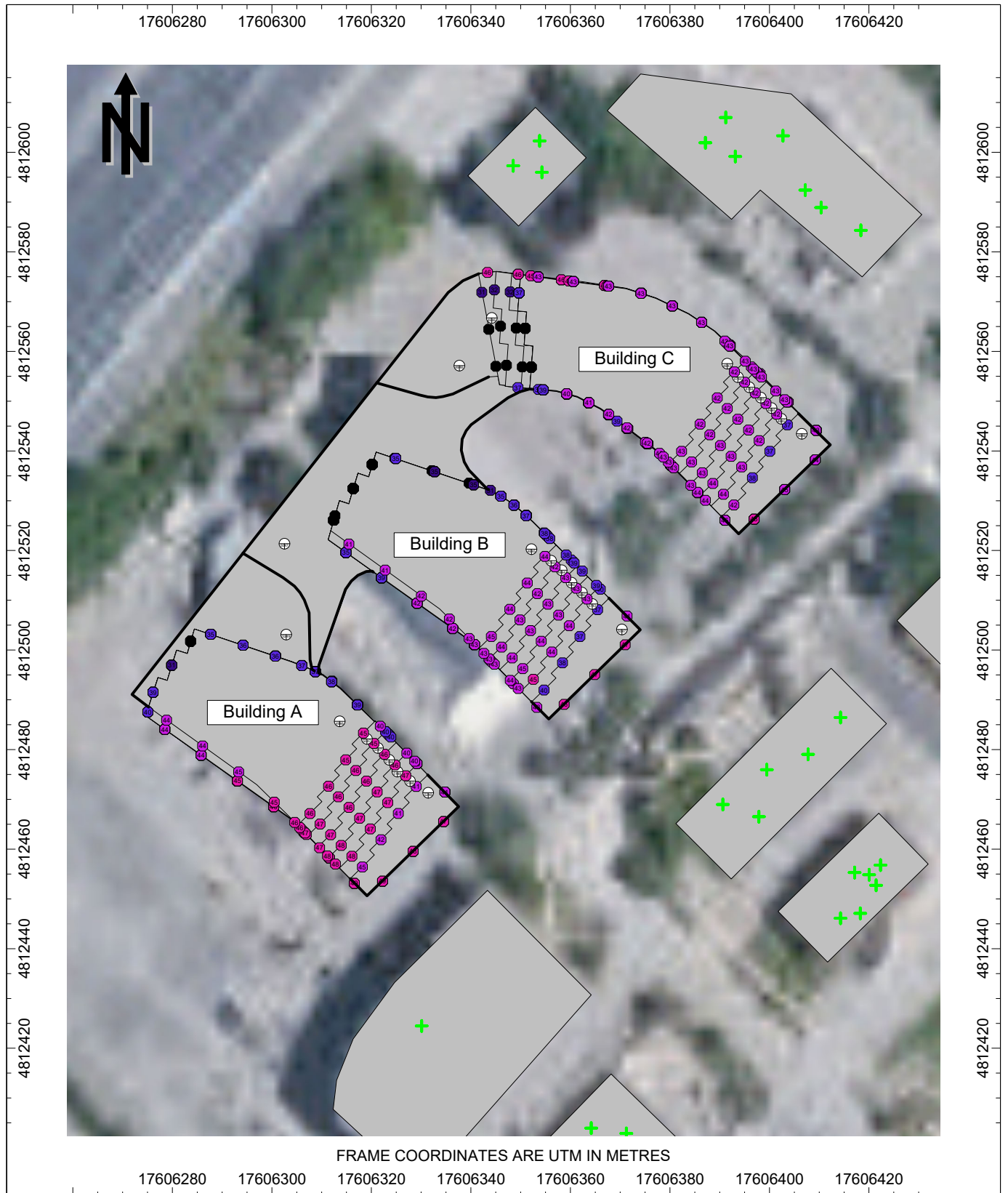


Figure 6: Sound Level Contours, dBA, Due to Stationary Noise Sources, Nighttime

APPENDIX A

Road Traffic Data



ACOUSTICS



NOISE



VIBRATION

Highway	Location Description	Dist (KM)	Year	Pattern Type	AADT	SADT	SAWDT	WADT
QEW			2013	C	187000	206100	203500	168300
QEW			2014	C	206000	226600	220400	185400
QEW			2015	C	210000	231000	224700	189000
QEW			2016	C	215000	236500	230000	193500
QEW			2017	C	205500	224800	224300	186500
QEW			2018	C	208900	229000	227700	188500
QEW			2019	C	212300	232100	230700	192200
QEW	TRAFALGAR RD IC-118	1.4	1988	C	111500	123800	123800	100400
QEW			1989	C	115300	128000	129100	103800
QEW			1990	C	120100	133300	133300	108100
QEW			1991	C	121300	133400	134600	110400
QEW			1992	C	123300	133200	136900	113400
QEW			1993	C	129500	141200	143300	119100
QEW			1994	C	130800	143200	145800	118400
QEW			1995	C	133800	146100	149900	122400
QEW			1996	C	136800	155100	155600	123500
QEW			1997	C	139800	158000	159400	125800
QEW			1998	C	142700	161300	161300	128400
QEW			1999	C	143400	160600	162000	129100
QEW			2000	C	146500	165500	165500	131800
QEW			2001	C	149700	168600	168900	134800
QEW			2002	C	152800	171100	172400	137500
QEW			2003	C	156000	174300	175400	140800
QEW			2004	C	158100	178100	178400	142400
QEW			2005	C	160800	179000	180500	144400
QEW			2006	C	163500	181700	183100	147100
QEW			2007	C	166200	184700	187200	149300
QEW			2008	C	168900	186400	183800	151500
QEW			2009	C	171600	188800	190500	154400
QEW			2010	C	174300	192100	193800	156900
QEW			2011	C	177000	195100	196800	159300
QEW			2012	C	179700	198000	193800	161800
QEW			2013	C	195000	214900	212200	175500
QEW			2014	C	200000	220000	214000	180000
QEW			2015	C	210000	231000	224700	189000
QEW			2016	C	215000	236500	230000	193500
QEW			2017	C	205000	224300	223800	186000
QEW			2018	C	208500	228500	227200	188200
QEW			2019	C	211900	231600	230200	191800
QEW	ROYAL WINDSOR DR (WBL) IC 119	3.1	1988	C	96000	106600	106600	86400
QEW			1989	C	99300	110200	111200	89400
QEW			1990	C	103200	114600	114600	92900
QEW			1991	C	103900	114300	115300	94500
QEW			1992	C	105400	113800	117000	97000
QEW			1993	C	106000	115500	117300	97500

Highway	QEW	Direction	FORT ERIE	Descriptor	WEST OF R	Highway	QEW	Direction	TORONTO	Descriptor					
VDS	Stator	LHRS	OS	VDS	Stator	LHRS	OS	Date	Time	VDS1	Volur	VDS2	Volur	Total	Volun
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	1:00	1393	980	2373					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	2:00	779	629	1408					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	3:00	635	546	1181					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	4:00	991	661	1652					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	5:00	825	1552	2377					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	6:00	1924	5898	7822					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	7:00	4837	7597	12434					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/08/2019	8:00	6373	7750	14123					
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QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/09/2019	6:00	1820	5913	7733					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/09/2019	7:00	4817	7672	12489					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/09/2019	8:00	6599	8013	14612					
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QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/09/2019	10:00	6167	6693	12860					
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QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/09/2019	13:00	6298	6515	12813					
QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/09/2019	14:00	6498	6509	13007					
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QEWDE02E	10135	0.7	QEWDE02E	10135	0.7	05/14/2019	23:59	2318	1806	4124

Victor Garcia

From: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Sent: February 17, 2021 2:24 PM
To: Victor Garcia
Cc: Bee, Christopher (MTO)
Subject: RE: Commercial Vehicle % for QEW at Trafalgar Rd

To Victor Garcia, HGC Engineering

This location's major intersection is QEW and Trafalgar Road.
The % commercial vehicle at QEW near Trafalgar was 14% steady every year from 2007 to 2016 (10 yrs).
2016 is the latest year of official MTO data.

"% commercial" includes large long trucks, small short trucks, vans, cars with trailer, buses, and specials, but
DOES NOT INCLUDE REGULAR CARS.

There is no further breakdown details within these classes.

Christopher Bee
MTO Central Region Traffic Office
Safety Traffic Information and Roadwork Coordination Section (STIRCS)

From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: February-16-21 11:41 AM
To: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Subject: Commercial Vehicle % for QEW at Trafalgar Rd

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good morning,

HGC Engineering is conducting a noise feasibility study for a proposed residential development located at 157 – 165
Cross Avenue in Oakville, Ontario. A google link is included for your reference:

<https://goo.gl/maps/7G5T3Uj5vL8GTjAc6>

Do you have commercial vehicle percentages available for the QEW in the vicinity of this site?

Thanks,

Victor Garcia, P.Eng
Associate

HGC Engineering [NOISE](#) | [VIBRATION](#) | [ACOUSTICS](#)
Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044 e: vgarcia@hgcengineering.com
Visit our website – www.hgcengineering.com Follow Us – [LinkedIn](#) | [Twitter](#) | [YouTube](#)

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Victor Garcia

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: March 2, 2021 9:44 AM
To: Victor Garcia
Subject: RE: Road Traffic Data Request
Attachments: 100323 - nb & sb volume.xls

Hi Victor,

Thanks for checking. I have attached a 2019 24 hour 2-way count on Trafalgar north of Cross. It is 47,400. Therefore, to consider the existing Trafalgar at-capacity, please use 55,000.

The Trafalgar volumes likely won't significantly impact the site at 157 Cross, as it is +300m to the west.

Matt

From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: Tuesday, March 2, 2021 9:07 AM
To: Krusto, Matt <Matt.Krusto@halton.ca>
Subject: RE: Road Traffic Data Request

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure or need assistance please contact the IT Service Desk.

Hi Matt,

We received the truck percentages from the email listed below, do you still provide ultimate traffic volumes for Trafalgar Rd or should we be projecting the volumes obtained from the TMC?

Thanks,

Victor Garcia, P.Eng
HGC Engineering **NOISE | VIBRATION | ACOUSTICS**
Howe Gastmeier Chapnik Limited
t: 905.826.4044

From: Krusto, Matt <Matt.Krusto@halton.ca>
Sent: February 16, 2021 11:50 AM
To: Victor Garcia <vgarcia@hgcengineering.com>
Subject: RE: Road Traffic Data Request

Hi Victor,

Any requests for turning movement counts go to trafficdatarequests@halton.ca Cornwall traffic data, other than at the Trafalgar Road intersection, must be obtained from the Town of Oakville.

Truck percentages must be based on existing truck percentages from the data you receive.

Master Station	Description	Count date	Total vol	lampk.cnt	lampk.vol	off pk.cnt	offpk.vol	pm.pk.cnt	pkhr.vol	8hr.vol	12hr.vol	pm10 speed (km)	50% speed (km)	avg (km)	85Percent	Variance	exceeding (%)	accs	# and trk	# med trk/hrs	# hvy trk	Sevacs	%normal trk	% med trk/hrs	% hvy trk	headway max (sec)	headway min (sec)	Temp min (C)	Temp max (C)	surface
10000	Trafalgar Road - between QEW WB Off-Ramp and Leighland/Isques	12-Sep-19	45,085	8-45	3,422	13-00	2,944	18-00	3,562	24,146	36,231	60	50	54	66.67	8.67	28.20%	43,237	343	692	540	96.5%	0.8%	1.5%	1.2%	0.93	64.29	19	29 Dry	

Prepared For: Halton Region
 Prepared By: *PYRAMID* Traffic Inc.
 Location: REG. RD. #3 200m north of Cross Ave
 Start Date: Thursday Sep 12, 2019

Site ID: 100323
 Interval: 15 min.

Period Ending	Channel 1 NB	Channel 2 SB	Hourly Summary
0:15	153	44	
0:30	68	37	
0:45	76	29	
1:00	35	28	470
1:15	27	5	305
1:30	15	24	239
1:45	32	10	176
2:00	14	11	138
2:15	23	12	141
2:30	20	6	128
2:45	7	15	108
3:00	8	7	98
3:15	12	6	81
3:30	7	3	65
3:45	9	7	59
4:00	9	7	60
4:15	11	9	62
4:30	12	15	79
4:45	17	22	102
5:00	19	47	152
5:15	32	33	197
5:30	33	56	259
5:45	49	73	342
6:00	67	103	446
6:15	72	89	542
6:30	97	158	708
6:45	154	235	975
7:00	164	280	1249
7:15	200	295	1583
7:30	255	381	1964
7:45	283	389	2247
8:00	326	449	2578
8:15	343	452	2878
8:30	446	496	3184
8:45	437	406	3355
9:00	339	453	3372
9:15	328	376	3281
9:30	301	324	2964
9:45	314	340	2775
10:00	341	340	2664
10:15	325	276	2561
10:30	363	284	2583
10:45	336	305	2570
11:00	354	301	2544
11:15	369	305	2617
11:30	399	338	2707
11:45	372	345	2783
12:00	414	379	2921

Period Ending	Channel 1 NB	Channel 2 SB	Hourly Summary
12:15	466	357	3070
12:30	419	326	3078
12:45	421	353	3135
13:00	428	368	3138
13:15	415	325	3055
13:30	438	298	3046
13:45	405	315	2992
14:00	438	315	2949
14:15	416	305	2930
14:30	458	278	2930
14:45	433	325	2968
15:00	435	343	2993
15:15	496	350	3118
15:30	501	324	3207
15:45	478	371	3298
16:00	483	331	3334
16:15	550	319	3357
16:30	518	337	3387
16:45	569	319	3426
17:00	467	316	3395
17:15	640	375	3541
17:30	635	343	3664
17:45	628	310	3714
18:00	492	323	3746
18:15	663	319	3713
18:30	436	312	3483
18:45	506	322	3373
19:00	348	305	3211
19:15	480	296	3005
19:30	349	266	2872
19:45	336	243	2623
20:00	349	217	2536
20:15	357	208	2325
20:30	294	221	2225
20:45	310	195	2151
21:00	235	200	2020
21:15	293	156	1904
21:30	219	145	1753
21:45	258	124	1630
22:00	188	116	1499
22:15	206	105	1361
22:30	191	84	1272
22:45	194	78	1162
23:00	140	104	1102
23:15	178	90	1059
23:30	100	75	959
23:45	144	55	886
0:00	64	87	793

AM Peak: 3372

PM Peak: 3746

24 HR VOLUME: 47408



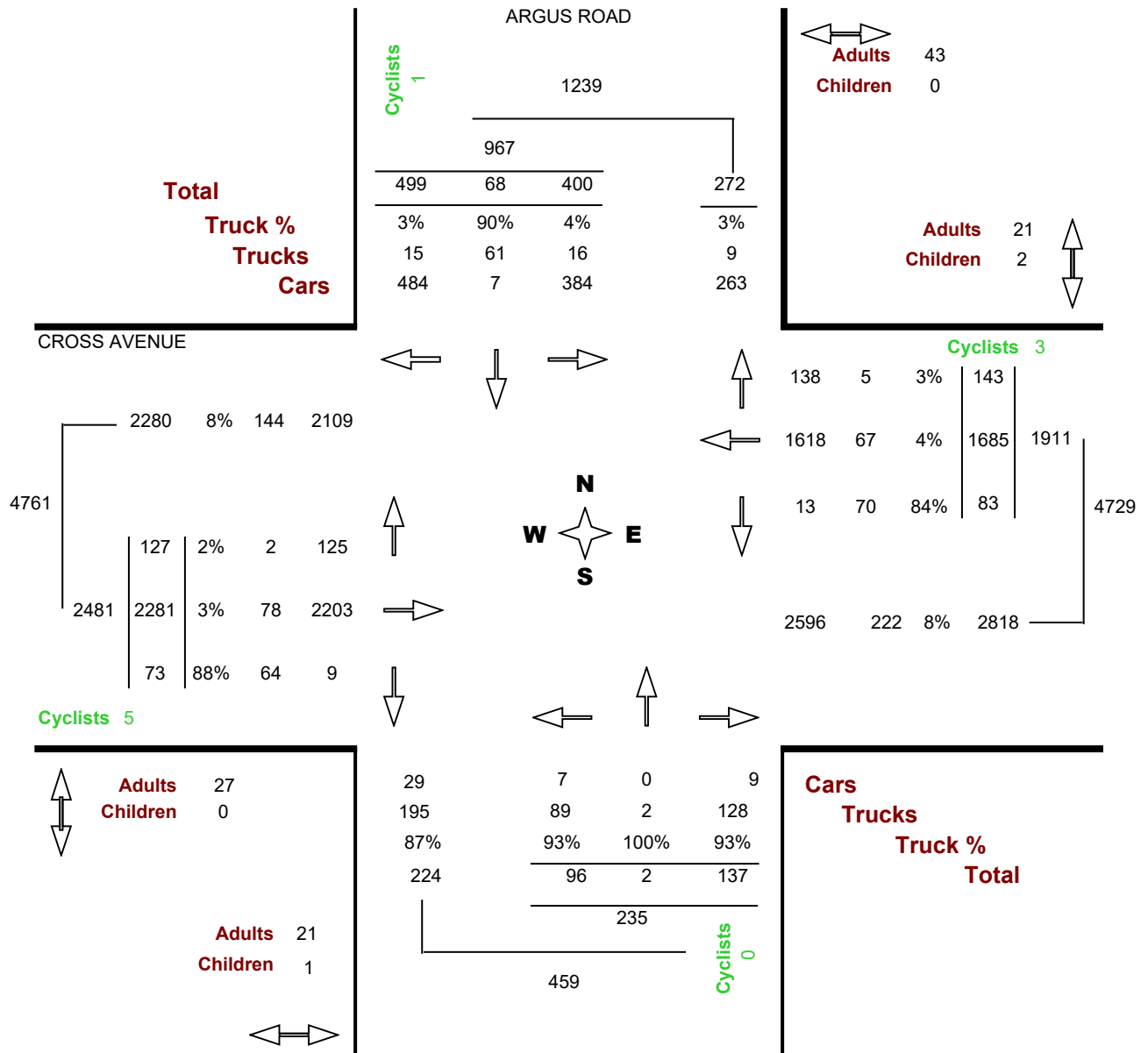
Turning Movements Count - Full Study Report

Location..... CROSS AVENUE @ ARGUS ROAD

Municipality..... OAKVILLE

GeoID..... 30151301

Count Date..... Wednesday, 30 September, 2020



In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0



Turning Movements Report - AM Period

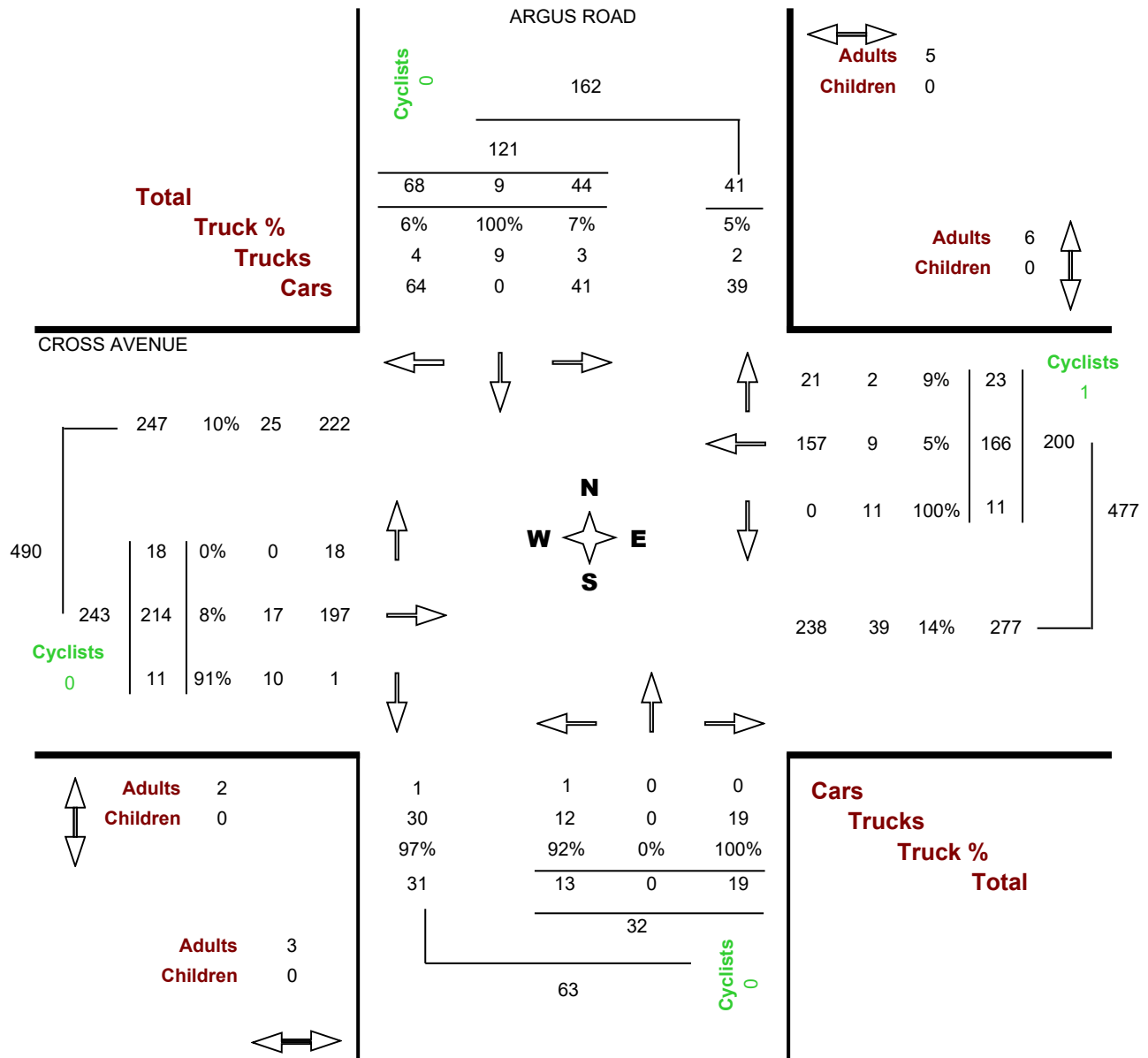
Location..... CROSS AVENUE @ ARGUS ROAD

Municipality..... OAKVILLE

GeoID..... 30151301

Count Date..... Wednesday, 30 September, 2020

Peak Hour..... 08:00 AM — 09:00 AM



THIS INFORMATION IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0



Turning Movements Report - MD Period

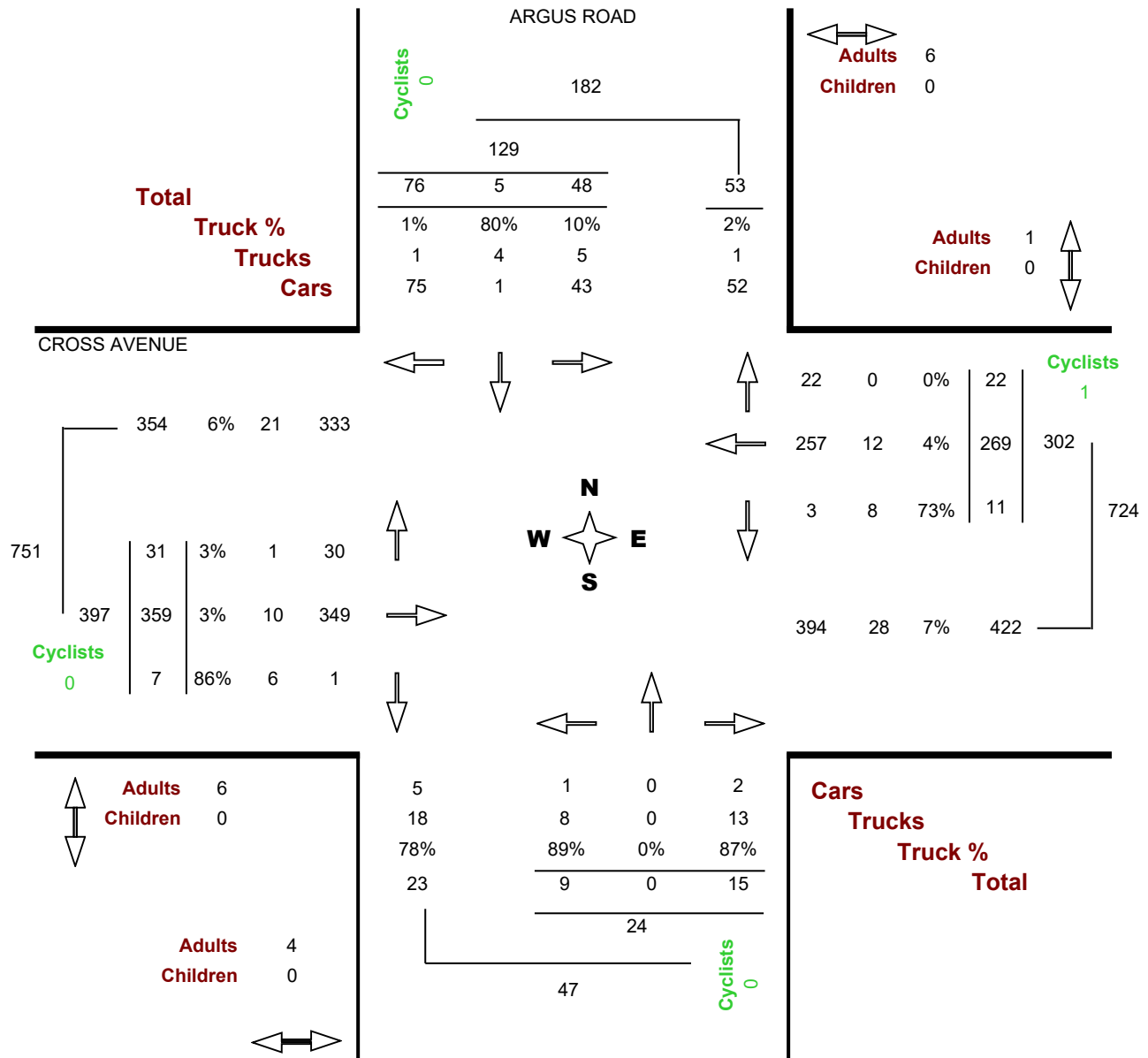
Location..... CROSS AVENUE @ ARGUS ROAD

Municipality..... OAKVILLE

GeoID..... 30151301

Count Date..... Wednesday, 30 September, 2020

Peak Hour..... 01:00 PM — 02:00 PM



THIS INFORMATION IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0



Turning Movements Report - PM Period

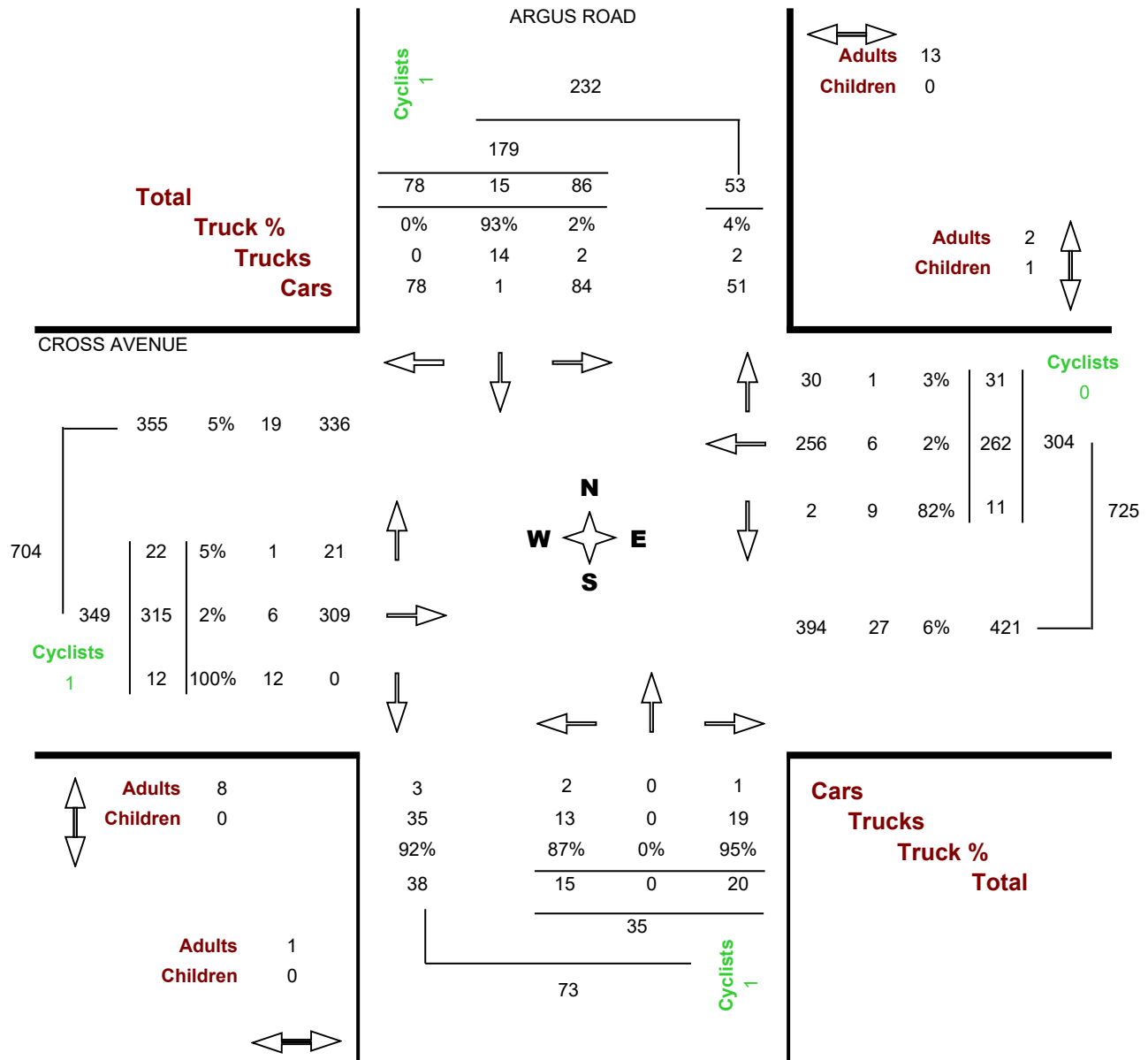
Location..... CROSS AVENUE @ ARGUS ROAD

Municipality..... OAKVILLE

GeoID..... 30151301

Count Date..... Wednesday, 30 September, 2020

Peak Hour..... 03:15 PM — 04:15 PM



THIS INFORMATION IS SUPPLIED FROM OUR RECORDS AND IS NOT GUARANTEED TO BE CORRECT. WE RECOMMEND FIELD CHECKING TO VERIFY THE INFORMATION SHOWN.

In all counts dated before 2018 - Adult pedestrian numbers include seniors, and the senior count = 0



Turning Movement Count - Details Report

Location..... CROSS AVENUE @ ARGUS ROAD
Municipality..... OAKVILLE
Count Date..... Wednesday, September 30, 2020

		ARGUS ROAD										CROSS AVENUE									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped	LT	TH	RT	Cyclists	Ped
07:00	07:15	3	4	9	0	1	6	0	7	0	1	4	29	1	0	0	1	19	3	0	0
07:15	07:30	3	1	12	0	0	1	0	1	0	0	1	31	3	0	2	4	41	2	0	1
07:30	07:45	3	3	7	0	0	5	0	8	0	0	6	36	1	0	0	2	37	4	0	1
07:45	08:00	6	1	18	0	4	0	0	3	0	0	2	29	3	0	2	1	40	1	0	0
Hourly Total		15	9	46	0	5	12	0	19	0	1	13	125	8	0	4	8	137	10	0	2
08:00	08:15	4	1	21	0	1	7	0	8	0	3	6	34	3	0	1	2	61	5	0	2
08:15	08:30	16	1	9	0	0	0	0	1	0	0	1	37	11	0	0	3	42	1	0	0
08:30	08:45	13	6	17	0	3	5	0	8	0	0	3	36	6	0	1	7	53	3	0	0
08:45	09:00	11	1	21	0	1	1	0	2	0	0	1	59	3	1	4	6	58	2	0	0
Hourly Total		44	9	68	0	5	13	0	19	0	3	11	166	23	1	6	18	214	11	0	2
11:00	11:15	4	0	4	0	0	6	0	6	0	0	1	28	3	0	0	1	41	1	0	0
11:15	11:30	10	0	23	0	1	2	1	1	0	1	1	64	2	0	0	5	84	1	3	0
11:30	11:45	14	2	24	0	0	2	0	3	0	0	2	79	7	0	1	3	91	1	1	3
11:45	12:00	7	0	8	0	0	3	1	3	0	0	4	56	4	0	0	3	95	0	0	1
Hourly Total		35	2	59	0	1	13	2	13	0	1	8	227	16	0	1	12	311	3	4	4
12:00	12:15	21	2	20	0	3	4	0	3	0	0	3	58	8	1	0	3	77	3	0	0
12:15	12:30	6	2	12	0	0	1	0	3	0	4	2	53	4	0	0	4	96	2	0	0
12:30	12:45	13	2	17	0	0	6	0	4	0	3	8	58	4	0	0	1	91	2	0	0
12:45	13:00	15	0	20	0	2	0	0	3	0	2	2	71	6	0	0	5	93	2	0	2
Hourly Total		55	6	69	0	5	11	0	13	0	9	15	240	22	1	0	13	357	9	0	2
13:00	13:15	15	4	23	0	0	5	0	4	0	1	4	66	3	1	0	2	95	2	0	0
13:15	13:30	8	0	16	0	0	0	0	3	0	1	0	71	6	0	0	6	94	2	0	3
13:30	13:45	12	0	18	0	3	3	0	4	0	1	4	55	6	0	1	5	82	2	0	2
13:45	14:00	13	1	19	0	3	1	0	4	0	1	3	77	7	0	0	18	88	1	0	1
Hourly Total		48	5	76	0	6	9	0	15	0	4	11	269	22	1	1	31	359	7	0	6
15:00	15:15	6	2	9	0	2	6	0	7	0	0	5	42	2	0	0	4	50	2	0	0
15:15	15:30	21	3	27	0	3	2	0	3	0	0	2	71	16	0	0	6	85	1	1	1
15:30	15:45	19	5	14	0	6	3	0	6	0	0	3	70	8	0	2	8	63	4	0	7
15:45	16:00	23	2	19	1	2	3	0	3	0	1	2	54	3	0	1	4	81	1	0	0
Hourly Total		69	12	69	1	13	14	0	19	0	1	12	237	29	0	3	22	279	8	1	8
16:00	16:15	23	5	18	0	2	7	0	8	0	0	4	67	4	0	0	4	86	6	0	0
16:15	16:30	6	1	13	0	2	1	0	4	0	0	0	55	5	0	2	4	89	3	0	0
16:30	16:45	17	6	15	0	2	4	0	6	0	0	3	57	2	0	4	3	72	5	0	0
16:45	17:00	19	1	23	0	0	1	0	3	0	0	1	58	3	0	1	4	94	1	0	0
Hourly Total		65	13	69	0	6	13	0	21	0	0	8	237	14	0	7	15	341	15	0	0
17:00	17:15	31	3	11	0	0	3	0	7	0	1	3	43	0	0	1	2	88	3	0	1
17:15	17:30	15	0	15	0	2	2	0	3	0	2	1	57	4	0	0	1	72	1	0	2
17:30	17:45	14	8	12	0	0	5	0	7	0	0	1	47	5	0	0	3	65	4	0	0
17:45	18:00	9	1	5	0	0	1	0	1	0	0	0	37	0	0	0	2	58	2	0	0
Hourly Total		69	12	43	0	2	11	0	18	0	3	5	184	9	0	1	8	283	10	0	3
Grand Total		400	68	499	1	43	96	2	137	0	22	83	1685	143	3	23	127	2281	73	5	27
Truck %		4%	90%	3%			93%	100%	93%			84%	4%	3%			2%	3%	88%		

APPENDIX B

Rail Traffic Data



ACOUSTICS



NOISE



VIBRATION



Train Count Data

TRANSMITTAL

To: HGC Engineering *Project :* OAK – 21.20 – Cornwall Rd, Oakville ON
Destinataire : 2000 Argentia Rd
Plaza, Suite 203
Mississauga ON
L5N 1P7

Att'n: Victor Garcia *Routing:* vgarcia@hgcengineering.com

From: Michael Vallins *Date:* 2021/04/26
Expéditeur :

Cc: Adjacent Development
CN via e-mail

Urgent For Your Use For Review For Your Information Confidential

Re: Train Traffic Data – CN Oakville Subdivision near Cornwall Rd in Oakville, ON

Please find attached the requested Train Traffic Data; this data does not reflect GO Metrolinx Traffic. The application fee in the amount of **\$500.00** +HST will be invoiced.

Should you have any questions, please do not hesitate to contact the undersigned at permits.gld@cn.ca.

Sincerely,
CN Design & Construction

Michael Vallins P.Eng
Manager Public Works- Eastern Canada
Permits.gld@cn.ca

Date: 2021/04/26

Project Number: OAK – 21.20 – Cornwall Rd, Oakville ON

Dear Victor:

Re: Train Traffic Data – CN Oakville Subdivision near Cornwall Rd in Oakville, ON

The following is provided in response to Victor’s 2021/02/16 request for information regarding rail traffic in the vicinity of Cornwall Rd in Oakville at approximately Mile 21.20 on CN’s Oakville Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

***Maximum train speed is given in Miles per Hour**

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	2	140	60	4
Way Freight	0	25	60	4
Passenger	12	10	95	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	2	140	60	4
Way Freight	0	25	60	4
Passenger	1	10	95	2

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN’s Oakville Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There is one (1) at-grade crossing in the immediate vicinity of the study area at Mile 21.97 Kerr St. Anti-whistling bylaws are in effect at this crossing. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The four mainline tracks are considered to be continuously welded rail throughout the study area. The presence of four (4) switches located at Mile 21.85, 21.99, 22.07, and 22.20 may exacerbate the noise and vibration caused by train movements.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at Proximity@cn.ca should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Michael Vallins P.Eng', with a long horizontal flourish extending to the right.

Michael Vallins P.Eng
Manager Public Works- Eastern Canada
Permits.gld@cn.ca

Victor Garcia

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: January 9, 2023 12:28 PM
To: Victor Garcia
Subject: RE: Rail Traffic Data Verification - Cross Avenue, Oakville

Hi Victor,

Further to your request dated January 9, 2023, the subject lands (157-165 Cross Ave, Oakville) are located within 300 metres of the Metrolinx Oakville Subdivision (which carries Lakeshore West GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel and electric 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 408 trains. The planned detailed trip breakdown is listed below:

	1 Diesel Locomotive	2 Diesel Locomotives	1 Electric Locomotive	2 Electric Locomotives		1 Diesel Locomotive	2 Diesel Locomotives	1 Electric Locomotive	2 Electric Locomotives
Day (0700-2300)	132	0	222	0	Night (2300-0700)	20	0	34	0

The current track design speed near the subject lands is 80 mph (129 km/h).

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

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase.

Options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams have submitted their bids to Infrastructure Ontario and Metrolinx for evaluation and contract award. GO Expansion construction will get underway in late 2022 or 2023.

However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel- track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.

Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected

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.

Regards,
Tara

Tara Kamal Ahmadi

Junior Analyst

Third Party Projects Review, Capital Projects Group

Metrolinx | 20 Bay Street | Suite 600 | Toronto | Ontario | M5J 2W3

APPENDIX C

Preliminary Drawings



ACOUSTICS



NOISE



VIBRATION

SHEET LIST

- A000 - PROJECT INFORMATION
- A001 - SHEET LIST, ZONING REQUIREMENTS
- A003 - GRID LAYOUT
- A101 - SITE SURVEY
- A111 - SITE PLAN @ ROOF LEVEL
- A112 - WASTE MANAGEMENT & LOADING PLAN

- A200 - FLOOR PLANS
- A200 - LEVEL P6 PLAN
- A201 - LEVEL P4 PLAN
- A202 - LEVEL P3 PLAN
- A203 - LEVEL P2 PLAN
- A204 - LEVEL P1 PLAN
- A205 - LEVEL P1 PLAN
- A206 - LEVEL 1 PLAN
- A207 - LEVEL 2 PLAN
- A208 - LEVEL 3 PLAN
- A209 - LEVEL 4 PLAN
- A210 - LEVEL 5 PLAN
- A211 - LEVEL 6 PLAN
- A212 - LEVEL 7 PLAN
- A213 - LEVEL 8 PLAN
- A214 - LEVEL 9 PLAN
- A215 - LEVEL 10 PLAN
- A216 - LEVEL 11 PLAN
- A217 - LEVEL 12 PLAN
- A218 - LEVEL 13 PLAN
- A219 - TYP TOWER PLAN
- A220 - LEVEL 15 PLAN
- A221 - LEVEL 16 PLAN
- A222 - LEVEL P4 PLAN
- A223 - LEVEL MPH PLAN
- A224 - ROOF PLAN

- A400 - ELEVATIONS
- A401 - NORTH & SOUTH ELEVATIONS
- A402 - EAST & WEST ELEVATIONS
- A500 - SECTIONS
- A501 - BUILDING SECTIONS
- A502 - BUILDING SECTIONS

- A700 - RENDERINGS
- A701 - PERSPECTIVES

- A800 - EDGE OF SLAB
- A806 - EDGE OF SLAB LEVEL 1
- A807 - EDGE OF SLAB LEVEL 2
- A808 - EDGE OF SLAB LEVEL 3
- A809 - EDGE OF SLAB LEVEL 4
- A810 - EDGE OF SLAB LEVEL 5

DEVELOPMENT UNIT MIX						
NAME	MIN (SM)	MIN (SF)	MAX (SM)	MAX (SF)	COUNT	%
1B	31.15 m ²	335 SF	45.48 m ²	490 SF	102	5.5%
1B-D	40.24 m ²	433 SF	63.53 m ²	684 SF	450	24.4%
1B-D	45.03 m ²	485 SF	67.55 m ²	729 SF	560	31.0%
2B	50.72 m ²	546 SF	73.32 m ²	789 SF	565	31.6%
3B	70.00 m ²	753 SF	88.34 m ²	951 SF	125	6.8%

UNIT MIX TOWER A				
NAME	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	340 SF	490 SF	43	8%
1B	476 SF	593 SF	89	16%
1B-D	505 SF	692 SF	188	35%
2B	633 SF	773 SF	112	20%
3B	789 SF	903 SF	52	10%
TOTAL			544	100%

UNIT MIX TOWER B				
NAME	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
STUDIO	433 SF	433 SF	46	8%
1B	483 SF	684 SF	99	16%
1B-D	485 SF	727 SF	235	42%
2B	620 SF	789 SF	149	25%
3B	782 SF	920 SF	58	10%
TOTAL			607	100%

UNIT MIX TOWER C				
UNIT TYPE	MINIMUM (SF)	MAXIMUM (SF)	COUNT	%
1B	433 SF	637 SF	262	38%
1B-D	488 SF	644 SF	137	20%
2B	546 SF	783 SF	264	36%
3B	753 SF	951 SF	15	2%
STUDIO	335 SF	437 SF	13	2%
TOTAL			691	100%

UNIT SUMMARY (PER LEVEL) TOWER A				
LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	340	490	1
LEVEL 02	1B	476	593	2
LEVEL 02	1B-D	505	692	3
LEVEL 02	2B	633	773	1
LEVEL 03	STUDIO	407	407	1
LEVEL 03	1B	518	518	2
LEVEL 03	1B-D	574	642	4
LEVEL 03	2B	684	684	3
LEVEL 04	STUDIO	408	408	10
LEVEL 04	1B	518	518	2
LEVEL 04	1B-D	574	642	5
LEVEL 04	2B	684	684	4
LEVEL 05	STUDIO	416	416	1
LEVEL 05	1B	520	518	3
LEVEL 05	1B-D	551	641	9
LEVEL 05	2B	648	687	5
LEVEL 05	3B	830	830	1
LEVEL 06	STUDIO	490	490	1
LEVEL 06	1B	476	518	4
LEVEL 06	1B-D	551	680	4
LEVEL 06	2B	648	676	4
LEVEL 06	3B	830	830	1
LEVEL 07	STUDIO	384	437	2
LEVEL 07	1B	510	510	1
LEVEL 07	1B-D	551	677	8
LEVEL 07	2B	690	783	2
LEVEL 07	3B	801	830	2
LEVEL 08	1B	510	510	1
LEVEL 08	1B-D	551	676	8
LEVEL 08	2B	650	676	3
LEVEL 08	3B	830	876	2
LEVEL 09	1B	510	510	15
LEVEL 09	1B-D	551	682	7
LEVEL 09	2B	648	687	4
LEVEL 09	3B	830	876	2
LEVEL 10	STUDIO	348	376	2
LEVEL 10	1B	492	538	14
LEVEL 10	1B-D	551	641	3
LEVEL 10	2B	648	676	3
LEVEL 10	3B	789	830	2
LEVEL 11	1B	483	510	2
LEVEL 11	1B-D	551	638	5
LEVEL 11	2B	637	730	5
LEVEL 11	3B	830	830	1
LEVEL 12	STUDIO	348	348	13
LEVEL 12	1B	510	510	1
LEVEL 12	1B-D	551	639	4
LEVEL 12	2B	633	712	3
LEVEL 12	3B	789	830	1
LEVEL 13	STUDIO	348	348	12
LEVEL 13	1B	510	510	2
LEVEL 13	1B-D	551	637	4
LEVEL 13	2B	633	672	4
LEVEL 13	3B	830	830	1
LEVEL 14	STUDIO	348	348	10
LEVEL 14	1B	510	510	10
LEVEL 14	1B-D	551	637	112
LEVEL 14	1B-D	551	637	3
LEVEL 14	1B-D	551	637	28
LEVEL 14	1B-D	551	637	28
LEVEL 15	STUDIO	348	348	10
LEVEL 15	1B	510	510	3
LEVEL 15	1B-D	551	637	3
LEVEL 15	2B	633	672	3
LEVEL 15	3B	830	830	1
LEVEL 16	STUDIO	348	348	10
LEVEL 16	1B	510	510	10
LEVEL 16	1B-D	551	637	2
LEVEL 16	2B	633	672	3
LEVEL 16	3B	830	830	1
LEVEL 17	STUDIO	348	348	10
LEVEL 17	1B	510	510	10
LEVEL 17	1B-D	551	637	2
LEVEL 17	2B	633	672	3
LEVEL 17	3B	830	830	1
LEVEL 18	STUDIO	348	348	10
LEVEL 18	1B	510	510	10
LEVEL 18	1B-D	551	637	2
LEVEL 18	2B	633	672	3
LEVEL 18	3B	830	830	1
TOTAL				644

UNIT SUMMARY (PER LEVEL) TOWER B				
LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	433	433	1
LEVEL 02	1B	515	515	2
LEVEL 02	1B-D	551	687	3
LEVEL 02	2B	649	703	3
LEVEL 03	STUDIO	407	407	1
LEVEL 03	1B	517	517	2
LEVEL 03	1B-D	574	642	5
LEVEL 03	2B	644	684	4
LEVEL 04	STUDIO	408	408	10
LEVEL 04	1B	518	518	2
LEVEL 04	1B-D	551	642	9
LEVEL 04	2B	649	684	4
LEVEL 05	STUDIO	416	416	19
LEVEL 05	1B	520	518	3
LEVEL 05	1B-D	551	641	9
LEVEL 05	2B	648	687	5
LEVEL 05	3B	830	830	1
LEVEL 06	STUDIO	490	490	19
LEVEL 06	1B	476	518	4
LEVEL 06	1B-D	551	680	4
LEVEL 06	2B	648	676	4
LEVEL 06	3B	830	830	1
LEVEL 07	STUDIO	384	437	19
LEVEL 07	1B	510	510	2
LEVEL 07	1B-D	551	677	8
LEVEL 07	2B	690	783	2
LEVEL 07	3B	801	830	2
LEVEL 08	1B	510	510	17
LEVEL 08	1B-D	551	677	8
LEVEL 08	1B-D	551	676	9
LEVEL 08	2B	650	676	3
LEVEL 08	3B	830	876	3
LEVEL 09	1B	520	518	11
LEVEL 09	1B-D	551	679	5
LEVEL 09	2B	648	687	3
LEVEL 09	3B	830	876	3
LEVEL 10	STUDIO	348	376	14
LEVEL 10	1B	490	537	3
LEVEL 10	1B-D	551	641	3
LEVEL 10	2B	648	676	3
LEVEL 10	3B	789	830	2
LEVEL 11	1B	483	510	14
LEVEL 11	1B-D	551	637	3
LEVEL 11	1B-D	551	637	6
LEVEL 11	2B	637	730	4
LEVEL 11	3B	830	830	1
LEVEL 12	STUDIO	348	348	13
LEVEL 12	1B	510	510	1
LEVEL 12	1B-D	551	639	4
LEVEL 12	2B	633	712	3
LEVEL 12	3B	789	830	1
LEVEL 13	STUDIO	348	348	11
LEVEL 13	1B	510	510	1
LEVEL 13	1B-D	551	637	5
LEVEL 13	2B	633	676	3
LEVEL 13	3B	830	830	1
LEVEL 14	STUDIO	348	348	10
LEVEL 14	1B	510	510	30
LEVEL 14	1B-D	551	637	165
LEVEL 14	1B-D	551	637	3
LEVEL 14	1B-D	551	637	28
LEVEL 14	1B-D	551	637	28
LEVEL 15	STUDIO	348	348	10
LEVEL 15	1B	510	510	3
LEVEL 15	1B-D	551	637	3
LEVEL 15	2B	633	676	3
LEVEL 15	3B	830	830	1
LEVEL 16	STUDIO	348	348	10
LEVEL 16	1B	510	510	10
LEVEL 16	1B-D	551	637	3
LEVEL 16	2B	633	676	3
LEVEL 16	3B	830	830	1
LEVEL 17	STUDIO	348	348	10
LEVEL 17	1B	510	510	10
LEVEL 17	1B-D	551	637	2
LEVEL 17	2B	633	676	3
LEVEL 17	3B	830	830	1
LEVEL 18	STUDIO	348	348	10
LEVEL 18	1B	510	510	10
LEVEL 18	1B-D	551	637	2
LEVEL 18	2B	633	676	3
LEVEL 18	3B	830	830	1
TOTAL				607

UNIT SUMMARY (PER LEVEL) TOWER C				
LEVEL	UNIT CATEGORY	MIN (SF)	MAX (SF)	COUNT
LEVEL 02	STUDIO	335	437	2
LEVEL 02	1B	515	515	5
LEVEL 02	1B-D	549	639	5
LEVEL 02	2B	649	699	2
LEVEL 03	STUDIO	399	437	2
LEVEL 03	1B	517	517	3
LEVEL 03	1B-D	518	620	8
LEVEL 03	2B	644	684	3
LEVEL 04	STUDIO	399	437	16
LEVEL 04	1B-D	518	620	4
LEVEL 04	1B-D	518	620	4
LEVEL 04	2B	648	703	5
LEVEL 04	3B	823	830	2
LEVEL 05	STUDIO	397	397	21
LEVEL 05	1B	504	599	5
LEVEL 05	1B-D	517	641	5
LEVEL 05	2B	648	704	7
LEVEL 05	3B	823	830	1
LEVEL 06	STUDIO	403	403	19
LEVEL 06	1B	487	564	5
LEVEL 06	1B-D	507	544	4
LEVEL 06	2B	601	718	5
LEVEL 06	3B	797	807	2
LEVEL 07	STUDIO	397	397	17
LEVEL 07	1B	487	532	5
LEVEL 07	1B-D	504	603	4
LEVEL 07	2B	611	699	4
LEVEL 07	3B	797	807	2
LEVEL 08	STUDIO	396	396	16
LEVEL 08	1B	433	530	5
LEVEL 08	1B-D	433	530	5
LEVEL 08	1B-D	554	606	3
LEVEL 08	2B	617	690	5
LEVEL 08	3B	823	823	1
LEVEL 09	STUDIO	335	335	15
LEVEL 09	1B	483	633	5
LEVEL 09	1B-D	483	633	5
LEVEL 09	2B	599	704	5
LEVEL 09	3B	789	789	1
LEVEL 10	STUDIO	376	376	14
LEVEL 10	1B	487	530	5
LEVEL 10	1B-D	507	544	5
LEVEL 10	2B	611	699	5
LEVEL 10	3B	797	807	2
LEVEL 11	STUDIO	376	376	14
LEVEL 11	1B	487	530	5
LEVEL 11	1B-D	507	544	5
LEVEL 11	2B	611	699	5
LEVEL 11	3B	797	807	2
LEVEL 12				

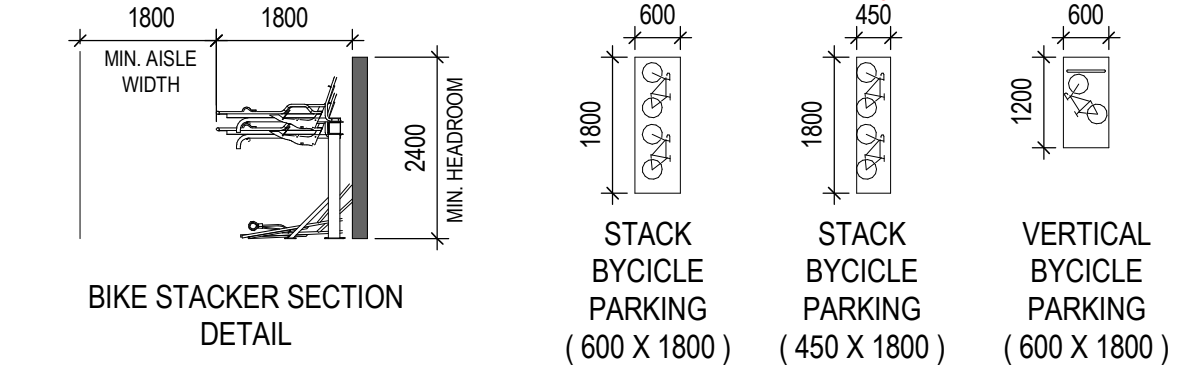
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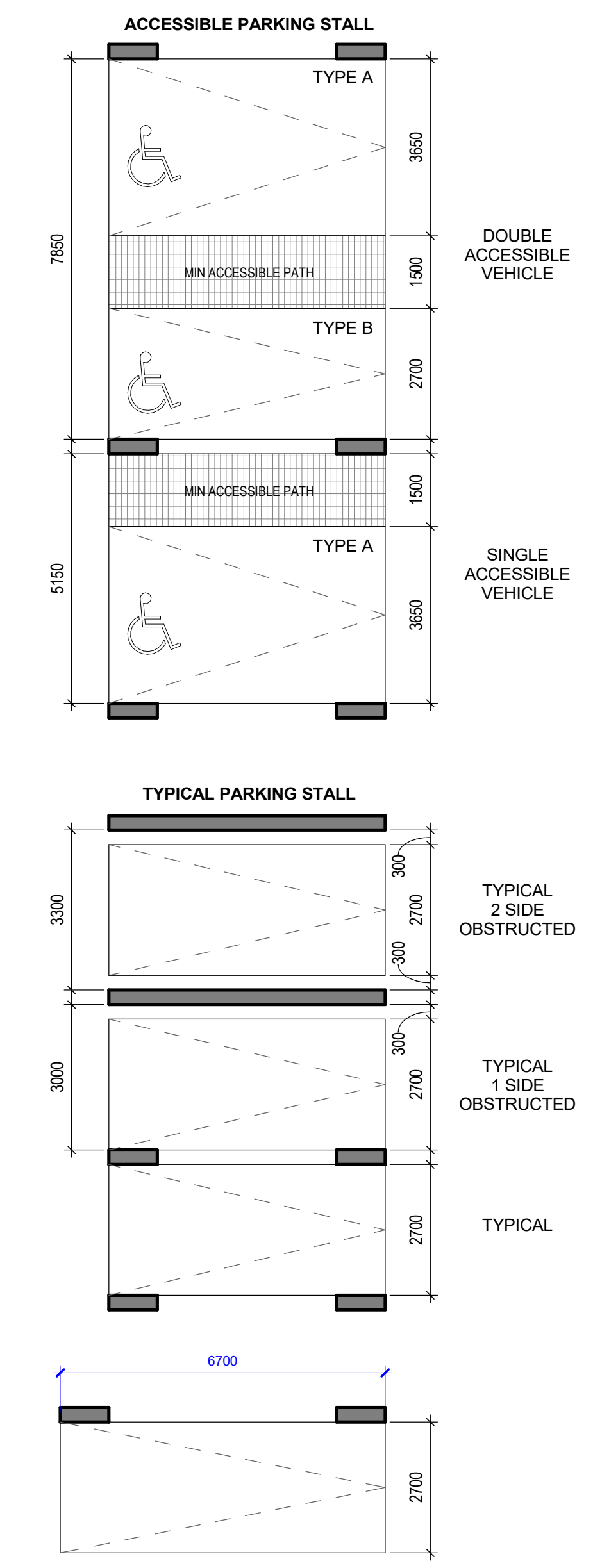
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3	2024.03.20	ISSUED FOR OPAZ/BA - 2nd SUBMISSION

BICYCLE PARKING REQUIREMENT



BICYCLE PARKING SUMMARY PER LEVEL	
1382	RESIDENTIAL*
	NON-RESIDENTIAL*
	VISITOR
1844	TOTAL



PRE-DEVELOPMENT PROPERTY LINE

POST-DEVELOPMENT PROPERTY LINE



LEVEL P1 PLAN 1:200 A205

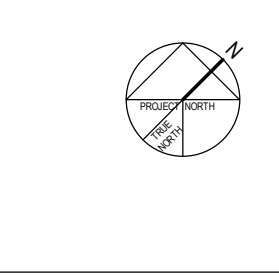
LEVEL	VEHICULAR PARKING SUMMARY PER LEVEL		
	RESIDENTIAL (P)	NON-RESIDENTIAL (C)	RESIDENTIAL VISITOR (V)
P1	0	24	66
P2			
P3			
P4			
P5			
P6			

LEVEL P1 PLAN

Author	Checker
22-106	As Indicated
PROJ NO	SCALE
	ARCH E
	2024-03-20
	FORMAT
	PLOT DATE

A205

- ARCHITECT
Teepie Architects Inc.
 5 Camden Street, Toronto, ON, Canada, M5V 1V2
 T: 416.598.0554
- STRUCTURAL
 -
- MECHANICAL
 -
- ELECTRICAL
 -
- LANDSCAPE
Public City Architecture Inc.
 11-650 Clifton Street, Winnipeg, MN, R5G 2X6
 T: 204.476.9323
- TRAFFIC
Trafalgar Engineering Limited
 1-881 Mountain Road, Oakville, ON, L6K 2W6
 T: 905.338.3268
- SOLID WASTE MANAGEMENT
R.J. Burnside & Associates Limited
 1465 Pickering Parkway, Pickering, ON, L1V 7G7
 T: 905.285.9662
- PLANNING
Bousfields Inc.
 3 Church Street, Toronto, ON, M5E 1M2
 T: 416.947.9744
- CLIENT
District Developments
 1-50 Wingo Avenue, Toronto, ON, Canada M8B 1P5
 T: 416.628.9038
- DISTRIKT OAKVILLE**
 590 Argus Road, Oakville, ON, Canada



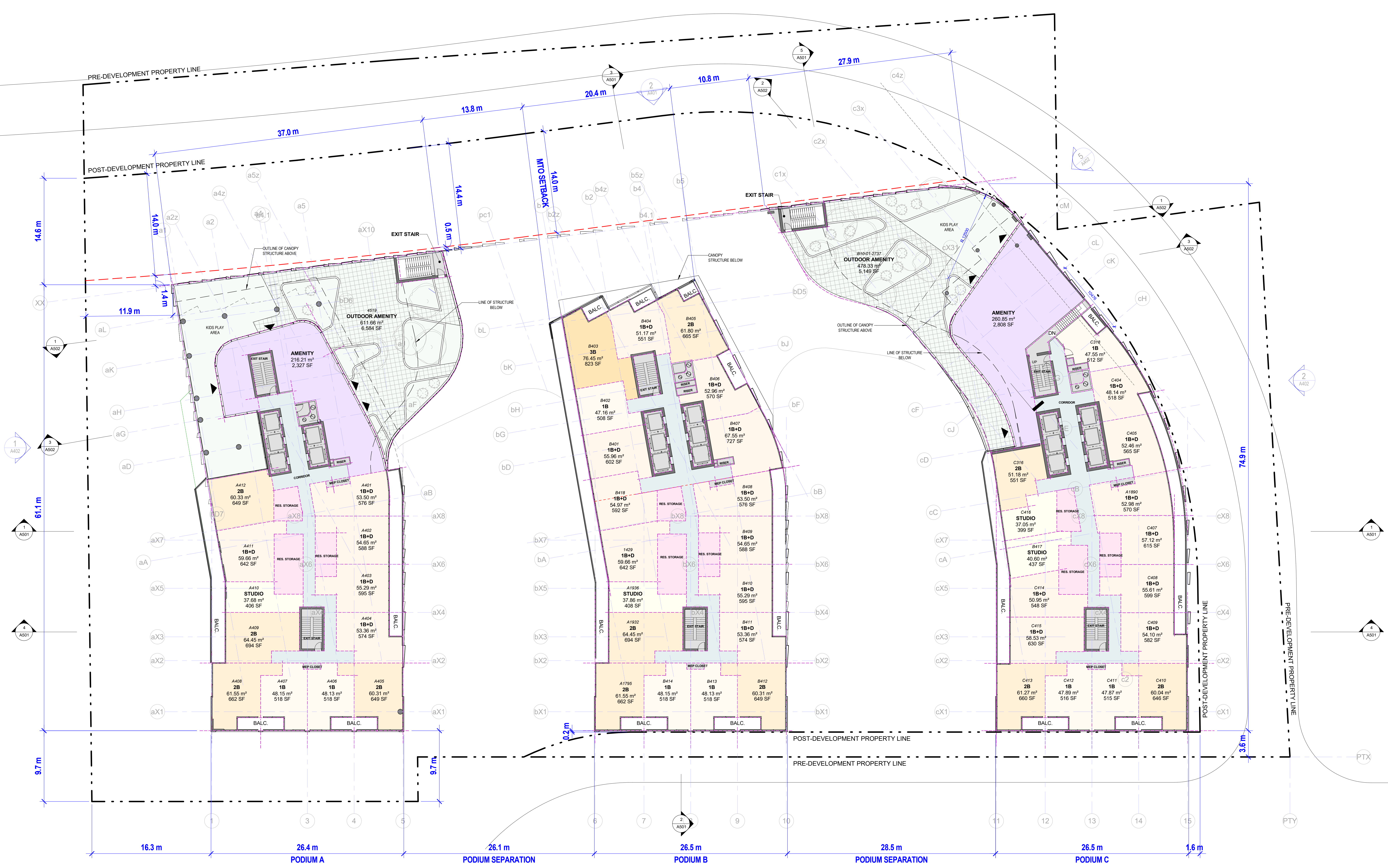
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- ARCHITECT
Teepie Architects Inc.
5 Camden Street, Toronto, ON, Canada, M5V 1V2
T: 416.598.0554
- STRUCTURAL
-
- MECHANICAL
-
- ELECTRICAL
-
- LANDSCAPE
Public City Architecture Inc.
11-650 Clifton Street, Winnipeg, MN, R3G 2X6
T: 204-478-9323
- TRAFFIC
Trafalgar Engineering Limited
300-45 St. Clair Avenue West, Toronto, ON, M5V 1K9
T: 416.567.1710
- SOLID WASTE MANAGEMENT
R.J. Burnside & Associates Limited
1465 Pickering Parkway, Pickering, ON, L1V 7G7
T: 905.285.9652
- PLANNING
Busfields Inc.
3 Church Street, Toronto, ON, M5E 1M2
T: 416.947.9744
- CLIENT
Distrikt Developments
1-50 Vantage Avenue, Toronto, ON, Canada M8B 1P5
T: 416.628.9038

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LEVEL 4 PLAN

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22-106	1: 200
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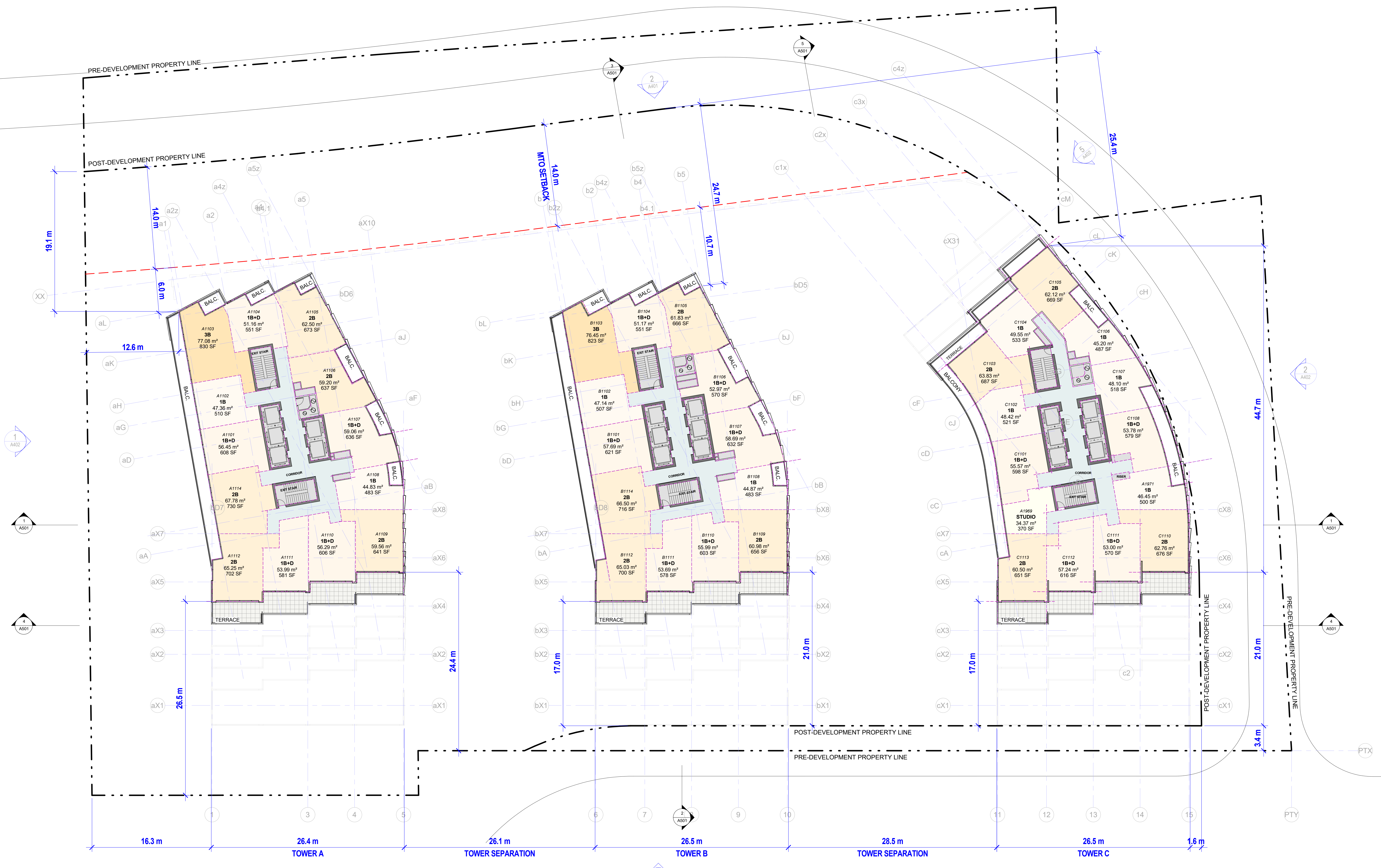
A209

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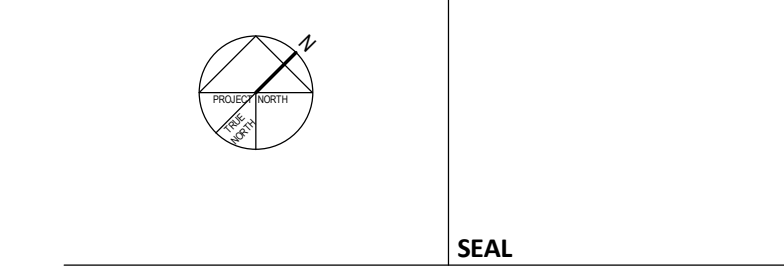
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T. 905.338.3368
- TRAFFIC**
BA Consulting Group Limited
300-45 St. Clair Avenue West, Toronto, ON, M5V 1K9
T. 416.961.7110
- SOLID WASTE MANAGEMENT**
R.J. Burnside & Associates Limited
1465 Pickering Parkway, Pickering, ON, L1V 7G7
T. 1.800.265.9652
- PLANNING**
Bousfields Inc.
3 Church Street, Toronto, ON, M5E 1M2
T. 416.947.9744
- CLIENT**
District Developments
1-500 Vinsing Avenue, Toronto, ON, Canada M8B 1P5
T. 416.628.9038
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LEVEL 11 PLAN

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FORMAT	PLOT DATE

A216

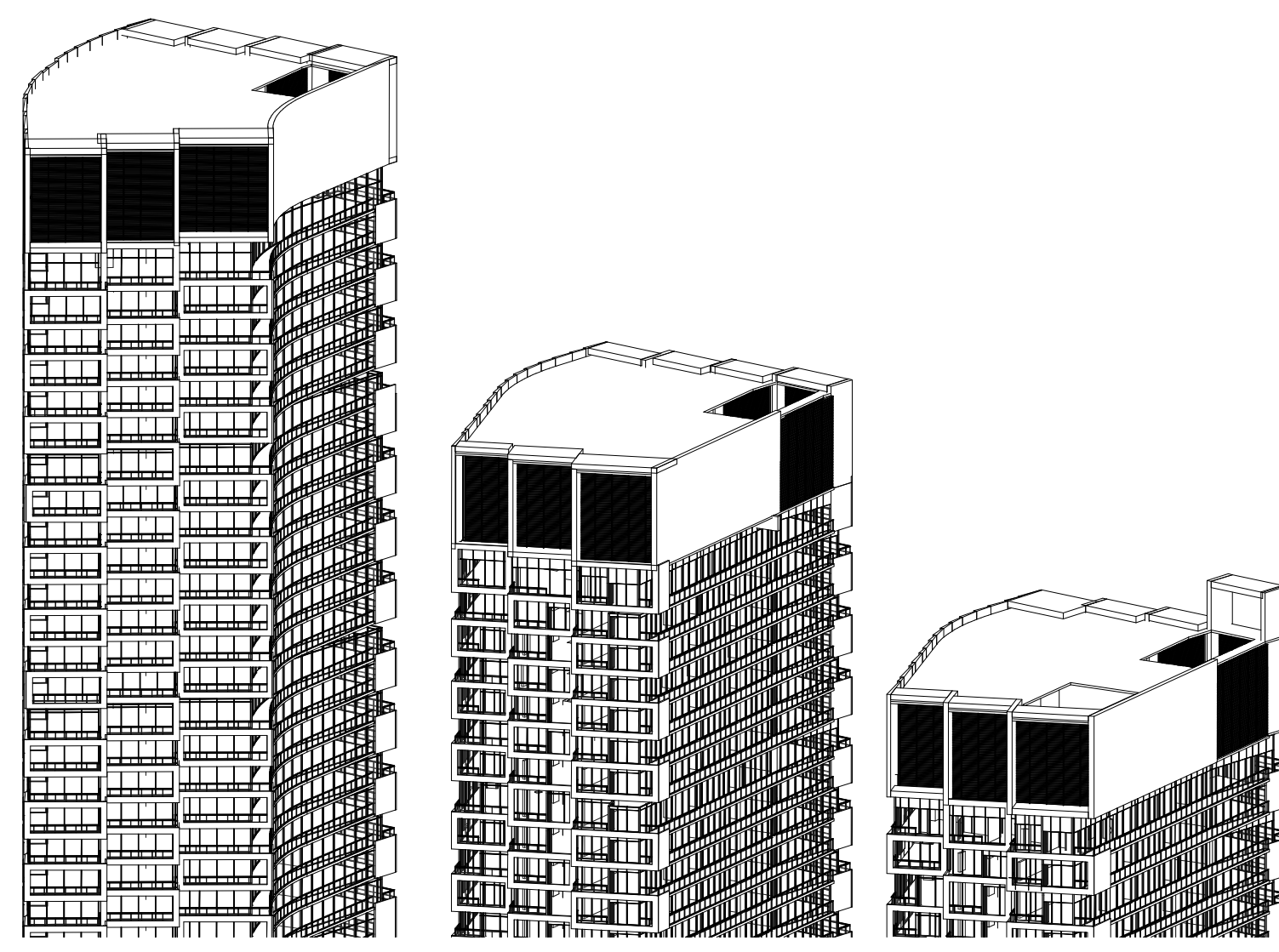
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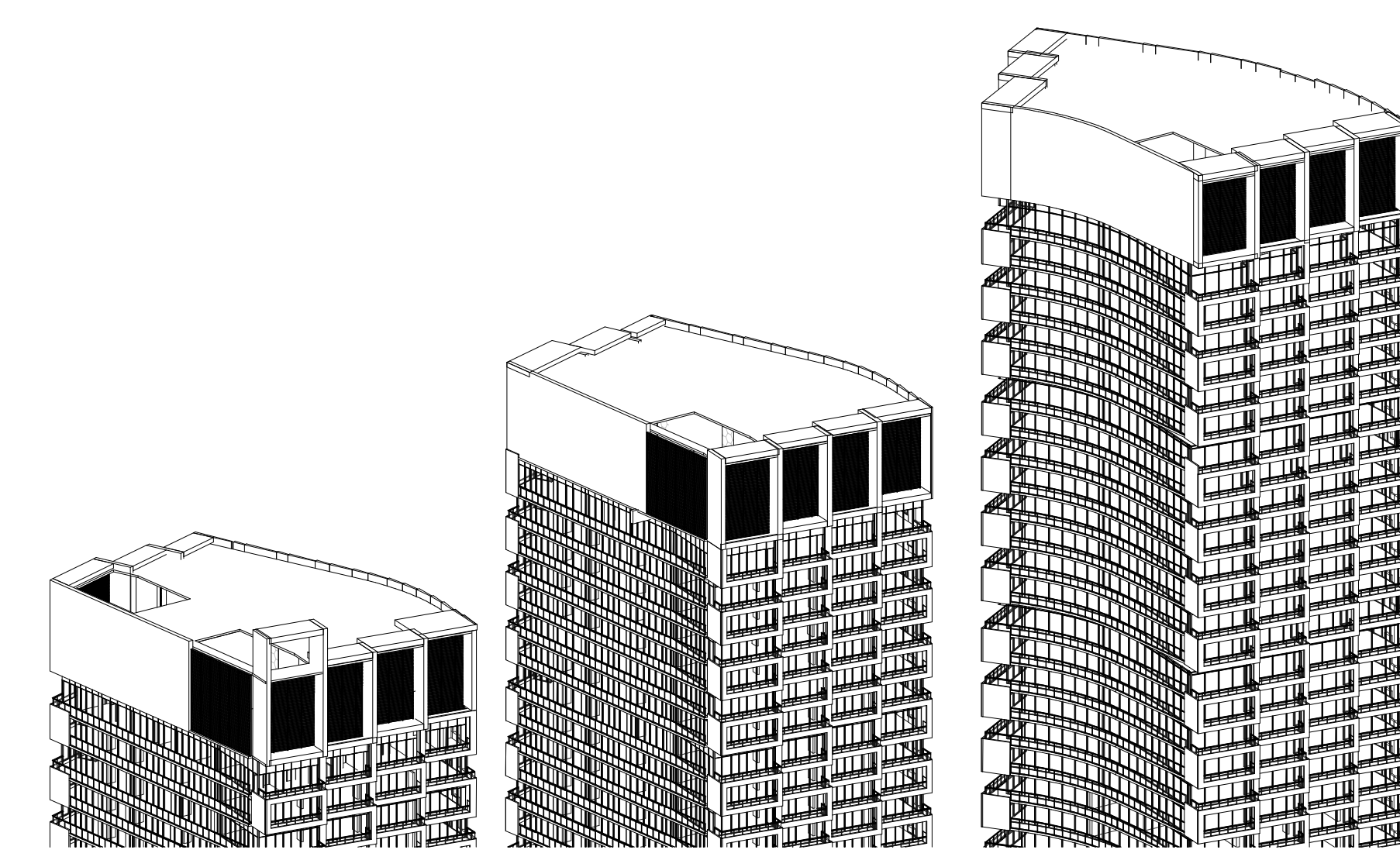
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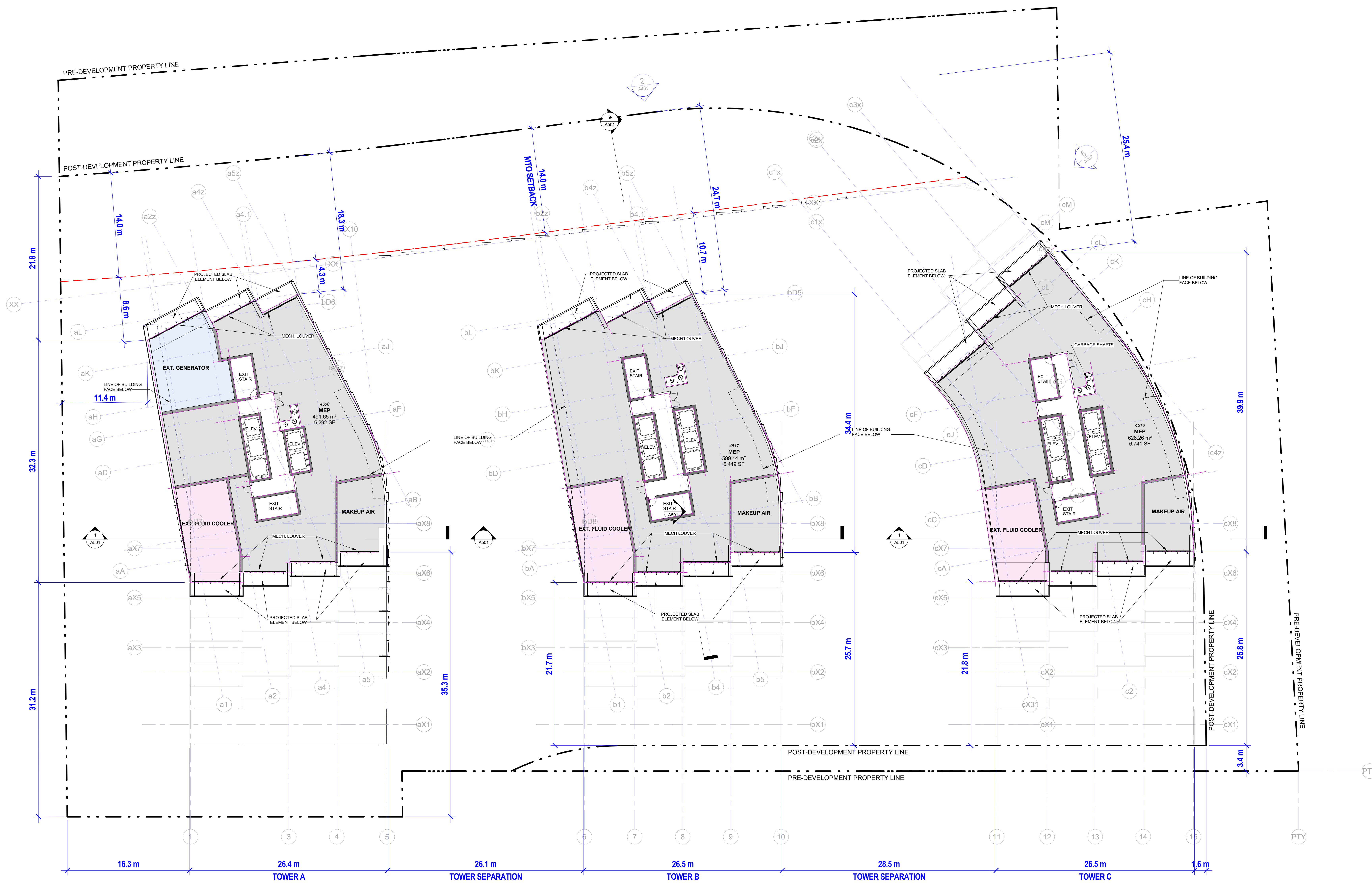
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3D - MPH - N-W 5 A223



3D - MPH - S-W 4 A223

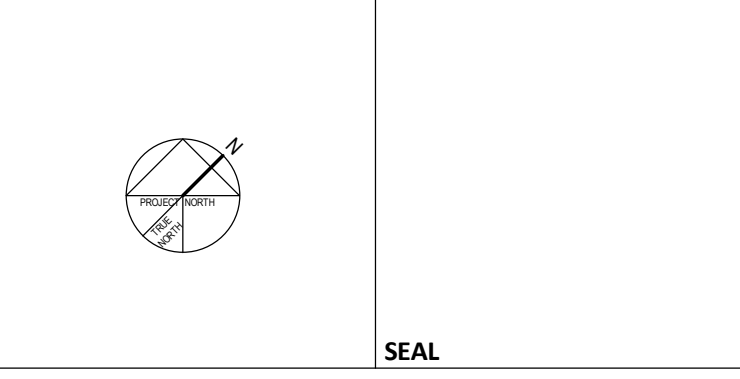


TOWER A MPH PLAN @ LEVEL 46 1 A223 1:200

TOWER B MPH PLAN @ LEVEL 51 2 A223 1:200

TOWER C MPH PLAN @ LEVEL 58 3 A223 1:200

- ARCHITECT
Teepie Architects Inc.
5 Camden Street, Toronto, ON, Canada, M5V 1V2
T: 416.598.0554
- STRUCTURAL
-
- MECHANICAL
-
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-
- LANDSCAPE
Public City Architecture Inc.
11-600 Clifton Street, Winnipeg, MN, R3G 2X6
T: 204-476-9923
- CLIENT
Trafalgar Engineering Limited
1-881 Mountain Road, Oakville, ON, L6K 2W6
T: 905.338.3068
- TRAFFIC
BA Consulting Group Limited
300-46 St. Clair Avenue West, Toronto, ON, M5V 1K9
T: 416.597.1710
- SOLID WASTE MANAGEMENT
R.J. Burnside & Associates Limited
1465 Pickering Parkway, Pickering, ON, L1V 7G7
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Bousfields Inc.
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T: 416.947.9744
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LEVEL MPH PLAN

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