

Noise and Vibration Impact Study

**121 Vansitmart Avenue Hamilton,
Ontario**
SW22183.00

Prepared For
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1.0 Introduction

At the request of Urban Solutions (Client), Thornton Tomasetti (TT) presents this Noise Impact Study (NIS) regarding the planned Vansitmart Residential Development located at 121 Vansitmart Avenue, Hamilton, Ontario (the Project).

The purpose of this study is to assess the noise impact on the Project from surrounding noise sources and the noise impact of the Project on surrounding noise sensitive areas. This report is intended to support the Site Plan Approval (SPA) application for the Project as a detailed study.

Where applicable, this report will provide noise control recommendations to meet the requirements of the relevant Land Use Planning Authority (LUPA), and noise criteria developed by the Ontario Ministry of the Environment, Conservation and Parks (MECP).

Where predicted noise impacts are lower than applicable action thresholds identified, the project should be designed to meet the Ontario Building Code (OBC) as a minimum standard.

1.1 Previous Reports

TT has reviewed the following documents previously prepared by third parties in relation to the proposed development:

- *Environmental Noise And Vibration Impact Study “The Vansitmart Residential Development” Located at 121 Vansitmart Avenue Hamilton Ontario*, prepared by dBA Acoustical Consultants Inc., dated February 2021
- *Environmental Noise and Vibration Study Peer Review Proposed Residential Development 121 Vansitmart Avenue City of Hamilton*, prepared by Jade Acoustics Inc. dated March 16, 2022

TT prepared a previous version of this report, and has received feedback from CN’s representative as follows:

- *Noise and Vibration Impact Study 121 Vansitmart Avenue Hamilton, Ontario SW22183.00*, prepared by TT, dated November 28, 2022.
- *Noise and Vibration Impact Study Peer Review Proposed Residential Development 121 Vansitmart Avenue City of Hamilton*, prepared by Jade Acoustics Inc. dated February 27, 2023.
- *Noise and Vibration Impact Study 121 Vansitmart Avenue Hamilton, Ontario SW22183.00*, prepared by TT, dated October 13, 2023.
- *Noise and Vibration Impact Study Peer Review Proposed Residential Development 121 Vansitmart Avenue City of Hamilton*, prepared by Jade Acoustics Inc. dated February 26, 2024.
- *Noise and Vibration Impact Study 121 Vansitmart Avenue Hamilton, Ontario SW22183.00*, prepared by TT, dated August 20, 2024.

- *Noise and Vibration Impact Study Peer Review Proposed Residential Development 121 Vansitmart Avenue City of Hamilton*, prepared by Jade Acoustics Inc. dated September 25, 2024.

This report reflects the final revisions to architectural plans agreed to with CN Rail including various mitigation measures and other considerations for noise.

2.0 Site and Surrounding Area

2.1 Project Location

The Project is located on the north side of Vansitmart Avenue, between Cope Street and Tragina Avenue North, approximately 400m west of Kenilworth Avenue North.

The Project is bordered on the north by the Canadian National Railway (CN) Grimsby Subdivision right-of-way and approximately 75m beyond that by the CN Parkdale Yard. The Project is bordered on the east, south, and west by residential land uses. The broader neighborhood includes mixed commercial and industrial uses to the north of the Project, and residential uses to the east, south and west of the Project.

The Project Site is currently occupied by:

- Townhouse development: Kemp Construction Ltd., a construction company which uses the property as an office space and equipment yard.
- Detached home "A": currently vacant residential property.
- Detached home "B": currently vacant residential property.

An illustration of the project location and surrounding area is provided in Figure 1.

2.2 Zoning & Official Plan

The Project site is zoned as RT-20 "Townhouse" under the City of Hamilton Zoning By-Law No. 6593, amended by By-Law No. 18-165, and C "Urban Protected Residential" and is designated as "Neighborhoods" under the City of Hamilton's Urban Official Plan. Surrounding areas are zoned for residential (C) and industrial (M5, M6) uses.

A zoning map is presented in Figure 2.

2.3 Planned Development

The Project will consist of:

- Four new 3 storey back-to-back townhouse blocks, with a total of 40 units. The maximum height of the buildings will be 12.5m. In this report, the townhouse blocks are referred to as Block 1 (northernmost) through to Block 4 (southernmost). No outdoor living areas are associated with the townhouse development.
- Lot "A", a new 2 storey dwelling, located adjacent to the southeast corner of the townhouse lot. This property will include an outdoor living area located on west side of the dwelling.

- Lot “B”, a new 3 storey dwelling, located adjacent to the west of the townhouse lot. This property will include an outdoor living area located on the east side of the dwelling.

The proposed new site plan is provided in Figure 3 and Appendix B.

2.4 Site Inspection

TT personnel attended the Project site on October 27, 2022, and September 27, 2023, to inspect the acoustical and vibration environment in the area of the Project.

Transportation noise at the Project site was observed to be dominated by the adjacent CN Rail tracks. Transportation noise is discussed in Section 5.0 of this report.

Audible noise from rail yard activities and a steady noise source located to the north was observed at the Project site. It was unclear from the ground if the steady noise source was associated with the adjacent rail yard, or the industrial facility located north of the rail yard. Stationary noise sources are discussed in Section 6.0 of this report.

2.4.1 Sound Level Measurements

TT contacted CN rail by email at proximity@cn.ca requesting any available information about current / future activities in the rail yard, as well as access and/or cooperation with the rail yard to perform field measurements of typical rail yard activities. Emails were sent to CN in relation to this inquiry on July 26, 2022, August 8, 2022, August 24, 2022, August 29, 2022, and October 14, 2022. No responsive answer was received, therefore TT proceeded with conducting noise measurements from the Project Site itself on October 27, 2022.

Measurements of the observed steady noise level were conducted at points coinciding with the planned north façade of townhouse Block 1. The steady sound level was found to be approximately 53-56 dBA on average at the planned north façade of townhouse Block 1 in readings conducted in the morning and afternoon respectively. The steady sound level was found to be approximately 50 – 52 dBA on average at the planned north façade of townhouse Block 2.

Measurements of the observed impulse noise level from activities in the train yard (coupling & taking out slack), with maximum coupling impulse sound levels recorded to be 68 – 72 dBAI. Additionally, one longer train departed the yard during the measurement period, resulting in a maximum recorded impulse sound level of 86 dBAI when the slack between each car was removed. All impulse measurements were taken at the approximate location of the north façade of townhouse Block 1.

Details of the measurement conditions, methodology, and results are included in Appendix E and discussed in Section 6.0.

2.4.2 Vibration Measurements

Ground borne vibration measurements were conducted at the north façade of townhouse Block 1 and Block 2 (V-01 and V-02) on October 27, 2022.

Following the receipt of the February 27, 2023, peer review comments, additional vibration measurements were conducted at the northeast and northwest corners of townhouse Block 1 on September 27, 2023.

Details of the measurement methodology and results are discussed in Section 7.0.

2.1 Topography

Based on the observed and/or reported conditions on and around the Project site, the local topography is expected to be approximately flat.

3.0 Ministry of the Environment Conservation and Parks

The MECP's *Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning* (NPC-300) provides province wide assessment standards and criteria for evaluating noise impacts from transportation sources such as roads, railways and aircraft, as well as stationary sources such as mechanical equipment, and industrial facilities. In preparing this NIS report, TT has referred to *Part A Background and Part C Land Use Planning* of NPC-300.

This NIS report has been prepared to support land use planning decisions and is not intended to support an application for an Environmental Compliance Approval (ECA) in accordance with *Part B Stationary Sources* of NPC-300, and Section 9 of the Environmental Protection Act.

4.0 Land Use Planning Authority

In addition to the MECP's standards and criteria, some LUPAs impose additional requirements on applications for development approval. The LUPAs for this Project are the City of Hamilton which generally defers to the MECP's guidelines as documented in NPC-300.

5.0 Transportation Noise Assessment

5.1 Critical Transportation Noise Receptors

NPC-300 defines a point of reception for the assessment of transportation noise sources as either the Plane of Window (POW) of a noise sensitive indoor space or an Outdoor Living Area (OLA) representing an area of a noise sensitive land use intended for quiet enjoyment of the outdoor environment.

The POW receptor(s) most likely to be affected by transportation noise are those representing the residential suites of the Project that have maximum exposure to the adjacent CN rail tracks. Specifically, POW receptors were assessed for the northwest and northeast corners of townhouse Block 1, and the northeast corner of townhouse Block 2, at the highest elevation with windows.

Based on provided site plans of the Project, TT understands that no outdoor amenity areas are planned for the townhouse development, however OLA receptors have been considered for the detached dwellings.

The locations of the critical receptors for transportation noise are summarized in Table 1 and shown in Figure 4. POW elevations were taken to be the representative height for 3rd floor windows, as specified in NPC-300.

Table 1: Points of Reception – Transportation Noise

Receptor ID	Receptor Description	Receptor Location
POW1	Block 1, northwest corner	North façade, 7.5m above ground
POW2	Block 1, northeast corner	North façade, 7.5m above ground
POW3	Block 2, northeast corner	North façade, 7.5m above ground
OLA1	Lot "B" rear yard*	3m from façade, 1.5m above ground

*Lot "B" (OLA1) is closer to the rail yard and more impacted by rail yard activities than Lot "A", therefore OLA1 is also conservatively representative of the transportation noise impacts to Lot "A".

5.2 Transportation Noise Sources

5.2.1 Road Noise Sources

The nearest roads to the Project site (Vansitmart Avenue, Cope Street, and Tragina Avenue North) have low levels of daily traffic, and the nearest significant streets (Barton Street East ~170m to the south, and Kenilworth Avenue North ~400m to the west) are shielded from the Project site by existing residential properties. Road traffic noise at the Project site is expected to be insignificant.

5.2.2 Rail Noise Sources

A railway operated by CN is located adjacent to the north of the Project, with the closest tracks approximately 50m from the nearest planned façade of the Project. Rail traffic data was obtained from CN pertaining to Mile 40.49 of the CN Grimsby Subdivision, in the vicinity of Kenilworth Avenue North, which is representative of the conditions impacting the Project.

This section of the Grimsby Subdivision is classified by CN as a Double Main Line. CN traffic on this rail line consists of freight, way freight, and passenger trains. According to the CN data, this track is continuously welded rail. There are three at-grade crossings in the area, but anti-whistling by-laws are in effect; therefore, train whistling is not expected outside of emergency situations. All trains are assumed to be diesel trains.

It is TT's understanding that these rail lines are also used infrequently by GO Transit for the Lakeshore West line, between the West Harbour GO Station and the St. Catherines GO Station. Current GO Transit traffic is low (~2 trips per day), but TT understands that Metrolinx's projections for future traffic include up to 93 trips per day along the lakeshore west line. The future projected data, as summarized in Table 2 is considered representative of the total rail traffic volume.

The 2022 CN train traffic volumes provided were projected to 2034 (10 years after the anticipated completion of the Project) using an annual growth rate of 2.5% for a 10-year period.

Table 2: Rail Traffic Data Summary

Parameter	CN Grimsby Subdivision			
	Freight	Way Freight	Passenger	GO Transit
Train Type				
Number of Trains Per Day (2022) Day (07:–0 - 23:00) / Night (23:–0 - 07:00)	4 / 0	0 / 2	2 / 0	88 / 5
Annual Growth Rate	2.5%	2.5%	2.5%	2.5%
Growth Period (years)	12	12	12	0
Locomotives Per Train	4	4	2	2
Cars Per Train	140	25	10	12
*Maximum Speed (mph) / (km/h)	30 / 50	30 / 50	30 / 50	30 / 48

*Note that the maximum speed of 30 mph reported by CN in 2022 is significantly lower than the maximum speed of 60-95 mph reported by CN in 2016.

A copy of the rail traffic data provided by CN is included in Appendix C.

5.2.3 Aircraft Noise Sources

No airports located in the vicinity of the project have been identified.

5.3 Transportation Sound Level Limits

5.3.1 Indoor Living Areas

Impacts at POWs from rail traffic are assessed against a 16-hour daytime (07:00 – 23:00) and 8-hour nighttime (23:00 – 07:00) equivalent sound pressure level (L_{eq}) reported in dBA to determine the requirement for ventilation and warning clauses. The applicable POW sound level limits and the sliding scale of required ventilation measures and warning clauses are listed in Table 3. Note that whistle noise is not included in the assessment of rail noise for this purpose.

Table 3: POW Sound Level Limit: Ventilation & Warning Clauses – Rail Traffic

Category	Daytime $L_{eq,16hr}$ (dBA)	Nighttime $L_{eq,8hr}$ (dBA)	Mitigation Measures	NPC-300 Warning Clause Required
POW Limit	55	50	None	None
POW Mitigation Threshold Living & Bedrooms	–6 - 65	51 – 60	Include forced air heating and provision for central air conditioning	Type C
POW Mitigation Threshold Living & Bedrooms	>65	>60	Include central air conditioning	Type D

Impacts to indoor noise levels from rail traffic are assessed against a 16-hour daytime (07:00 – 23:00) and 8-hour nighttime (23:00 – 07:00) equivalent sound pressure level (L_{eq}) reported in dBA at representative POW receptors to determine the requirement for acoustically designed building components. The applicable indoor sound level limits and required noise reduction measures for rail noise at in the indoor

environment are listed in Table 4. Note that whistle noise is included in the assessment of rail noise for this purpose.

Table 4: Indoor Sound Level Limit: Construction Requirements – Rail Traffic

Category	Daytime $L_{eq,16hr}$ (dBA)	Nighttime $L_{eq,8hr}$ (dBA)	Total $L_{eq,24hr}$ (dBA)	Mitigation Measures
Rail Sound Level Indoor Limit Living Rooms / Bedrooms	40 / 40	40 / 35	-	Not Applicable
Rail POW Sound Level Living & Bedrooms	>60	>55	-	Design building components to achieve indoor sound level limit
Rail POW Sound Level Bedrooms	-	-	>60	Minimum of brick veneer or masonry equivalent construction from foundation to rafters in 1 st row of dwellings if within 100m of tracks

5.4 Transportation Sound Level Predictions

5.4.1 Rail Traffic

Calculations of rail traffic sound levels were performed using STAMSON 5.04, the software implementation of the MECP ORNAMENT model, which was developed and published by the MECP for transportation noise prediction. The calculated sound levels at the receptors are presented in Table 5.

Table 5: Calculated Sound Levels due to Rail Sources

POR ID	Predicted Transportation Sound Levels (dBA)	
	Daytime (07:00–23:00) $L_{eq,16hr}$	Nighttime (23:00–07:00) $L_{eq,8hr}$
POW01	66	58
POW02	66	58
POW03	61	53
OLA1	54	N/A

The STAMSON calculation outputs for the traffic noise predictions are attached in Appendix D.

5.5 Transportation Noise Control Recommendations

Noise control recommendations for the identified critical receptors and the corresponding noise sensitive land uses that they represent in the proposed redevelopment are summarized in Table 6 and discussed in the subsequent sections.

Table 6: Transportation Noise Control Measures Summary

POR ID	Noise Barrier	Ventilation	Warning Clause	Building Components
POW1	N/A	Central AC	Type D	Designed to achieve indoor sound level criteria, use brick veneer or equivalent
POW2	N/A	Central AC	Type D	Designed to achieve indoor sound level criteria, use brick veneer or equivalent
POW3	N/A	Central AC*	Type D	Designed to achieve indoor sound level criteria
OLA1	Not required	N/A	None	N/A

*In anticipation of Class 4 designation.

5.5.1 Outdoor Living Areas – Barriers

Because no OLA receptors were identified in the townhouse blocks, barrier mitigation of noise levels in outdoor living areas of the townhouses is not anticipated to be applicable.

Outdoor living areas associated with the Lot “A” and Lot “B” dwellings are expected to be sufficiently distant and shielded from the rail activities so that based on a representative receiver (OLA1), barrier mitigation for these locations is not anticipated to be necessary for the purposes of transportation noise.

The adjacent railway line is classified as a Double (Secondary) Main Line. In accordance with the *Guidelines for New Development in Proximity to Railway Operations Prepared for the Federation of Canadian Municipalities and the Railway Association of Canada (May 2013)*, it is generally recommended that a noise barrier be constructed in the railway right-of-way, parallel to the railway with returns at each end, and a minimum height of 4.5m above track level. It should be noted that this general recommendation is provided for reference only. Due to the height of the development, and the lack of barriers on adjacent properties, the actual acoustical benefit of this barrier would be negligible, and it has been omitted from all modeling described in this report. TT does not consider this barrier to be necessary for the purposes of noise mitigation.

NPC-300 indicates that noise barriers, if constructed, should have a minimum surface density (face weight) of 20 kg/m². Barriers should be structurally sound, appropriately designed to withstand wind and snow load, and constructed without cracks or surface gaps. Any gaps under the barrier that are necessary for drainage purposes should be minimized and localized, so that the acoustical performance of the barrier is maintained. To improve the visual characteristics of the barrier, transparent elements and/or soil berms may be included, if they meet the above conditions.

5.5.2 Indoor Living Areas - Ventilation

TT understands that the Project plan includes forced air heating and central air conditioning for the entirety of the Project, therefore ventilation requirements for the development are considered to be met.

5.5.3 Indoor Living Areas - Building Components

Sensitive receptors along the north, east and west façades of townhouse Block 1 of the Project are expected to face POW sound levels above 60 dBA over a full 24-hour day due to noise from rail traffic and are located within 100m of a railway. Therefore, the exterior façade of these receptors is required to use, as a minimum, brick veneer or masonry equivalent construction from foundation to rafters.

Sensitive receptors along the north, east and west façades of all townhouse blocks for the Project are expected to face POW sound levels above 60 dBA during the 16-hour day (07:00 – 23:00) and/or 55 dBA during the 8-hour night (23:00 – 07:00) due to rail noise, therefore building components on these façades must be designed to achieve the indoor sound level limit.

Table 7 shows TT’s estimation of the maximum exterior wall, fixed window, and operable window component areas as a percentage of the floor area of a typical room and the minimum recommended STC requirement of each component to address transportation noise. If a component with a higher STC rating than the noted requirement is used, then the maximum allowable area of that component may increase, and if a component occupies a smaller area the STC rating required may decrease.

Table 7: Building Envelope Requirements for Transportation Noise

Component	Maximum Component Area as Percentage of Floor Area	Equivalent STC
Sensitive Spaces Along the North, East & West Façade of Townhouse Block 1		
Solid Exterior	100%	Brick Veneer or Masonry Equivalent*
Fixed Glazing	50%	36
Operable Glazing	50%	36
Sensitive Spaces Along the North, East and West Façades of Townhouse Block 2, 3, 4 & Lot “A” and Lot “B” Detached Dwellings		
Solid Exterior	100%	35
Fixed Glazing	50%	31
Operable Glazing	50%	31

*Brick veneer or masonry equivalent is expected to provide an STC rating of ~54.

Note that these building components are required only for exterior walls of sensitive spaces, such as bedrooms and living rooms. For the purposes of addressing transportation noise, the remaining façades of the Project must meet minimum OBC requirements for the glazing and exterior wall constructions.

5.5.4 Example Constructions

Unless otherwise specified, all building components must meet the minimum STC requirements set out in OBC. Examples of building components that are expected to meet the identified STC requirements for transportation noise above are as follows. Example constructions described in *Building Research Note No. 148* (BRN-148) published by the National Research Council of Canada in 1980 are provided for reference only, and installed performance should be confirmed with material suppliers and/or as part of an architectural acoustics report.

Exterior wall

For exterior walls, the following construction(s) are recommended to meet the identified STC requirements:

- Block 1 north, east, and west façade, brick veneer or masonry equivalent (BRN-148: EW5 – STC ~54):
 - 12.7mm gypsum board
 - vapour barrier
 - 38 x 89 mm studs
 - 50 mm (or thicker) mineral wool or glass fibre batts
 - Sheathing
 - 25 mm air space
 - 100 mm brick veneer
- Block 2, 3, 4 north, east & west façades, solid exterior (STC-35+):
 - Typical OBC constructions expected to be sufficient

These provided glazing constructions are noted for reference only – STC of installed components should be verified with the window manufacturer. Window frames may create flanking paths for noise and could reduce the STC rating of windows compared to the rating of glazing alone; manufacturer specifications for window performance should be based on testing of window constructions that are similar or equivalent to the planned installation. Any window constructions with equivalent or greater STC values to the glazing recommendations above is expected to be acceptable.

Note that additional and stricter requirements for building construction have been identified in relation to the Class 4 designation and mitigation of stationary noise impacts. These are discussed in Section 6.5 and Section 8.0 of this report.

5.5.5 Warning Clauses

The following examples of warning clause wordings are based on applicable guidance documents and TT's experience regarding common requests from stakeholders. Precise wordings may be modified by the Client with input from the relevant LUPA(s), stakeholders, and/or legal counsel if required.

The **Type D** warning clause is required to be included in the development agreements for specific dwelling units if one or more representative POW receptors is predicted to be exposed to transportation sound pressure levels greater than 65 dBA during the 16-hour day (07:00 – 23:00) or 60 dBA during the 8-hour night (23:00 – 07:00), and the Project includes central air conditioning. The Type D warning clause is as follows:

"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."

The **CN Rail** warning clause should be included in the development agreements for the Project. The typical rail warning clause is as follows:

"Canadian National Railway Company or their assigns or successors in interest has or have a right-of-way within 300 meters from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may

expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). The railway will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."

The **Metrolinx** warning clause should be included in the development agreements for the Project. The typical rail warning clause is as follows:

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

6.0 Stationary Noise Assessment

6.1 Critical Stationary Noise Receptors

NPC-300 defines a point of reception for the assessment of stationary noise sources as any location on a noise sensitive land use where noise from a stationary source is received. This typically includes both points of reception on building façades, representing the plane-of-window of noise sensitive spaces (POR) and outdoor points of reception representing areas such as balconies, gardens, patios, and terraces (OPOR). These locations may be the same or different from the POW and OLA receptors identified as part of a transportation noise assessment.

6.1.1 Project Receptors

TT has modeled a total of 112 project points of reception (PPOR) at each window on the third floor (7.5m) of the proposed Project townhouse buildings. Impacts to the Lot A and Lot B detached homes have been modeled using a building evaluation to predict sound levels on all façades.

Based on provided site plans of the Project, TT understands that no outdoor amenity areas are planned for the townhouse development, however outdoor (POPOR) receptors have been considered for the detached dwellings (Lot A and Lot B).

The locations of the critical receptors on the Project for stationary noise are summarized in Table 8 and shown in Figure 5.

Table 8: Project Points of Reception – Stationary Noise

Receptor ID	Receptor Description	Receptor Location
PPOR_Block1_North_01 – PPOR_Block1_North_10	Block 1, north façade	7.5m above ground
PPOR_Block1_East_01 – PPOR_Block1_East_04	Block 1, east façade	7.5m above ground
PPOR_Block1_South_01 – PPOR_Block1_South_10	Block 1, south façade	7.5m above ground
PPOR_Block1_West_01 – PPOR_Block1_West_04	Block 1, west façade	7.5m above ground
PPOR_Block2_North_01 – PPOR_Block2_North_10	Block 2, north façade	7.5m above ground
PPOR_Block2_East_01 – PPOR_Block2_East_04	Block 2, east façade	7.5m above ground
PPOR_Block2_South_01 – PPOR_Block2_South_10	Block 2, south façade	7.5m above ground
PPOR_Block2_West_01 – PPOR_Block2_West_04	Block 2, west façade	7.5m above ground
PPOR_Block3_North_01 – PPOR_Block3_North_10	Block 3, north façade	7.5m above ground
PPOR_Block3_East_01 – PPOR_Block3_East_04	Block 3, east façade	7.5m above ground
PPOR_Block3_South_01 – PPOR_Block3_South_10	Block 3, south façade	7.5m above ground
PPOR_Block3_West_01 – PPOR_Block3_West_04	Block 3, west façade	7.5m above ground
PPOR_Block4_North_01 – PPOR_Block4_North_10	Block 4, north façade	7.5m above ground
PPOR_Block4_East_01 – PPOR_Block4_East_04	Block 4, east façade	7.5m above ground
PPOR_Block4_South_01 – PPOR_Block4_South_10	Block 4, south façade	7.5m above ground
PPOR_Block4_West_01 – PPOR_Block4_West_04	Block 4, west façade	7.5m above ground
LOT A Detached Home	Lot A Detached Home	Building Evaluation
LOT_A_POPOR	Lot A Rear Yard	NW Corner of Lot, 1.5m above ground
LOT B Detached Home	Lot B Detached Home	Building Evaluation
LOT_B_POPOR	Lot B Rear Yard	NE Corner of Lot, 1.5m above ground

6.2 Stationary Noise Sources

NPC-300 defines a stationary source of noise as one or more sources of sound that are normally operated within a given property. Stationary sources typically include mechanical equipment such as Heating, Ventilation and Air Conditioning (HVAC) equipment, standby power generators with routine testing, and heavy vehicle traffic (truck idling, driving, and loading).

Certain sources of noise, such as residential air conditioners, passenger automobile traffic in parking lots, or temporary noise such as that related to construction are not considered to be stationary sources in

NPC-300 and are not assessed in this report. These sources are typically handled in a more qualitative fashion by applicable noise by-laws.

6.2.1 Project Sources

Due to the nature of the project (residential townhomes), no significant stationary noise sources are anticipated to be present.

6.2.2 Surrounding Sources

The CN Parkdale Yard is located 75m north of the through rail lines of the CN Grimsby Subdivision right-of-way, which is adjacent to the north of the Project Site. The CN Parkdale Yard serves the CN Metals Distribution Centre located at 419 Parkdale Avenue North, as well as the nearby industrial facilities. North of the rail yard is a large industrial facility operated by ArcelorMittal Dofasco Inc. located at 480 Kenilworth Avenue.

Based on publicly available information from the MECP's website Access Environment, the ArcelorMittal Dofasco Inc. facility is understood to have operated under a series of Certificates of Approval, the most recent of which is Number 5824-7U6RUX, dated July 26, 2009. As a condition of these certificates, the facility was required to meet applicable noise regulations at surrounding receptors, which would have included the residential properties adjacent to the east and west of the Project Site. TT has not reviewed the acoustical reports prepared in support of the industrial facility's approvals, however due to the proximity of existing sensitive receptors, it is assumed that the noise impacts from the industrial facility will also be compliant on the Project Site.

Based on observations made at the Project Site, TT has identified the following significant noise sources impacting the Project Site.

- Consistent steady noise was observed to be present throughout the duration of TT's field inspection;
- Shunting activities in the rail yard resulted in coupling related impulse noises; and,
- A train departing the rail yard resulted in a short duration noise as the slack was taken out of the train cars.

Although TT was unable to identify the source of the observed steady noise, it is assumed to be related to operations of the rail yard, due to the above noted compliance activities of the industrial facility.

Table 9 and Figure 5 provide a summary of the estimated surrounding stationary source data and assumed locations used for modelling.

Table 9: Stationary Noise Source – Measured Results

Source ID	Source Description	Source Sound Pressure		Source Sound Power	Source Type	Notes & Assumptions
		dBA/ dBAI	@ m*	dBA/ dBAI		
SNS-01	Measured Steady Noise	56	117	106	Steady	Measured @ N-01
INS-01	Measured Coupling Noise	72	65	116	Impulse	Measured @ N-01

Source ID	Source Description	Source Sound Pressure		Source Sound Power	Source Type	Notes & Assumptions
		dBA/ dBAI	@ m*	dBA/ dBAI		
INS-02	Measured Slack Taking Noise	86	53	128	Impulse	Measured @ N-01

*Distance to sources estimated based on field observations.

Based on information provided in the February 27, 2023, peer review comments, TT understands that CN expects the CN Parkdale Yard to include the following noise generating activities:

- Train movements in the yard;
- Offloading / loading of steel;
- Shunting of railcars to make up trains;
- Coupling of locomotives to railcars; and,
- Idling of locomotives.

TT's modelling includes a combination of the measured sound level data, and input provided in the February 27, 2023 peer review, as detailed in Table 10 and illustrated in Figure 5. Note that operating time for each source is assumed to be the same during the day, evening, and night.

Table 10: Stationary Noise Sources Modelled

Source ID	Source Description	Source Type	Sound Power Level (Linear, 1/3 Octave)									Total		Units
			31.5	63	125	250	500	1000	2000	4000	8000	dBA	dBZ	
CN_Yard	Train Movements & Shunting	Area, Steady	112.2	112.9	108.4	106.0	99.0	97.8	100.6	94.7	78.8	105.6	117.0	Leq-1hr
CN_Idle_1 CN_Idle_2 CN_Idle_3	Locomotive Idling	Point, Steady	117.4	113.1	109.0	97.1	103.6	102.0	98.8	92.2	89.3	106.3	119.5	Leq-1hr*
CN_Imp	Coupling, Slack Taking, Loading	Area, Impulse	135.7	135.3	133.4	126.3	117.8	119.8	120.6	115.0	106.1	126.1	140.0	LIm**

*Each idling locomotive was assumed to operate for 30 min/hr

**Based on measurement INS-02, with adjusted total power level to LIm of INS-01 & INS-02

6.3 Project Area Classification

NPC-300 defines the applicable sound pressure level limit at a given receptor as the higher of a set exclusionary sound level limit based on the area classification of that receptor, or the actual background sound level at the location of the receptor, whichever is higher. In this report, the defined exclusionary limits were used for the purposes of assessing compliance.

The Project is currently located in a Class 1 area as defined in NPC-300, based on the surrounding area features and its distance from major roads. The Project site could potentially also meet the conditions to be considered a Class 4 area as defined in NPC-300.

6.3.1 Class 1 Area Exclusionary Sound Level Limits

NPC-300 defines a Class 1 area as having an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as “urban hum” during both day and night.

Table 11 provides a summary of the applicable exclusionary sound level limits for steady noise sources impacting receptors in a Class 1 area. Steady stationary noise sources are assessed against a 1-hour equivalent sound pressure level (L_{eq}) expressed in A-weighted decibels (dBA). Routine testing of emergency equipment, if applicable, is assessed separately from other stationary noise sources, and is compared to sound level limits that are 5 dBA higher than would otherwise apply.

Table 11: Class 1 Exclusionary Sound Level Limits – Steady Noise

Time Period	Normal Operations Steady Noise ($L_{eq,1hr}$, dBA)		Emergency Equipment Testing Steady Noise ($L_{eq,1hr}$, dBA)	
	POR	OPOR	POR	OPOR
Daytime (07:00 – 19:00)	50	50	55	55
Evening (19:00 – 23:00)	50	50	55	55
Nighttime (23:00 – 07:00)	45	-	50	-

Table 12 provides a summary of the applicable exclusionary sound level limits for impulse noise sources impacting receptors in a Class 1 area, based on the number of impulses generated by stationary sources in a one-hour period. Impulse noise sources are assessed against a Logarithmic Mean Impulse Sound Level, (L_{LM}) expressed in A-weighted impulsive decibels, dBAI. Impulse noise sources are assessed separately from steady noise sources.

Table 12: Class 1 Exclusionary Sound Level Limits – Impulsive Noise

Actual Number of Impulses in One Hour	Impulsive Sound Level Limits, Class 1 Area (L_{LM} , dBAI)	
	POR (L_{LM} , dBAI) Daytime (07:00 – 23:00) / Nighttime (23:00 – 07:00)	OPOR (L_{LM} , dBAI) Daytime (07:00 – 23:00) Only
9 or more	50 / 45	50

6.3.2 Class 4 Area Exclusionary Sound Level Limits

NPC-300 defines a Class 4 area as having an acoustical environment typical of Class 1 or Class 2, but which has not previously had noise sensitive land use(s), is intended for development with new noise sensitive land use(s) that are not yet built, is in proximity to existing, lawfully established stationary noise source(s), and has formal confirmation from the LUPA that a Class 4 designation is appropriate.

Table 13 provides a summary of the applicable exclusionary sound level limits for steady noise sources impacting receptors in a Class 4 area.

Table 13: Class 4 Exclusionary Sound Level Limits – Steady Noise

Time Period	Normal Operations Steady Noise ($L_{eq,1hr}$, dBA)		Emergency Equipment Testing Steady Noise ($L_{eq,1hr}$, dBA)	
	POR	OPOR	POR	OPOR
Daytime (07:00 – 19:00)	60	55	65	60
Evening (19:00 – 23:00)	60	55	65	60
Nighttime (23:00 – 07:00)	55	-	60	-

Table 14 provides a summary of the applicable exclusionary sound level limits for impulse noise sources impacting receptors in a Class 4 area, based on the number of impulses generated by stationary sources in a one-hour period.

Table 14: Class 4 Exclusionary Sound Level Limits – Impulsive Noise

Actual Number of Impulses in One Hour	Impulsive Sound Level Limits, Class 1 Area (L_{LM} , dBAI)	
	POR (L_{LM} , dBAI) Daytime (07:00 – 23:00) / Nighttime (23:00 – 07:00)	OPOR (L_{LM} , dBAI) Daytime (07:00 – 23:00) Only
9 or more	60 / 55	55

In addition to permitting higher plane-of-window sound levels based on the inclusion of central HVAC and architectural noise control measures (enhanced windows, walls, roofs, etc.), NPC-300 allows developments in Class 4 areas to benefit from certain receptor-based noise control measures which are not normally considered in Class 1, 2, or 3 areas. Examples of receptor-based noise control measures which are typically only considered in Class 4 areas include inoperable windows, and enclosed noise buffers.

The **Type F** warning clause may be included in the development agreements for the Project if the Project is designated as a Class 4 area. The Type F warning clause is as follows:

"Purchasers/tenants are advised that sound levels due to the adjacent industry are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."

6.4 Stationary Sound Level Predictions

Sound levels at the PORs due to the nearby stationary sources were calculated using the software CadnaA in accordance with the methods described in ISO 9613-2. The CadnaA calculation outputs are presented in Appendix F.

Impulsive noises have a duration of less than one second and are therefore unlikely to overlap. As such NPC-300 requires that these sources be assessed in isolation, rather than cumulatively with each other, or with other stationary noise sources. In the modelling conducted for this project, impacts from impulsive noise sources associated with the rail yard were modelled as an area source encompassing the full rail yard.

6.4.1 Stationary Noise Impacts on the Project

In modelling the impact of stationary noise sources to receptors located on the Project, TT has considered only the identified stationary sources associated with the surrounding area. No significant noise sources have been identified on the Project itself.

Table 15 provides a summary of the modelling results for stationary noise impacts to the Project, and Appendix F contains the full modelling output and illustrations.

Table 15: Predicted Stationary Noise Source Impacts to the Project

POR ID	Time Period	Maximum Steady Sound Level Leq,1hr (dBA)	Steady Sound Level Limit Leq,1hr (dBA) Class 1 / Class 4	Maximum Impulse Sound Level LLM (dBAI)	Impulse Sound Level Limit* LLM (dBAI) Class 1 / Class 4	Compliance
PPOR_Block1_North_01 - _10	Day / Eve	63	50 / 60	76	50 / 60	No
	Night	63	45 / 55	76	45 / 55	No
PPOR_Block1_East_01 - _04	Day / Eve	59	50 / 60	73	50 / 60	No
	Night	59	45 / 55	73	45 / 55	No
PPOR_Block1_South_01 - _10	Day / Eve	45	50 / 60	62	50 / 60	No
	Night	45	45 / 55	62	45 / 55	No
PPOR_Block1_West_01 - _04	Day / Eve	59	50 / 60	73	50 / 60	No
	Night	59	45 / 55	73	45 / 55	No
PPOR_Block2_North_01 - _10	Day / Eve	54	50 / 60	69	50 / 60	No
	Night	54	45 / 55	69	45 / 55	No
PPOR_Block2_East_01 - _04	Day / Eve	53	50 / 60	69	50 / 60	No
	Night	53	45 / 55	69	45 / 55	No
PPOR_Block2_South_01 - _10	Day / Eve	43	50 / 60	56	50 / 60	Class 4
	Night	43	45 / 55	56	45 / 55	No
PPOR_Block2_West_01 - _04	Day / Eve	52	50 / 60	67	50 / 60	No
	Night	52	45 / 55	67	45 / 55	No
PPOR_Block3_North_01 - _10	Day / Eve	48	50 / 60	67	50 / 60	No
	Night	48	45 / 55	67	45 / 55	No
PPOR_Block3_East_01 - _04	Day / Eve	51	50 / 60	67	50 / 60	No
	Night	51	45 / 55	67	45 / 55	No
PPOR_Block3_South_01 - _10	Day / Eve	41	50 / 60	54	50 / 60	Class 4
	Night	41	45 / 55	54	45 / 55	Class 4
PPOR_Block3_West_01 - _04	Day / Eve	48	50 / 60	63	50 / 60	No
	Night	48	45 / 55	63	45 / 55	No
PPOR_Block4_North_01 - _10	Day / Eve	46	50 / 60	64	50 / 60	No
	Night	46	45 / 55	64	45 / 55	No
PPOR_Block4_East_01 - _04	Day / Eve	49	50 / 60	65	50 / 60	No
	Night	49	45 / 55	65	45 / 55	No
PPOR_Block4_South_01 - _10	Day / Eve	34	50 / 60	50	50 / 60	Class 1
	Night	34	45 / 55	50	45 / 55	Class 4
PPOR_Block4_West_01 - _04	Day / Eve	46	50 / 60	61	50 / 60	No
	Night	46	45 / 55	61	45 / 55	No
LOT A Detached Home	Day / Eve	51	50 / 60	64	50 / 60	No
	Night	51	45 / 55	64	45 / 55	No
LOT_A_POPOR	Day / Eve	48	50 / 55	63	50 / 55	No
LOT B Detached Home	Day / Eve	52	50 / 60	67	50 / 60	No
	Night	52	45 / 55	67	45 / 55	No
LOT_B_POPOR	Day / Eve	49	50 / 55	60	50 / 55	No

*Impulse Sound Level Limit for >9 Impulses / hour

It should be noted that during multiple site inspections by TT and other parties over the course of multiple years, it has never been observed for 9 or more discernable impulses to occur within a single hour. The assumption of 9+ impulses per hour is made at the request of CN, and is expected to be conservative.

Unmitigated stationary noise from the nearby rail yard is expected to exceed the Class 1 and Class 4 exclusionary limits at most receptors, primarily due to impulse noise associated with the loading, coupling and slack taking activities.

6.5 Stationary Noise Mitigation Recommendations

Where possible, source mitigation and/or noise barriers are generally the preferred method for addressing stationary noise exceedances. In the case of this proposed development, the nature of the significant stationary noise sources (rail yard) makes source mitigation infeasible. The height of the proposed townhouse development (3 stories), combined with the magnitude of the potential noise exceedances, (particularly for impulse noises) makes the use of barriers alone infeasible.

NPC-300 does not generally accept receptor based on-building noise control measures in the context of noise source approvals under Part B of NPC-300 except in the case of receivers in Class 4 areas.

The rail yard is federally regulated, and not subject to Part B of NPC-300 and does not need to demonstrate compliance with applicable noise limits at neighboring properties. Despite the rail yard being federally regulated, NPC-300 still requires that it be assessed as a noise source in the context of development approvals for nearby properties, therefore a Class 4 designation for the project site is still recommended to most clearly comply with the recommendations of NPC-300.

Based on the characteristics of the proposed development (new sensitive receptors on a previously non-sensitive land use, located in proximity to existing legally established noise sources), a Class 4 designation would be appropriate for the project, conditional on approval by the LUPA.

Based on recent correspondence and peer review comments, TT understands that CN would also support a Class 4 designation for the Project Site.

6.5.1 Mitigation for Project Receptors

Once the project site has been designated a Class 4 area, NPC-300 will permit the benefits of receptor based on-building noise control measures to be accounted for in the assessment of stationary noise impacts.

The following noise control measures are recommended to be implemented in the proposed development:

- **Central HVAC:** All townhouse units, Lot "A", and Lot "B" should be equipped with central HVAC, so that exterior windows can be kept closed.
- **Lot A Noise Barrier:** A 2.2m tall noise barrier wall should be included on the north and west sides of the Lot A rear yard.
- **Lot B Noise Barrier:** A 2.0m tall noise barrier wall should be included on the north and east sides of the Lot A rear yard.

- **Warning Clauses:** All townhouse units, Lot "A" and Lot "B" must be provided with the following warning clauses:
 - **Type E warning clause:** "Purchasers/tenants are advised that due to the proximity of the adjacent rail yard and tracks, noise from the rail yard and tracks may at times be audible."
 - **Type F warning clause:** "Purchasers/tenants are advised that sound levels due to the adjacent rail yard and tracks have been assessed based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."
- **Enclosed Noise Buffers (ENBs):** Exterior windows of noise sensitive spaces on all façades of the four townhouse blocks and on the north, east and west façades of the Lot "A" and Lot "B" detached dwellings should be fitted with ENBs. Per NPC-300, ENBs must be:
 - an enclosed area outside the exterior wall of a building such as an enclosed balcony specifically intended to buffer one or more windows of noise sensitive spaces;
 - not less than one meter and not more than two meters deep;
 - fully enclosed with floor to ceiling glazing or a combination of solid parapet plus glazing above - glazing can potentially be operable to the maximum permitted by the Ontario Building Code;
 - separated from interior space with a weatherproof boundary of exterior grade wall, exterior grade window, exterior grade door, or any combination, in compliance with exterior envelope requirements of the Ontario Building Code;
 - of sufficient horizontal extent to protect windows of noise sensitive spaces; and
 - of an architectural design that is not amenable to converting the enclosed space to being noise sensitive.

These recommendations are reflected in the Site Plans included in Appendix B.

Estimated Performance Requirements

The highest predicted impact from rail yard impact noise is ~76 dBA. In order to achieve the 55 dBA Class 4 façade nighttime sound level limit, the exterior windows of the ENBs would require a minimum rating of ~STC 28 (assuming adequate performance in the lower frequency ranges) as illustrated in Table 16. Note that the example provided is for illustrative purposes only and uses a simplified calculation that neglects room-effects within the noise buffer and possible flanking paths associated with window framing.

Table 16: ENB Performance With Typical Glazing

Item	Impulsive Noise Sound Pressure Level (Linear, 1/3 Octave, dB)									Total		Units
	31.5	63	125	250	500	1000	2000	4000	8000	dBA	STC	
PPOR_Block1_North_10 Exterior Noise	87.3	87.1	82.7	74.2	67.3	70.1	70.2	62.1	45.2	75.8	-	Llm
5mm Monolithic Glass Sample ENB Glazing	-	10.5*	21	22	30	33	30	31	31*	-	28	TL
Block 1 NE Unit Façade Noise	87.3	76.6	61.7	52.2	37.3	37.1	40.2	31.1	14.2	54.0	-	Llm
Strictest Façade Noise Limit (Night)	-	-	-	-	-	-	-	-	-	55	-	Llm

*Estimated

Recommended Exterior Façade & ENB Construction

As part of their peer reviews on behalf of CN, Jade has requested that the construction of the ENBs (and building façades) be upgraded beyond the minimum required for compliance. Based on correspondence with Jade, CN, and the project architect, the specific façade and ENB constructions have been agreed on as acceptable for both constructability and noise mitigation considerations.

Based on these discussions, Table 17 summarizes the constructions to be used in the Project:

Table 17: Recommended Façade & ENB Performance

Location	Exterior Façade	Exterior Windows of Noise Sensitive Spaces	Building Façade Within ENB	Building Windows Within ENB*	Building Doors Within ENB*	ENB Exterior Façade	ENB Exterior Windows*
Townhouse Block 1 All Sides	Brick Veneer / Masonry Equivalent (STC 54)	N/A	Brick Veneer / Masonry Equivalent (STC 54)	N/A	STC 33	Metal Siding (STC 54)	STC 35
Townhouse Block 2,3,4 All Sides	Brick Veneer / Masonry Equivalent (STC 54)	N/A	Brick Veneer / Masonry Equivalent (STC 54)	N/A	STC 33	Metal Siding (STC 44)	STC 33
Lot "A" & Lot "B" North, East, West	Brick Veneer / Masonry Equivalent (STC 54)	N/A	Brick Veneer / Masonry Equivalent (STC 54)	N/A	STC 33	Metal Siding (STC 44)	STC 33
Lot "A" & Lot "B" South	Metal Siding	STC 33	N/A	N/A	N/A	N/A	N/A

*Building windows/doors within ENBs & exterior windows of those ENBs to be selected with different thicknesses & configurations of glass (i.e. single / double / triple pane)

A summary of the recommended noise mitigation measures is illustrated in Figure 7.

With the inclusion of the above façade constructions, the indoor sound levels from rail yard operations are considered acceptable to CN for both bedroom and living room spaces.

7.0 Railway Vibration Assessment

7.1 Vibration Criteria

Currently, there are no guidelines for the impact of railway vibration in the land use approval process in Ontario. However, in May 2013, the Federation of Canadian Municipalities (FCM) and the Railway Association of Canada (RAC) issued "Guidelines for New Development in Proximity to Railway Operations" to address developments near railway operations. The FCM/RAC guidelines identify dwellings within 75 meters of railways alignments as susceptible to vibration impact and recommend an

overall maximum vibration limit of 0.14 mm/sec root-mean-square (RMS) between 4 and 200 Hz. This limit is applied to the overall vertical RMS velocity across the frequency range noted.

The FCM/RAC guidelines further recommend that readings be collected from a minimum of five (5) train pass-by events covering the range of train types using the rail line.

7.2 Vibration Measurement Locations

Vibration measurements were conducted at four locations on the Project site, corresponding to the approximate location of the north façade of the two northernmost townhouse blocks (closest to the railway) in 2022, as well as the northeast and northwest corners of the northernmost townhouse block in 2023.

Measurement locations are illustrated in Figure 6.

7.3 Vibration Measurement Equipment

Vibration measurements were conducted using two Brüel & Kjær Type 3680 Vibration Monitoring Terminals (VMT), using Brüel & Kjær Type 4450 analyzers and Type 8380 tri-axial geophones. The X direction was parallel to the tracks (East-West), the Y direction was perpendicular to the tracks (North-South), and the Z direction was vertical. Table 18 provides a summary of the equipment used.

Table 18: VMT Equipment Summary

Measurement Location ID	Measurement Location Description	Analyzer Model	Analyzer SN	Geophone Model	Geophone SN
V-01 (2022)	North Façade, Townhouse Block 1 (~35m from Rail ROW)	4450	1000155	8380	182
V-02 (2022)	North Façade, Townhouse Block 2 (~90m from Rail ROW)	4450	1000245	8380	408
V-03 (2023)	Northwest Corner, Townhouse Block 1 (~35m from Rail ROW)	4450	1000231	8380	13
V-04 (2023)	Northeast Corner, Townhouse Block 1 (~35m from Rail ROW)	4450	1000155	8380	182

7.4 Vibration Measurement Results

Vibrations from six (6) train pass-by events associated with the adjacent rail tracks and yard were recorded during TT's site inspection on October 27, 2022, and from a further five (5) on September 27, 2023. Table 19 provides a summary of the overall vertical RMS velocity for comparison to the FCM/RAC guideline, and field observations.

Table 19: VMT Results Summary

Pass-By Event	Train Operator	Train Type	Loc.	Cars	Dir.	Speed	Time	Max RMS Velocity (Z / Vertical) (mm/s)			
								V-01	V-02	V-03	V-04
October 27, 2022											
PB-01	Amtrak	Pass.	1	~5	East	Low	~09:20	0.02	N/A*	-	-
PB-02	CN	Freight	2	~100	East	Low	~10:10	0.03	0.02	-	-
PB-03	CN	Freight	1	~15	West	Low	~11:07	0.02	0.02	-	-
PB-04	CN	Freight	1	~15	East	Low	~11:15	0.02	0.02	-	-
PB-05	CN	Freight	1	~20	West	Low	~11:27	0.03	0.02	-	-
PB-06	CN	Freight	1	~10	East	Low	~11:34	0.02	0.02	-	-
September 27, 2023											
PB-07	CN	Freight	3	~65	East	Low	~09:00	-	-	0.01	0.03
PB-08	Amtrak	Pass.	1	~5	East	Low	~09:20	-	-	0.01	0.02
PB-09	CN	Freight	3	~30	East	Low	~09:55	-	-	0.02	0.02
PB-10	GO	Pass.	1	~8	East	Low	~10:25	-	-	0.01	0.02
PB-11	GO	Passe	1	~6	West	Low	~14:11	-	-	0.01	0.02
FCM / RAC Guideline Recommended Limit								0.14	0.14	0.14	0.14

*Train pass-by occurred while VMT was being deployed.

7.5 Vibration Control Recommendations

Observed peak particle overall velocity (vertical) was observed to be below the recommended limit of 0.14 mm/s during each train pass-by. Based on the results obtained, no specific vibration mitigation measures are expected to be required for the proposed development.

8.0 Summary of Recommendations

In summary, based on the expected noise impacts to the project, the measures identified in Table 20 should be incorporated into the Project.

Table 20: Summary of Noise Recommendations

Rec. #	Description
HVAC	All dwelling units must be equipped with forced air heating and central air conditioning.
Lot A Barrier	A 2.2m tall noise barrier should be constructed along the north and west boundaries of the Lot A rear yard.
Lot B Barrier	A 2.0m tall noise barrier should be constructed along the north and east boundaries of the Lot B rear yard.
Barrier Const.	Noise barriers should have a minimum surface density (face weight) of 20 kg/m ² . Barriers should be structurally sound, appropriately designed to withstand wind and snow load, and constructed without cracks or surface gaps. Any gaps under the barrier that are necessary for drainage purposes should be minimized and localized, so that the acoustical performance of the barrier is maintained. To improve the visual characteristics of the barrier, transparent elements and/or soil berms may be included, if they meet the above conditions.
WC-1	The following warning clause should be included in development agreements for all units. Precise wordings may be modified with input from the developer, relevant LUPA(s), stakeholders, and/or legal counsel if required. <i>"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."</i>
WC-2	The following warning clause should be included in development agreements for all units. Precise wordings may be modified with input from the developer, relevant LUPA(s), stakeholders, and/or legal counsel if required. <i>"Purchasers/tenants are advised that due to the proximity of the adjacent rail yard and tracks, noise from the rail yard and tracks may at times be audible."</i>
WC-3	The following warning clause should be included in development agreements for all units. Precise wordings may be modified with input from the developer, relevant LUPA(s), stakeholders, and/or legal counsel if required. <i>"Purchasers/tenants are advised that sound levels due to the adjacent industry have been assessed based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."</i>
WC-4	The following warning clause should be included in development agreements for all units. Precise wordings may be modified with input from the developer, relevant LUPA(s), stakeholders, and/or legal counsel if required. <i>"Canadian National Railway Company or their assigns or successors in interest has or have a right-of-way within 300 meters from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). The railway will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."</i>
WC-5	The following warning clause should be included in development agreements for all units. Precise wordings may be modified with input from the developer, relevant LUPA(s), stakeholders, and/or legal counsel if required. <i>"Metrolinx / GO Transit or their assigns or successors in interest has or have a right-of-way within 300 meters from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). The railway will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."</i>

Rec. #	Description
CLASS	All four townhouse blocks, Lot "A" and Lot "B" should be designated Class 4.
ENB-1	Enclosed Noise Buffers (ENBs) should be used for all windows of noise sensitive spaces on: - All sides of townhouse blocks 1, 2, 3, & 4 - Noth, east, and west sides of the Lot "A" and Lot "B" detached dwellings
ENB-2	ENBs should be constructed in accordance with the requirements identified in NPC-300: - an enclosed area outside the exterior wall of a building such as an enclosed balcony specifically intended to buffer one or more windows of noise sensitive spaces; - not less than one meter and not more than two meters deep; - fully enclosed with floor to ceiling glazing or a combination of solid parapet plus glazing above - glazing can potentially be operable to the maximum permitted by the Ontario Building Code; - separated from interior space with a weatherproof boundary of exterior grade wall, exterior grade window, exterior grade door, or any combination, in compliance with exterior envelope requirements of the Ontario Building Code; - of sufficient horizontal extent to protect windows of noise sensitive spaces; and - of an architectural design that is not amenable to converting the enclosed space to being noise sensitive.
ENB-3	Exterior façades of the Project buildings & their ENBs should be constructed using assemblies and/or materials which are specified by their manufacturer and/or an accredited testing organization to meet the performance requirements identified in the table below. Building windows/doors within ENBs & exterior windows of those ENBs to be selected with different thicknesses & configurations of glass (i.e. single / double / triple pane)

Location	Exterior Façade	Exterior Windows of Noise Sensitive Spaces	Building Façade Within ENB	Building Windows Within ENB*	Building Doors Within ENB*	ENB Exterior Façade	ENB Exterior Windows*
Townhouse Block 1 All Sides	Brick Veneer / Masonry Equivalent (STC 54)	N/A	Brick Veneer / Masonry Equivalent (STC 54)	N/A	STC 33	Metal Siding (STC 54)	STC 35
Townhouse Block 2,3,4 All Sides	Brick Veneer / Masonry Equivalent (STC 54)	N/A	Brick Veneer / Masonry Equivalent (STC 54)	N/A	STC 33	Metal Siding (STC 44)	STC 33
Lot "A" & Lot "B" North, East, West	Brick Veneer / Masonry Equivalent (STC 54)	N/A	Brick Veneer / Masonry Equivalent (STC 54)	N/A	STC 33	Metal Siding (STC 44)	STC 33
Lot "A" & Lot "B" South	Metal Siding	STC 33	N/A	N/A	N/A	N/A	N/A

9.0 Concluding Comments

Noise impacts associated with the proposed development at 121 Vansitmart Avenue are expected to be able to meet all applicable MECP requirements with a Class 4 designation and the inclusion of noise control measures agreed-to with CN (ENBs, façade construction), ventilation requirements, and warning clauses as summarized in Figure 7 and presented in Section 8.0 of this report. The proposed development should therefore be approved.

Based on measurements conducted by TT, vibration mitigation measures are not expected to be necessary for the development.

Please do not hesitate to contact us if there are any questions.

Yours Truly,
Thornton Tomasetti



Robert Fuller, P.Eng.
Project Engineer

Reviewed by:
Marcus Li, P.Eng.
Vice President

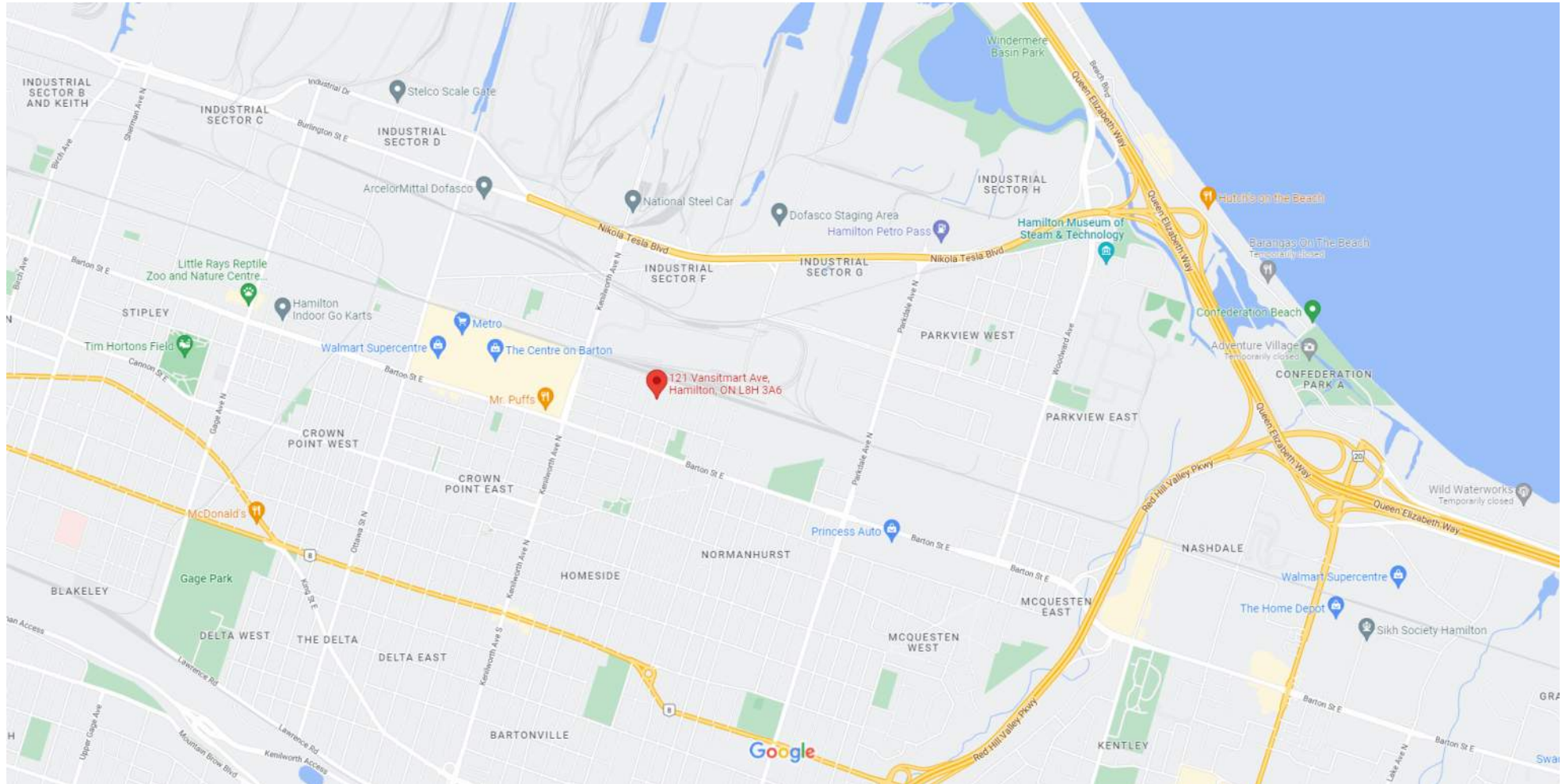
Disclaimer

Achieving the required noise control requirements relies on correct incorporation of noise control recommendations into Architectural and Mechanical drawings and specifications, as well as correct installation during construction. On Request, TT will conduct drawing reviews and onsite reviews of noise control measures and provide observations as appropriate; however, notwithstanding the foregoing, it is expressly understood and agreed that TT shall not have control or charge of, and shall not be responsible for the acts or omissions, including but not limited to means, methods, techniques, sequences and procedures, of the Design Professionals and/or Contractors performing design and/or construction on the Project. Accordingly, TT shall not be held responsible for the failure of any party to properly incorporate the noise control measures stated in this report.

Appendix A: Figures

- Figure 1: Project Location & Surroundings
- Figure 2: Zoning Map
- Figure 3: Project Site Plan
- Figure 4: Transportation Noise PORs & Sources
- Figure 5: Stationary Noise PORs & Sources
- Figure 6: Field Measurement Locations
- Figure 7: Recommended Mitigation Measures

Google Maps 121 Vansitmart Ave



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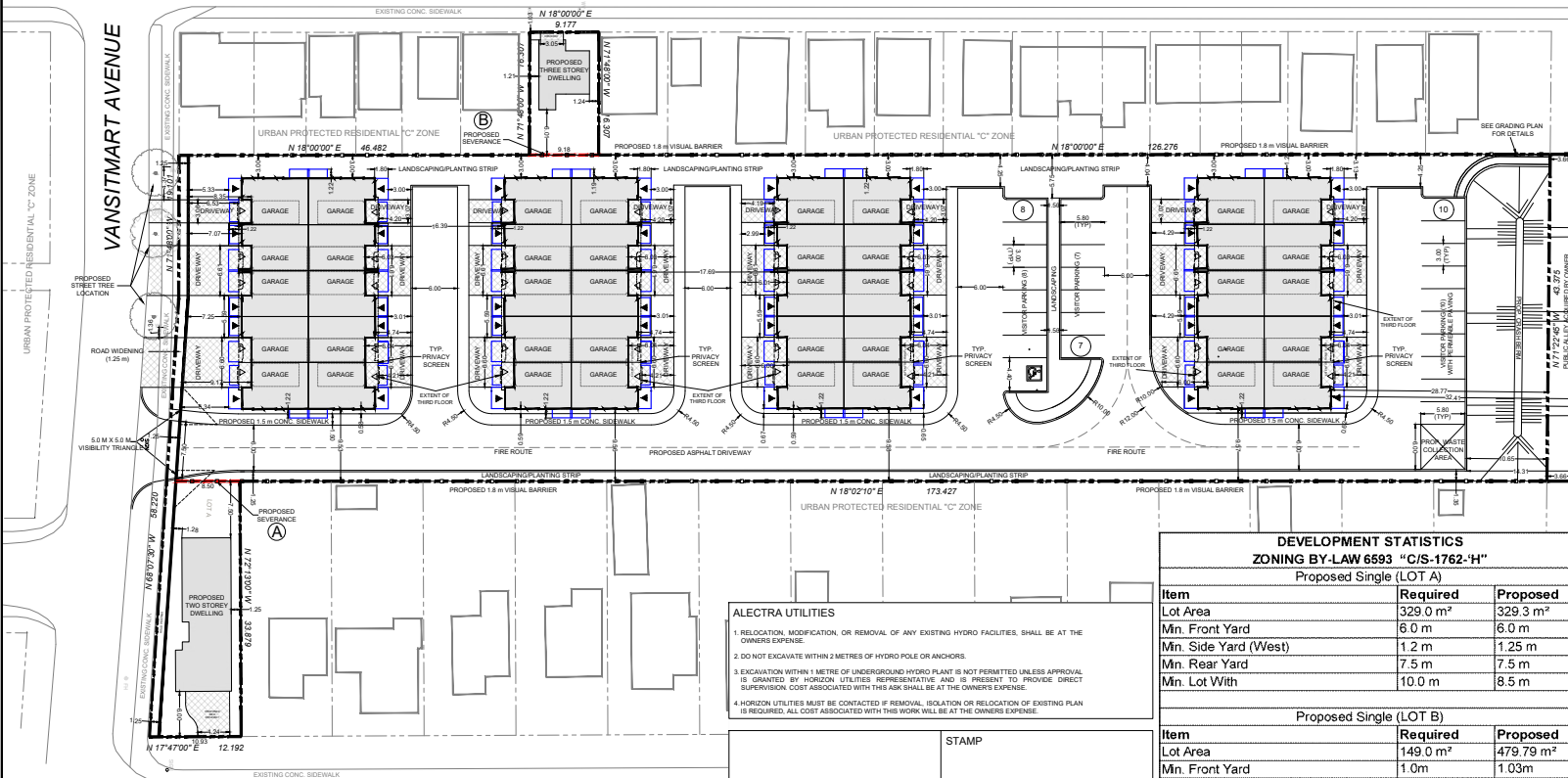
PL

NP

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&LW\ RI +DPLOWRQ  &LW\ RI +DPLOWRQ  :HE *,6 )UDP
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7KH &LW\ RI +DPLOWRQ LV QRW OLDEOH IRU DQ\ GD
7KLW SURGXFW LV IRU LQIRUPDWLRQDO SXUSRVHV DQG PD\ QRW KDYH EHHQ SUHSDUHG

COPE STREET



TRAGINA AVENUE NORTH

ALECTRA UTILITIES

1. RELOCATION, MODIFICATION, OR REMOVAL OF ANY EXISTING HYDRO FACILITIES, SHALL BE AT THE OWNERS EXPENSE.
2. DO NOT EXCAVATE WITHIN 2 METRES OF HYDRO POLE OR ANCHORS.
3. EXCAVATION WITHIN 1 METRE OF UNDERGROUND HYDRO PLANT IS NOT PERMITTED UNLESS APPROVAL IS GRANTED BY HORIZON UTILITIES REPRESENTATIVE AND IS PRESENT TO PROVIDE DIRECT SUPERVISION COST ASSOCIATED WITH THIS WORK SHALL BE AT THE OWNERS EXPENSE.
4. HORIZON UTILITIES MUST BE CONTACTED IF REMOVAL, ISOLATION OR RELOCATION OF EXISTING PLAN IS REQUIRED, ALL COST ASSOCIATED WITH THIS WORK WILL BE AT THE OWNERS EXPENSE.

STAMP

DEVELOPMENT STATISTICS
ZONING BY-LAW 6593 "C/S-1762-H"
Proposed Single (LOT A)

Item	Required	Proposed
Lot Area	329.0 m ²	329.3 m ²
Min. Front Yard	6.0 m	6.0 m
Min. Side Yard (West)	1.2 m	1.25 m
Min. Rear Yard	7.5 m	7.5 m
Min. Lot With	10.0 m	8.5 m

Proposed Single (LOT B)

Item	Required	Proposed
Lot Area	149.0 m ²	479.79 m ²
Min. Front Yard	1.0m	1.03m
Min. Side Yard (North)	3.0 m	1.24 m
Min. Side Yard (South)	3.0 m	1.21 m
Min. Rear Yard	6.0 m	6.01 m
Min. Lot With	9.1 m	9.18 m
Min. Manoeuvring Space With	1.0 m	3.0 m
Max. Porch Front Yard Encroachment	1.0 m	0.3 m

DEVELOPMENT STATISTICS

Proposed Back to Back Townhouse Block

Item	Required	Proposed
Lot Area	N/A	8,051.46 m ²
	5.5 m (1st storey) 4.3 m (2nd & 3rd storey) 6.0 m (garage)	7.07 m (1st storey) 6.53 m (2nd & 3rd storey) 8.35 m (garage)
Min. Front Yard		
Min. Side Yard (West)	3.0 m	3.00 m
Min. Side Yard (East)	3.0 m	9.53 m
Min. Rear Yard	3.0 m	32.41 m
Max. Building Height	12.6 m	12.50 m
No. of Units	N/A	40 units
Density	N/A	50 UPH
Min. Building Separation	15.0 m	16.39 m
Min. Landscaped Area	23%	1,989.22 m ² (25%)
Parking		
No. of Spaces per Unit	1.0 per unit = 40 spaces	1.0 per unit = 40 spaces
No. of Visitor Spaces	0.3 per unit = 12 spaces	26 spaces
Parking Stall Size	5.8 m X 3.0 m	5.8 m x 3.0 m
No. of Barrier Free Spaces	N/A	1 space

UNDERTAKING

- REC: DA-19-015
- (1) THE UNDERTAKING IS ENTERED INTO BY THE UNDERTAKER OF THE LAND, HEREBY UNDERTAKING AND AGREEING TO COMPLY WITH THE UNDERTAKING.
- (2) TO COMPLY WITH ALL THE CONTENTS OF THIS PLAN AND DRAWINGS AND NOT TO VARY THEREFROM.
- (3) TO PERFORM THE FACILITIES, WORKS OR MATTERS MENTIONED IN SECTION 41(7)(b) OF THE PLANNING ACT SHOWN ON THIS PLAN AND DRAWINGS IN ACCORDANCE WITH THE CONDITIONS OF APPROVAL AS SET OUT IN THE LETTER OF APPROVAL DATED JUNE 21, 2019.
- (4) TO MAINTAIN TO THE SATISFACTION OF THE CITY AND AT MY (OUR) SOLE RISK AND EXPENSE, ALL OF THE FACILITIES, WORKS OR MATTERS MENTIONED IN SECTION 41(7)(b) OF THE PLANNING ACT SHOWN ON THIS PLAN AND DRAWING, INCLUDING REPAIRS OR REPAIRS FROM ACCESS RAMP AND DRIVEWAYS, PARKING AND LOADING AREAS AND WALKWAYS AND.
- (5) IN THE EVENT THAT THE OWNER DOES NOT COMPLY WITH THE PLAN DATED JULY 15, 2022, THE OWNER AGREES THAT THE CITY MAY ENTER THE LAND AND DO THE REQUIRED WORKS, AND FURTHER THE UNDERTAKER AGREES THAT THE CITY WILL BE RESPONSIBLE FOR THE COSTS OF SUCH WORKS.
- (6) CAUTION: NOTWITHSTANDING CURRENT SURFACE CONDITIONS, THE PROPERTY HAS BEEN DETERMINED TO BE OF AN AREA OF ARCHAEOLOGICAL POTENTIAL, ALTHOUGH AN ARCHAEOLOGICAL ASSESSMENT IS NOT REQUIRED BY THE CITY OF HAMILTON. THE UNDERTAKER IS CAUTIONED THAT DURING DEVELOPMENT ACTIVITIES, SHOULD DEEPLY BURIED ARCHAEOLOGICAL MATERIALS BE FOUND ON THE PROPERTY, THE UNDERTAKER SHALL IMMEDIATELY STOP WORK AND NOTIFY THE CITY OF HAMILTON IMMEDIATELY (416-324-1343). IN THE EVENT THAT HUMAN REMAINS ARE ENCOUNTERED DURING CONSTRUCTION, THE UNDERTAKER SHALL IMMEDIATELY CONTACT BOTH MTC AND THE REGISTRAR OR DEPUTY REGISTRAR OF THE CEMETERIES REGULATION UNIT OF THE MINISTRY OF SMALL BUSINESS AND CONSUMER SERVICES (416-326-8392).
- (7) THAT THE OWNER SHALL INCLUDE THE FOLLOWING WARNING LABEL IN ALL OFFERS OF PURCHASE AND SALE: (a) THAT THE HOME/BUSINESS MAIL DELIVERY WILL BE PROVIDED BY CENTRALIZED MAIL BOX (b) THAT THE DEVELOPERS/OWNER BE RESPONSIBLE FOR OFFICIALLY NOTIFYING THE PURCHASERS OF THE EXACT CENTRALIZED MAIL BOX LOCATIONS PRIOR TO THE CLOSING OF AN HOME SALE (c) PURCHASERS/TENANTS ARE ADVISED THAT DESPITE THE INCLUSION OF NOISE CONTROL FEATURES IN THE DEVELOPMENT AND WITHIN THE BUILDINGS UNITS, SOUND LEVELS DUE TO INCREASING RAIL TRAFFIC ON OCCASION 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 (d) THIS DWELLING UNIT HAS BEEN SUPPLIED WITH CENTRAL AIR CONDITIONING SYSTEM WHICH WILL ALLOW WINDOWS AND EXTERIOR DOORS TO REMAIN CLOSED, THEREBY ENSURING THAT INDOOR SOUND LEVELS ARE WITHIN THE MUNICIPALITY'S AND THE MINISTRY OF THE ENVIRONMENT CONSERVATION AND PARKS NOISE CRITERIA (e) "WARNING: THE CANADIAN NATIONAL RAILWAY COMPANY OR ITS ASSIGNS OR SUCCESSORS IN INTEREST 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 EXPANSIONS MAY AFFECT THE LIVING ENVIRONMENT OF RESIDENTS IN THE VICINITY. NOTWITHSTANDING THE INCLUSION OF ANY NOISE AND VIBRATION ATTENUATING MEASURES IF IT IS THE DEVELOPMENT AND INDIVIDUAL DWELLINGS, CNR WILL NOT BE RESPONSIBLE FOR ANY COMPLAINTS OR CLAIMS ARISING FROM THE USE OF SUCH FACILITIES AND/OR OPERATIONS ON OR OVER OR UNDER THE AFORESAID RIGHT OF WAY."
- (8) THAT THE OWNER AGREE TO INCLUDE THE FOLLOWING NOISE MITIGATION MEASURES FOR THE PROPOSED DEVELOPMENT: (a) THAT THE NORTHERLY MOST BUILDING UTILIZE BRICK VENEER OR ACoustically TREATED MASONRY EQUIVALENT WILL BE IMPLEMENTED (b) THAT THE REQUIRED SITE RATING FOR DOORS AND WINDOWS IDENTIFIED ON TABLE 7 OF THE ENVIRONMENTAL NOISE AND VIBRATION IMPACT STUDY PREPARED BY GSA ACoustical Consultants Inc. DATED JUNE 2017 WILL BE IMPLEMENTED (c) TO ESTABLISH A SAFETY BEAR AND ACoustical FENCE (d) ESTABLISH ISOLATION PADS, VIBRATION ABSORPTIVE MATERIAL, OR VIBRATION DAMPING MATERIAL TO BE APPLIED TO THE NORTH, EAST AND WEST SIDE OF THE NORTHERLY MOST BUILDING (e) ANY AND ALL MITIGATION MEASURES AND OTHER REQUIREMENTS AS STIPULATED BY CNR
- (9) THAT THE OWNER AGREES TO DISPLAY THE MUNICIPAL NUMBER (121) OR FULL ADDRESS (115 VANSITMART AVENUE) NEAR THE ENTRANCEWAY IN A MANNER THAT IS VISIBLE FROM THE STREET.
- (10) THE OWNER SHALL THROUGH RESTRICTIVE COVENANT TO BE REGISTERED ON TITLE AND ALL AGREEMENTS OF COVENANCE AND SALE OR LEASE PROVIDE NOTICE TO THE PLAN THAT THE SAFETY BEAR, FENCING AND VIBRATION ISOLATION MEASURES IMPLEMENTED ARE NOT TO BE TAMPED WITH OR ALTERED AND FURTHER THAT THE OWNER SHALL HAVE SOLE RESPONSIBILITY FOR AND SHALL MAINTAIN THESE MEASURES TO THE SATISFACTION OF CN.

DATED THIS _____ DAY OF _____, 20____

WITNESS (SIGNATURE) _____ OWNER(S) (SIGNATURE) _____ (SIGNED)

WITNESS (PRINT) _____ OWNER (PRINT)

ADDRESS OF WITNESS _____

GENERAL NOTES

1. ALL WORK INVOLVED IN THE CONSTRUCTION, RELOCATION, REPAIR OF MUNICIPAL SERVICES FOR THE PROJECT SHALL BE TO THE SATISFACTION OF THE DIRECTOR AND CHIEF PLANNER OF THE PLANNING DIVISION, PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT.
2. FIRE ROUTE, BOMB AND 30 MINUTE FIRE HYDRANTS SHALL BE ESTABLISHED TO THE SATISFACTION OF THE CITY FIRE DEPARTMENT AND AT THE EXPENSE OF THE OWNER.
3. MAIN DRIVEWAY DIMENSIONS AT THE PROPERTY LINE BOUNDARIES ARE 7.5 M UNLESS OTHERWISE STATED.
4. ALL DRIVEWAYS FROM PROPERTY LINES FOR THE FIRST 7.5 M SHALL BE WITHIN 5% MAXIMUM GRADE, THEREAFTER, ALL DRIVEWAYS SHALL BE WITHIN 10% MAXIMUM GRADE.
5. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNERS BIDDING CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NECESSARY TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
 - BUILDING PERMIT
 - ROAD CUT PERMITS
 - SEWER AND WATER PERMITS
 - RELOCATION OF SERVICES
 - ENCROACHMENT AGREEMENTS (IF NEEDED)
 - APPROACH APPROVAL PERMITS
 - COMMITTEE OF ADJUSTMENT
6. ABANDONED ACCESSES MUST BE REMOVED AND THE CURB AND BOULEVARD RESTORED WITH SOD AT THE OWNERS EXPENSE TO THE SATISFACTION OF THE TRAFFIC ENGINEERING SECTION, PUBLIC WORKS DEPARTMENT.
7. FOR VISIBILITY TRIANGLES AT THE VEHICULAR ACCESS POINTS, THE FOLLOWING NOTE TO BE PROVIDED:
"5 METRE BY 5 METRE VISIBILITY TRIANGLES IN WHICH THE MAXIMUM HEIGHT OF ANY OBJECTS OR NATIVE VEGETATION IS NOT TO EXCEED A HEIGHT OF 0.70 METRES ABOVE THE CORRESPONDING PERPENDICULAR CENTRELINE ELEVATION OF THE ADJACENT STREET"
8. ALL SIGNS MUST COMPLY WITH HAMILTON SIGN BY-LAW NO. 10-197
9. ALL FENCES MUST COMPLY WITH HAMILTON FENCE BY-LAW NO. 10-142
10. THIS PROPERTY IS ELIGIBLE FOR WEEKLY COLLECTION OF GARBAGE, RECYCLING, ORGANICS AND LEAF AND YARD WASTE THROUGH THE CITY OF HAMILTON. SUBJECT TO COMPLIANCE WITH SPECIFICATIONS INDICATED BY THE PUBLIC WORKS DEPARTMENT AND SUBJECT TO COMPLIANCE WITH THE CITY'S SOLID WASTE MANAGEMENT BY-LAW 09-067, AS AMENDED
11. LIGHTING MUST BE DIRECTED ON-SITE AND MUST NOT SPILL OVER TO ADJACENT PROPERTIES OR STREETS; MUST PROVIDE HOUR SHIELDS WHERE NEEDED TO COMPLETELY ELIMINATE GLARE TO ADJACENT PROPERTIES.
12. UNION GAS HAS SERVICE LINES RUNNING WITHIN THE AREA WHICH MAY OR MAY NOT BE AFFECTED BY THE DEVELOPMENT. SHOULD THE PLAN IMPACT THE SERVICES IT MAY BE NECESSARY TO RELOCATE THE LINES. ANY SERVICE RELOCATION WOULD BE AT THE COST OF THE PROPERTY OWNER.
13. A 1.0M SETBACK SHALL BE PROVIDED FROM EDGE OF DRIVEWAY TO ALL UTILITY AND LANDSCAPED FEATURES.

LEGEND:

- SUBJECT LANDS
- SURROUNDING PROPERTY LINE
- PROPOSED BUILDING
- EXISTING BUILDING
- PROPOSED ROAD WIDENING
- PROPOSED VISUAL BARRIER
- PROPOSED SEVERANCE
- PROPOSED DRIVEWAY
- PROPOSED NO. OF PARKING SPACES
- PROPOSED GARAGE DOOR
- PROPOSED MAN DOOR
- NOISE BUFFER / BALCONY

SCALE 1:300



NOTES:

- ALL DIMENSIONS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SITE PLAN

LEGAL DESCRIPTION:
PARTS OF LOTS 1 AND 2, CONCESSION 1,
GEOGRAPHIC TOWNSHIP OF BARTON,
AND ALL OF LOT 15, REGISTERED PLAN 737
AND ALL OF LOT 162, REGISTERED PLAN 500
IN THE CITY OF HAMILTON.



3 Studebaker Place Hamilton, ON L8L 0C8
905-546-1087 - UrbanSolutions.info

PROJECT: THE VANSITMART
115 & 121 VANSITMART AVENUE
DA-19-015
CITY OF HAMILTON

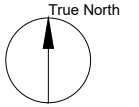
CLIENT: 1349010 ONTARIO INC.

UIS FILE NUMBER: 167-16 SHEET NUMBER: 1

NOT FOR CONSTRUCTION

DESIGN BY: S. MCKAY	CHECKED BY: S. MANCHA
DRAWN BY: M. GOWANS	DATE: MARCH 21, 2019
NO. DATE BY DESCRIPTION	
6	07/23/24 J.T. AS PER CITY COMMENTS
5	07/04/22 J.S. AS PER CITY COMMENTS
4	01/04/22 L.D. AS PER CITY COMMENTS
3	10/22/21 L.D. AS PER CITY COMMENTS
2	10/18/20 L.D. AS PER REVISED SITE PLAN
1	03/21/19 M.G. AS PER CITY COMMENTS
NO.	DATE BY DESCRIPTION

DRAWING ISSUE RECORD



TT PROJECT CODE
SW22183

DRAWN BY: RF

REVIEWED BY:

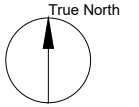
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1	2021/MM/DD	FOR INFORMATION ONLY, NOT FOR CONSTRUCTION



PROJECT NAME
121 VANSITMART
AVENUE
HAMILTON

DRAWING NAME
FIGURE 4:
TRANSPORTATION NOISE
PORS & SOURCES

SCALE ON DRAWING	DATE 2024/07/29
Project SK. No	SHEET 1 OF 1



TT PROJECT CODE

SW22183

DRAWN BY:

RF

REVIEWED BY:

REVISION

#	DATE	DESCRIPTION
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1	2021/MM/DD	FOR INFORMATION ONLY, NOT FOR CONSTRUCTION

CN Parkdale Yard

Idling Locomotive

Crash Berm

Block 1

Block 2

Block 3

Block 4

Lot "B"

Lot "A"

0m 40m

PROJECT NAME

121 VANSITMART
AVENUE
HAMILTON

DRAWING NAME

FIGURE 5:
STATIONARY NOISE
PORS & SOURCES

SCALE
ON DRAWING

DATE
2024/12/05

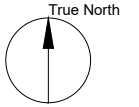
Project SK. No

SHEET
1 OF 1



Thornton Tomasetti

366 Revus Avenue, Unit 23
Mississauga, ON Canada L5G 4S5
Tel: 905.271.7888 Fax: 905.271.1846
www.thorntontomasetti.com



TT PROJECT CODE

SW22183

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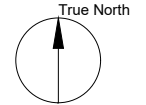
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REVISION		
#	DATE	DESCRIPTION
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1	2021/MM/DD	FOR INFORMATION ONLY, NOT FOR CONSTRUCTION

PROJECT NAME
121 VANSITMART
AVENUE
HAMILTON

DRAWING NAME
FIGURE 6:
FIELD MEASUREMENT
LOCATIONS

SCALE ON DRAWING	DATE 2024/07/29
Project SK. No	SHEET 1 OF 1



TT PROJECT CODE

SW22183

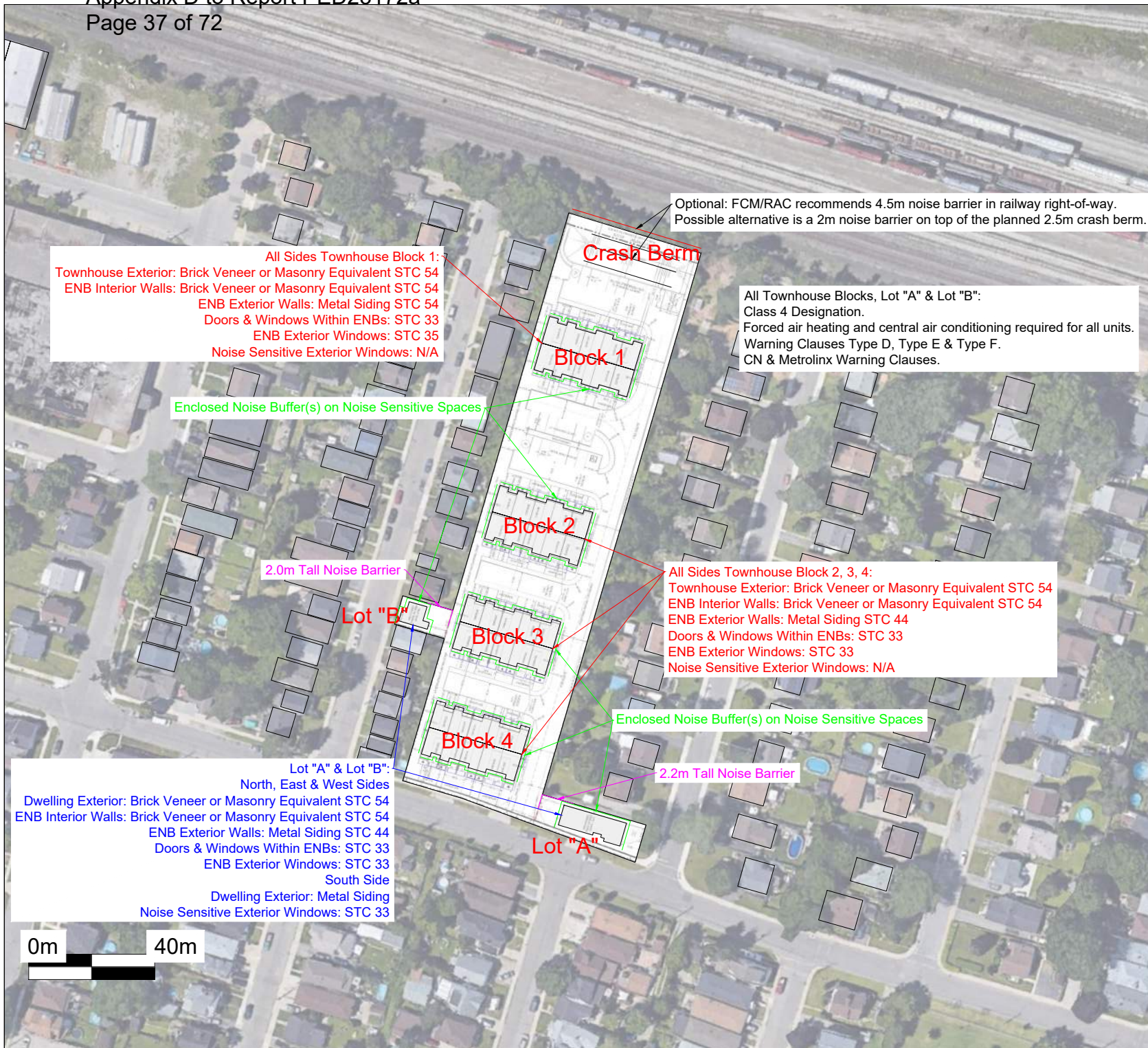
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RF

REVIEWED BY:

REVISION

#	DATE	DESCRIPTION
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1	2024/03/05	FOR INFORMATION ONLY, NOT FOR CONSTRUCTION



PROJECT NAME

121 VANSITMART
AVENUE
HAMILTON

DRAWING NAME

FIGURE 7:
RECOMMENDED
MITIGATION MEASURES

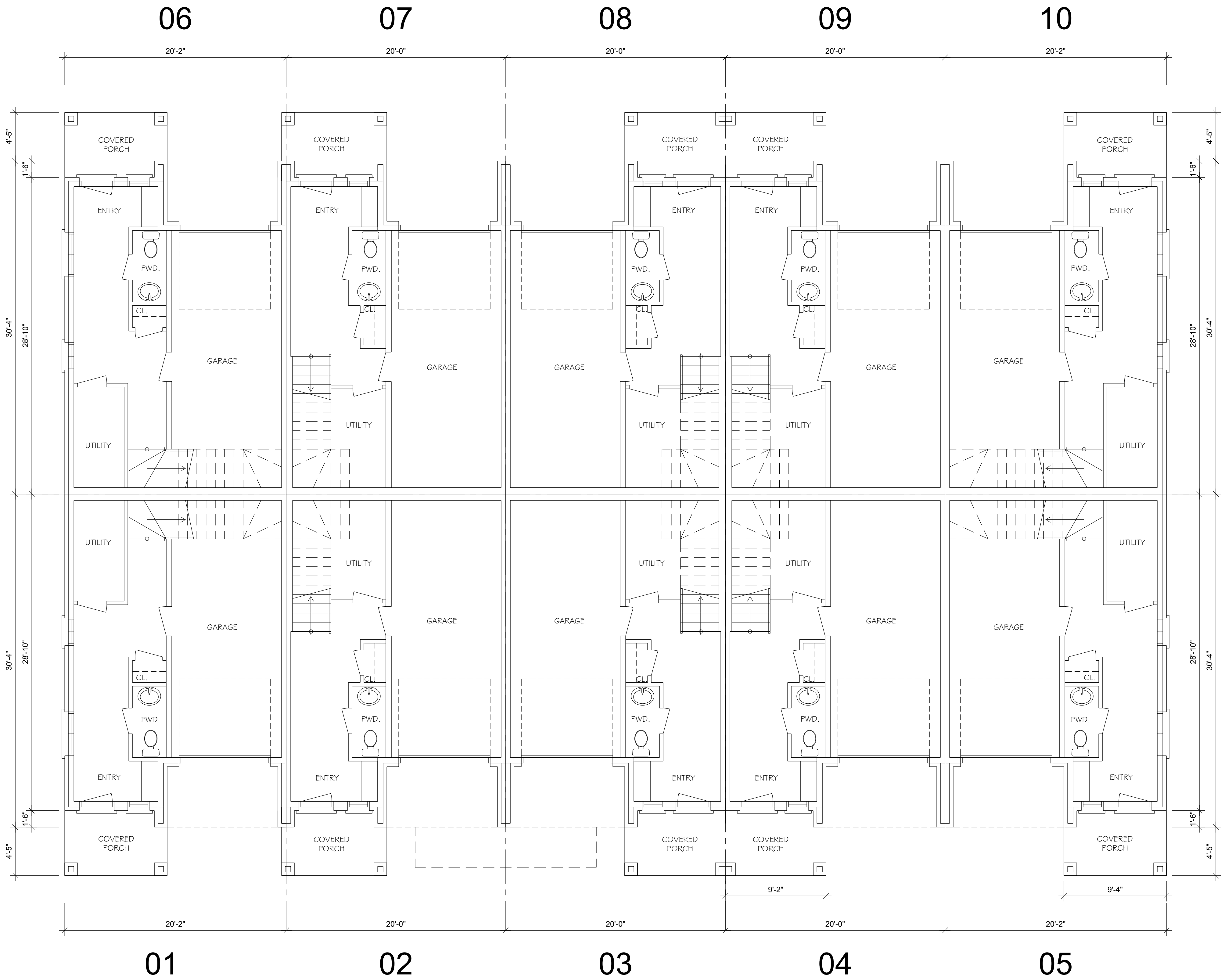
SCALE
ON DRAWING

DATE
2024/12/05

Project SK. No

SHEET
1 OF 1

Appendix B: Project Plans



1 GROUND FLOOR
A100 3/16" = 1'-0"

CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND JOB CONDITIONS BEFORE PROCEEDING WITH WORK. ALL DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE ARCHITECTS AND MUST BE RETURNED AT THE COMPLETION OF THE WORK.	
THE CONTRACTOR WORKING FROM DRAWINGS NOT SPECIFICALLY MARKED "FOR CONSTRUCTION" MUST ASSUME FULL RESPONSIBILITY AND BEAR COSTS FOR ANY CORRECTIONS OR DAMAGES RESULTING FROM HIS OR HER WORK.	
KEY TO DETAIL LOCATION	
No.	DETAIL NUMBER
No.	DRAWING SHEET NUMBER

PRINTS ISSUED			
SITE PLAN APPROVAL	1	04,12,18	MB
ISSUED FOR REVIEW	2	06,10,20	GA
ISSUED FOR REVIEW	3	20,08,21	AB
RE-ISSUED FOR SUBMISSION	4	08,11,22	JR
REVISED FOR NOISE BUFFERS	5	18,06,24	DG
SOUND RATINGS UPDATED	6	08,08,24	DG
ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED			

REVISIONS TO DRAWING			
No.	DATE (DD.MM.YY)	BY	
-			
BUILDING PERMIT NUMBER:			
NOT FOR CONSTRUCTION WITHOUT PERMIT			

KNYMH INC.
1006 SKYVIEW DRIVE • SUITE 101
BURLINGTON, ONTARIO • L7P 0V1
T 905.639.6595
F 905.639.0394
www.knymh.com info@knymh.com

THIS DOCUMENT IS PRELIMINARY AND MAY NOT BE USED FOR REGULATORY APPROVAL, PERMIT OR CONSTRUCTION AND ARE FOR USE BY CONSULTANTS, SUBCONSULTANTS, OWNER AND CONTRACTORS TO PROVIDE THEIR INPUT TO THE COORDINATION OF THIS DOCUMENT.

VANSITMART B2B BUILDINGS 1,2,3,4
HAMILTON, ONTARIO

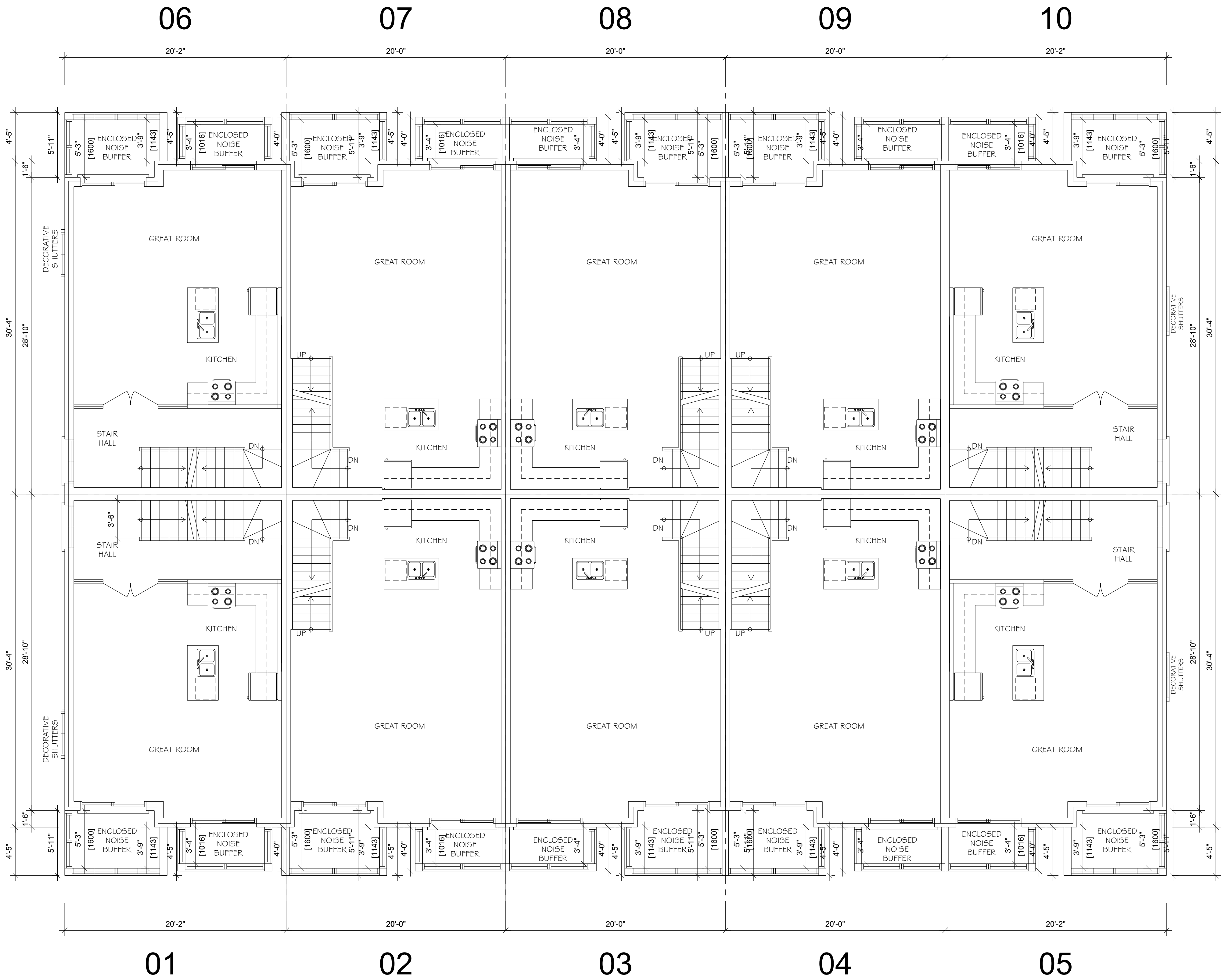
DRAWING SHEET TITLE:
UNIQUE BLOCK PLAN

DRAWING SCALE:
AS NOTED

DRAWN BY:
CHECKED BY:
PLOT DATE:

KNY PROJECT NUMBER:
18053

DRAWING SHEET NUMBER:
A100



1 2ND FLOOR
A101 3/16" = 1'-0"

CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND JOB CONDITIONS BEFORE PROCEEDING WITH WORK. ALL DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE ARCHITECTS AND MUST BE RETURNED AT THE COMPLETION OF THE WORK.

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KEY TO DETAIL LOCATION	
No.	DETAIL NUMBER
No.	DRAWING SHEET NUMBER

PRINTS ISSUED	NO.	DATE (DD.MM.YY)	BY
SITE PLAN APPROVAL	1	04.12.18	MB
ISSUED FOR REVIEW	2	06.10.20	GA
ISSUED FOR REVIEW	3	20.08.21	AB
RE-ISSUED FOR SUBMISSION	4	08.11.22	JR
REVISED FOR NOISE BUFFERS	5	18.06.24	DG
SOUND RATINGS UPDATED	6	08.08.24	DG

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

REVISIONS TO DRAWING	NO.	DATE (DD.MM.YY)	BY
-	-	-	-

BUILDING PERMIT NUMBER:

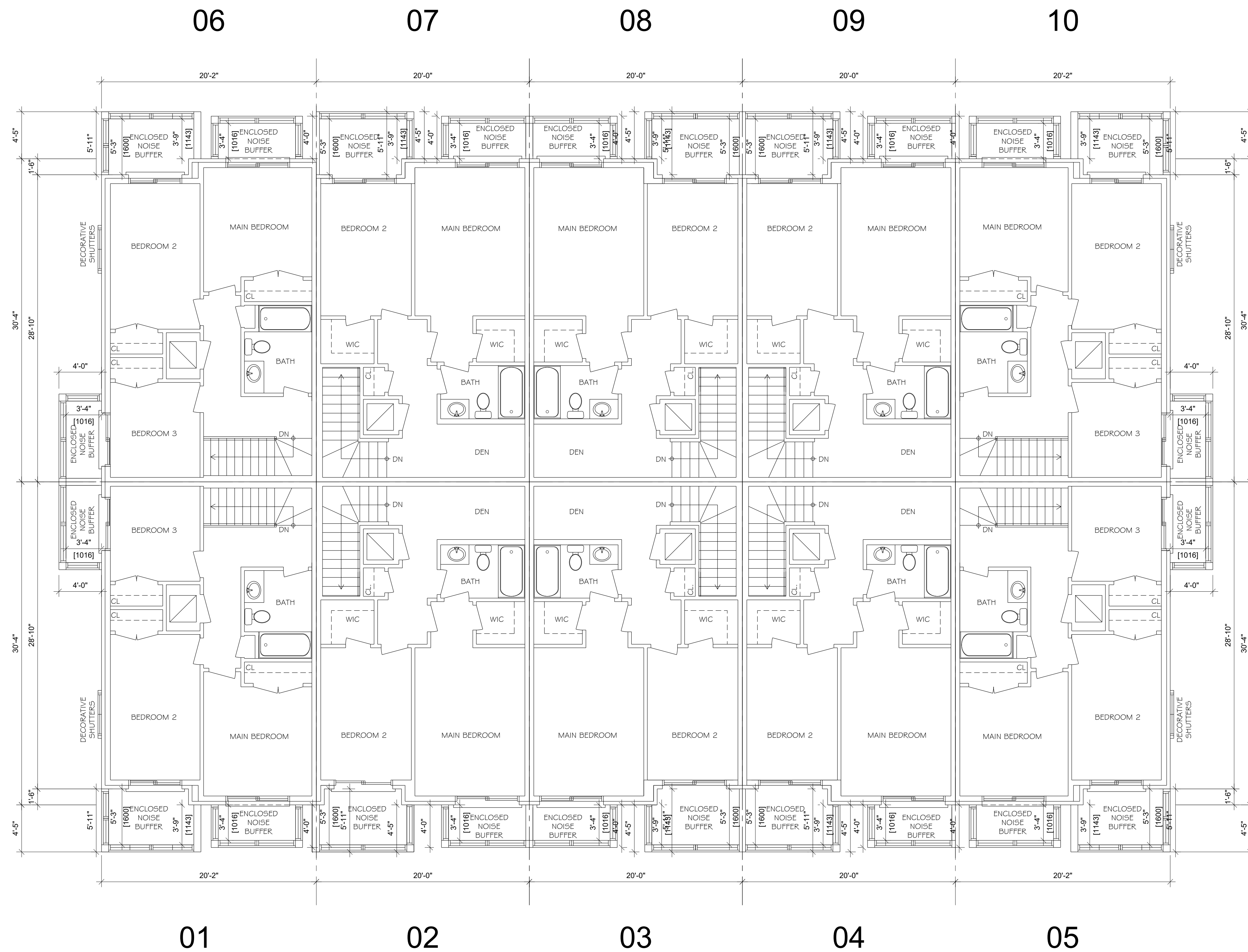
NOT FOR CONSTRUCTION WITHOUT PERMIT

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VANSITMART B2B BUILDINGS 1,2,3,4
HAMILTON, ONTARIO

DRAWING SHEET TITLE: UNIQUE BLOCK PLAN	
DRAWING SCALE: AS NOTED	KNY PROJECT NUMBER: 18053
DRAWN BY:	DRAWING SHEET NUMBER: A101
CHECKED BY:	
PLOT DATE:	



1 3RD FLOOR
A102 3/16" = 1'-0"

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KEY TO DETAIL LOCATION

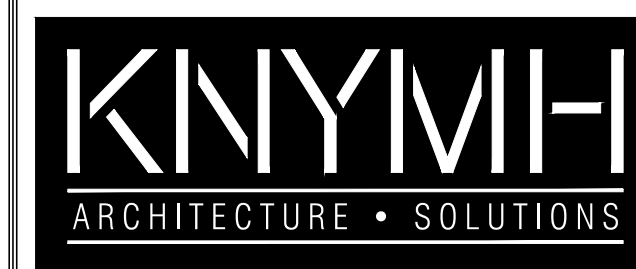
No.	DETAIL NUMBER
No.	DRAWING SHEET NUMBER

PRINTS ISSUED	NO.	DATE (DD,MM,YY)	B
SITE PLAN APPROVAL	1	04,12,18	MA
ISSUED FOR REVIEW	2	06,10,20	GA
ISSUED FOR REVIEW	3	20,08,21	AE
RE-ISSUED FOR SUBMISSION	4	08,11,22	JR
REVISED FOR NOISE BUFFERS	5	18,06,24	DO
SOUND RATINGS UPDATED	6	08,08,24	DO

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REVISIONS TO DRAWING	NO.	DATE (DD,MM,YY)	BY
-	-	-	-

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DRAWING SHEET TITLE:

UNIQUE BLOCK PLAN

DRAWING SCALE:
A5 NOTED

KNY PROJECT NUMBER:
18053

DRAWN BY:

VANSITMART B2B
BUILDINGS 1,2,3,4
HAMILTON, ONTARIO

CHECKED BY:

PLOT DATE:

DRAWING SHEET NUMBER:

A102

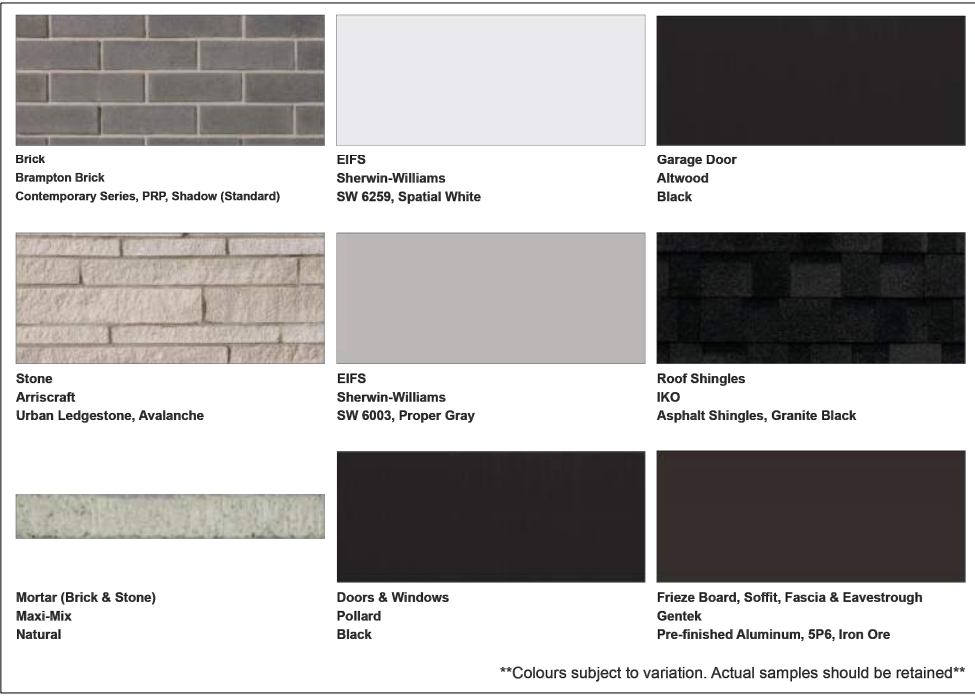


1 FRONT/REAR ELEVATION
10 UNIT BLOCK
3/16" = 1'-0"

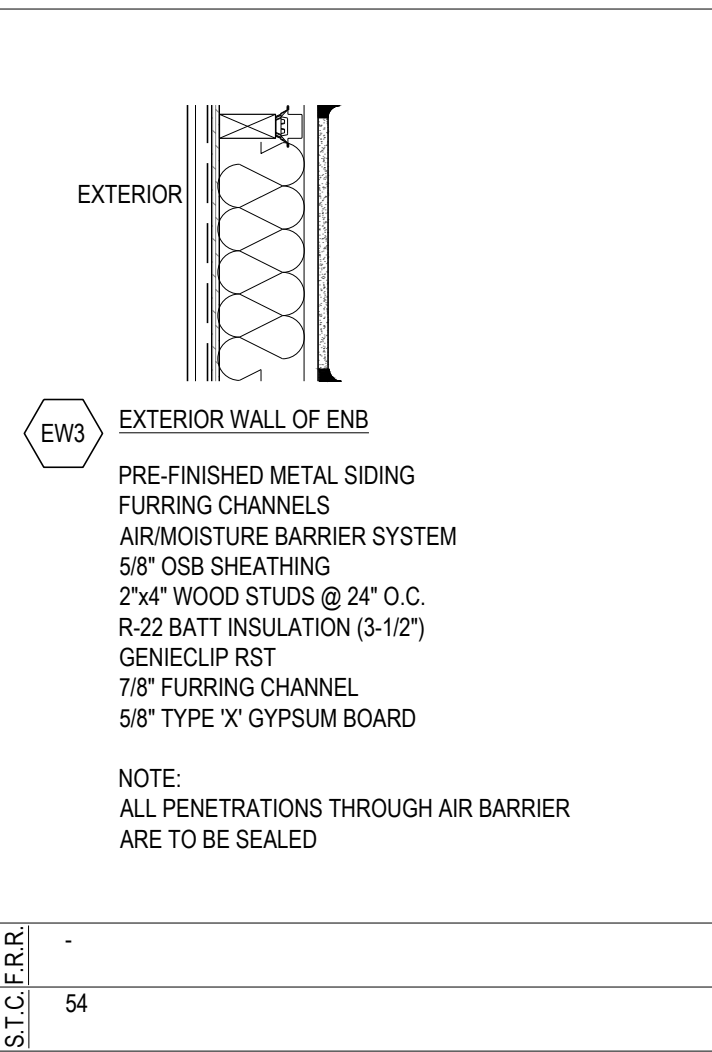
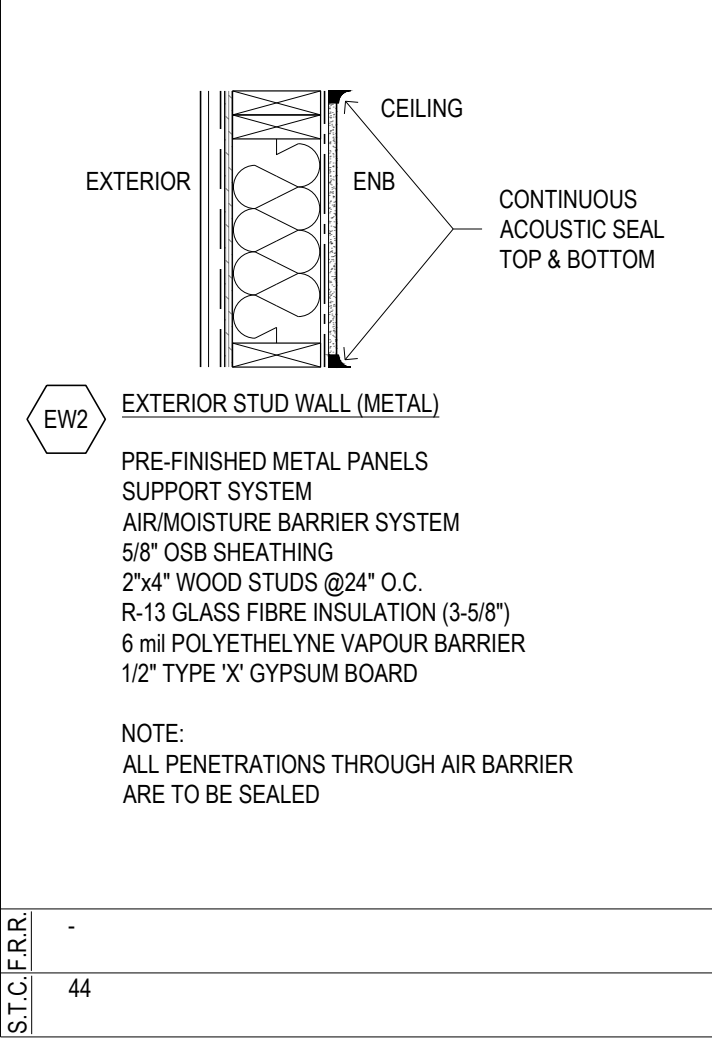
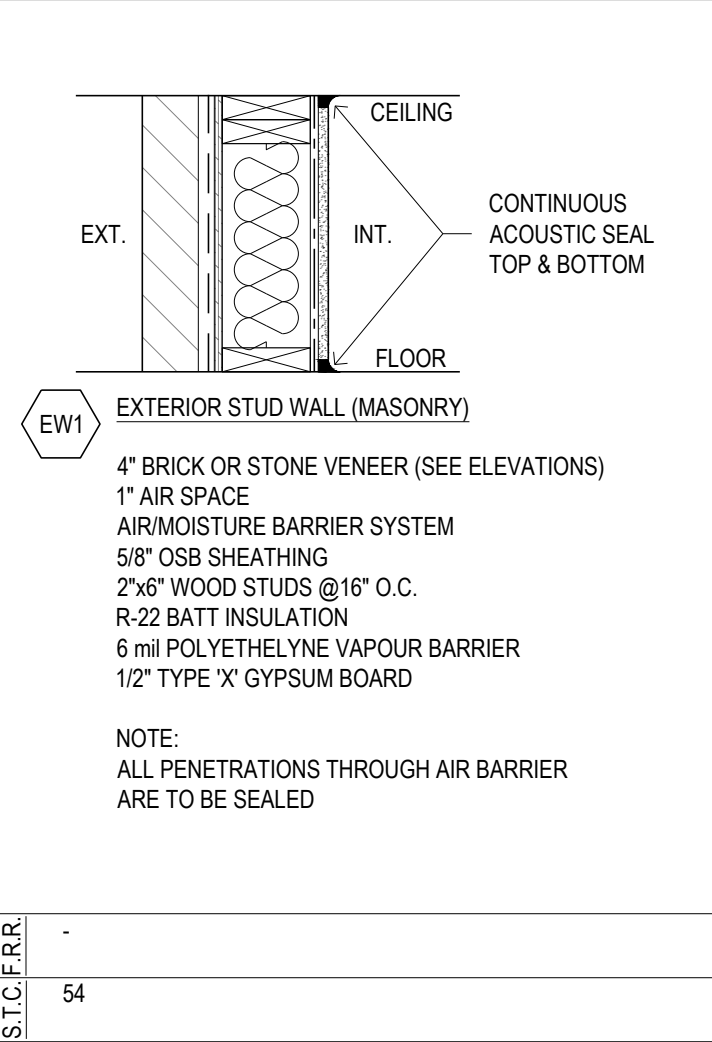


2 SIDE ELEVATION
10 UNIT BLOCK
3/16" = 1'-0"

MATERIAL LEGEND	
TAG	MATERIAL TYPE
ST	STONE
BR	BRICK
AS	ASPHALT SHINGLES
MR	METAL ROOF
AT	ALUMINUM TRIM
AR	ALUMINUM RAILING
TR	DOOR & WINDOW TRIM
SC	SOLDIER COURSE
PC	PRECAST
PS	PRECAST SILL
GD	GARAGE DOOR
GLZ	GLAZING
CS	CEDAR SHAKES
FW	FAKE WINDOW
MTL	PRE-FINISHED METAL



SOUND RATING		
LOCATION	WALL TAG	STC
BLOCK 1		
BRICK/MASONRY EXTERIOR WALLS	EW1	54
EXTERIOR WALLS OF ENBs (METAL SIDING)	EW3	54
BRICK/MASONRY INTERIOR WALLS OF ENBs	EW1	54
WINDOWS/DOORS INSIDE ENBs		33
WINDOWS ON EXTERIOR OF ENBs		35
BLOCKS 2, 3 & 4		
BRICK/MASONRY EXTERIOR WALLS	EW1	54
EXTERIOR WALL OF ENBs	EW2	44
WINDOWS/DOORS INSIDE ENBs		33
WINDOWS ON EXTERIOR OF ENBs		33



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KEY TO DETAIL LOCATION			
No.	DETAIL NUMBER	DRAWING SHEET NUMBER	
No.			

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SITE PLAN APPROVAL	1	04.12.18	MB
ISSUED FOR REVIEW	2	06.10.20	GA
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SOUND RATINGS UPDATED	6	08.06.24	DG
ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED			

REVISIONS TO DRAWING	NO.	DATE (DD.MM.YY)	BY
-	-	-	-
BUILDING PERMIT NUMBER:			
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VANSITMART B2B
BUILDINGS 1,2,3,4
HAMILTON, ONTARIO

DRAWING SHEET TITLE:
MASONRY BLOCK
ELEVATIONS

DRAWING SCALE:
AS NOTED

DRAWN BY:
CHECKED BY:
PLOT DATE:

KNYMH PROJECT NUMBER:
18053

DRAWING SHEET NUMBER:
A400



<u>LANDSCAPED AREA:</u>	
FRONT YARD AREA:	693.32 SQ. FT.
DRIVEWAY AREA:	286.52 SQ. FT.
HARD SURFACE %:	48%

	DRAWING SHEET NUMBER:
DRAWING VERSION:	A1
DATE:	
December 2, 2024	

NOT FOR CONSTRUCTION



SOUND RATING			
LOCATION		WALL TAG	STC
LOT A			
NORTH, WEST, & EAST FACADES		BRICK/MASONRY (EW1)	54
ENB EXTERIOR WALL		METAL SIDING (EW2)	44
ENB INTERIOR WALL		BRICK/MASONRY (EW1)	54
SOUTH FACADE		METAL SIDING	N/A
ALL FACADES & ENBs		WINDOW	33

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No.	DRAWING SHEET NUMBER

DRAWING SETS ISSUED	No.	DATE (DD,MM,YY)
ISSUED FOR CLIENT REVIEW	1.	07.05.24
ISSUED FOR CLIENT REVIEW	2.	31.05.24
PORCH UPDATED FOR ZONING	3.	20.06.24
REISSUED FOR CONSULTANT COORDINATION	4.	04.07.24
STC RATINGS UPDATED	5.	08.08.24
UPDATED PER NOISE REPORT	6.	06.11.24

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REVISIONS TO DRAWING	No.	DATE (DD,MM,YY)
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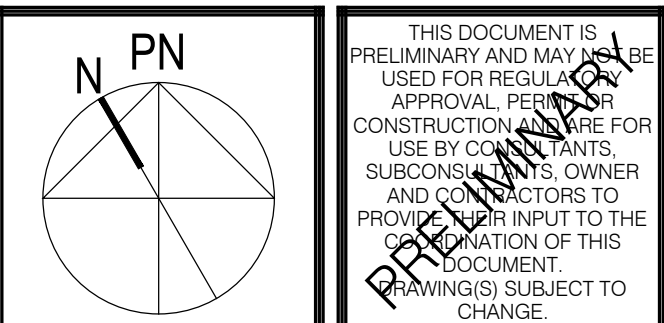
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VANSITMART
SINGLES

115 & 121 VANSITMART
HAMILTON, ONTARIO

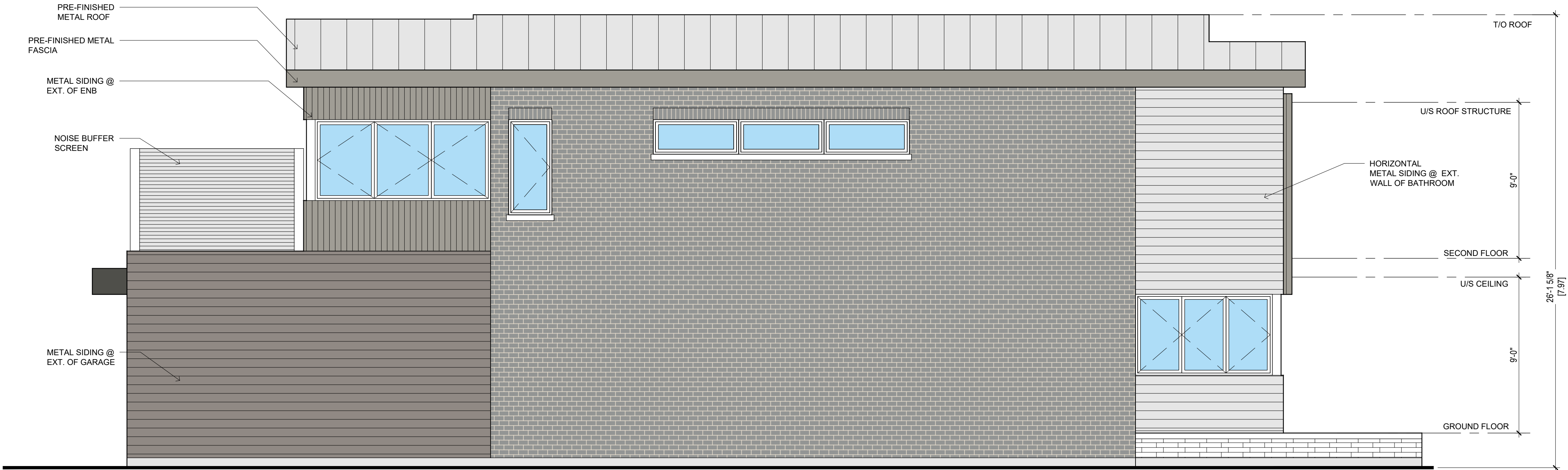
DRAWING SHEET TITLE:

LOT A
FLOOR PLANS

DRAWING SCALE: 1/4"=1'-0"	PROJECT NUMBER: 18053
	DRAWING SHEET NUMBER: A2
DRAWING VERSION:	
PLOT DATE: December 2, 2024	



1 SOUTH ELEVATION
A3
1/4" = 1'-0"



2 NORTH ELEVATION
A3
1/4" = 1'-0"

CEILING
EXT. INT.
CONTINUOUS ACOUSTIC SEAL TOP & BOTTOM
FLOOR

EW1
EXTERIOR STUD WALL (MASONRY)
4" BRICK OR STONE VENEER (SEE ELEVATIONS)
1" AIR SPACE
AIR/MOISTURE BARRIER SYSTEM
5/8" OSB SHEATHING
2"x6" WOOD STUDS @ 24" O.C.
R-22 BATT INSULATION
6 mil POLYETHYLENE VAPOUR BARRIER
1/2" TYPE 'X' GYPSUM BOARD

NOTE:
ALL PENETRATIONS THROUGH AIR BARRIER ARE TO BE SEALED

1HR RATING - AS PER OBC SB-3 ASSEMBLY EW2a

ST.C.F.R.R. 54

CEILING
EXTERIOR ENB
CONTINUOUS ACOUSTIC SEAL TOP & BOTTOM

EW2
EXTERIOR STUD WALL (METAL SIDING)
PRE-FINISHED METAL SIDING
FURRING CHANNELS
AIR/MOISTURE BARRIER SYSTEM
5/8" OSB SHEATHING
2"x6" WOOD STUDS @ 24" O.C.
R-22 BATT INSULATION (5-1/2")
6 mil POLYETHYLENE VAPOUR BARRIER
1/2" TYPE 'X' GYPSUM BOARD

NOTE:
ALL PENETRATIONS THROUGH AIR BARRIER ARE TO BE SEALED

ST.C.F.R.R. 44

3 EXTERIOR WALL CONSTRUCTION
A3
NTS

SOUND RATING		
LOCATION	WALL TAG	STC
LOT A		
NORTH, WEST, & EAST FACADES	BRICK/MASONRY (EW1)	54
ENB EXTERIOR WALL	METAL SIDING (EW2)	44
ENB INTERIOR WALL	BRICK/MASONRY (EW1)	54
SOUTH FACADE	METAL SIDING	N/A
ALL FACADES & ENBs	WINDOW	33

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ISSUED FOR CLIENT REVIEW	2	31.05.24
PORCH UPDATED FOR ZONING	3	20.06.24
REISSUED FOR CONSULTANT COORDINATION	4	04.07.24
STC RATINGS UPDATED	5	08.08.24
UPDATED PER NOISE REPORT	6	06.11.24

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REVISIONS TO DRAWING

No.	DATE (DD.MM.YY)
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VANSITMART SINGLES
115 & 121 VANSITMART
HAMILTON, ONTARIO

DRAWING SHEET TITLE:
LOT A ELEVATIONS

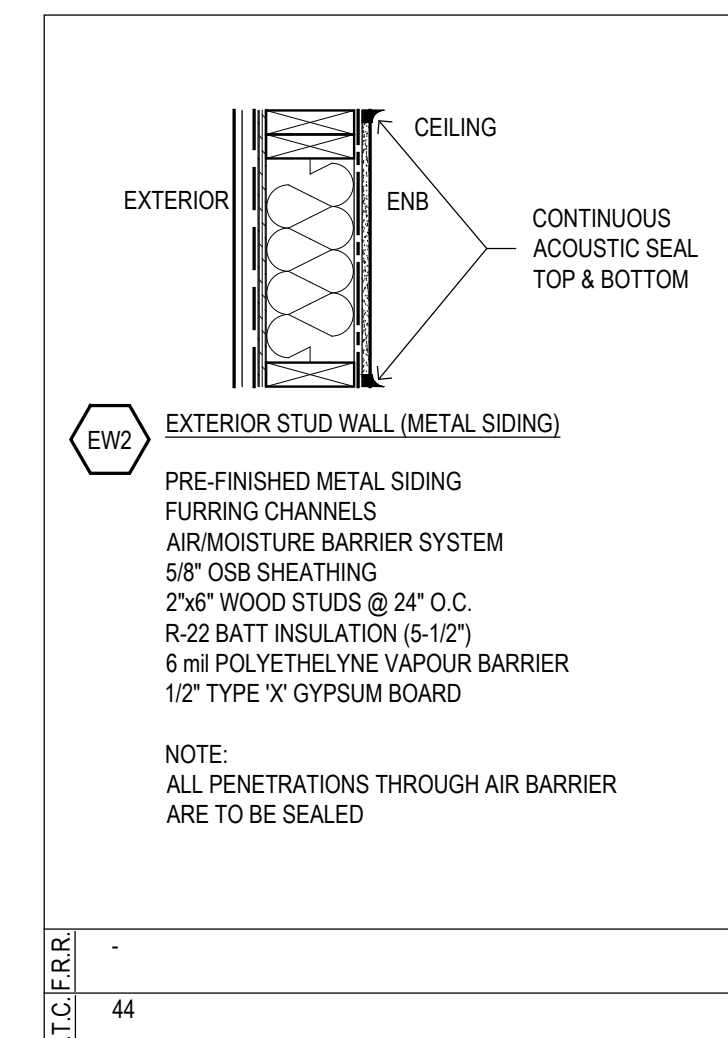
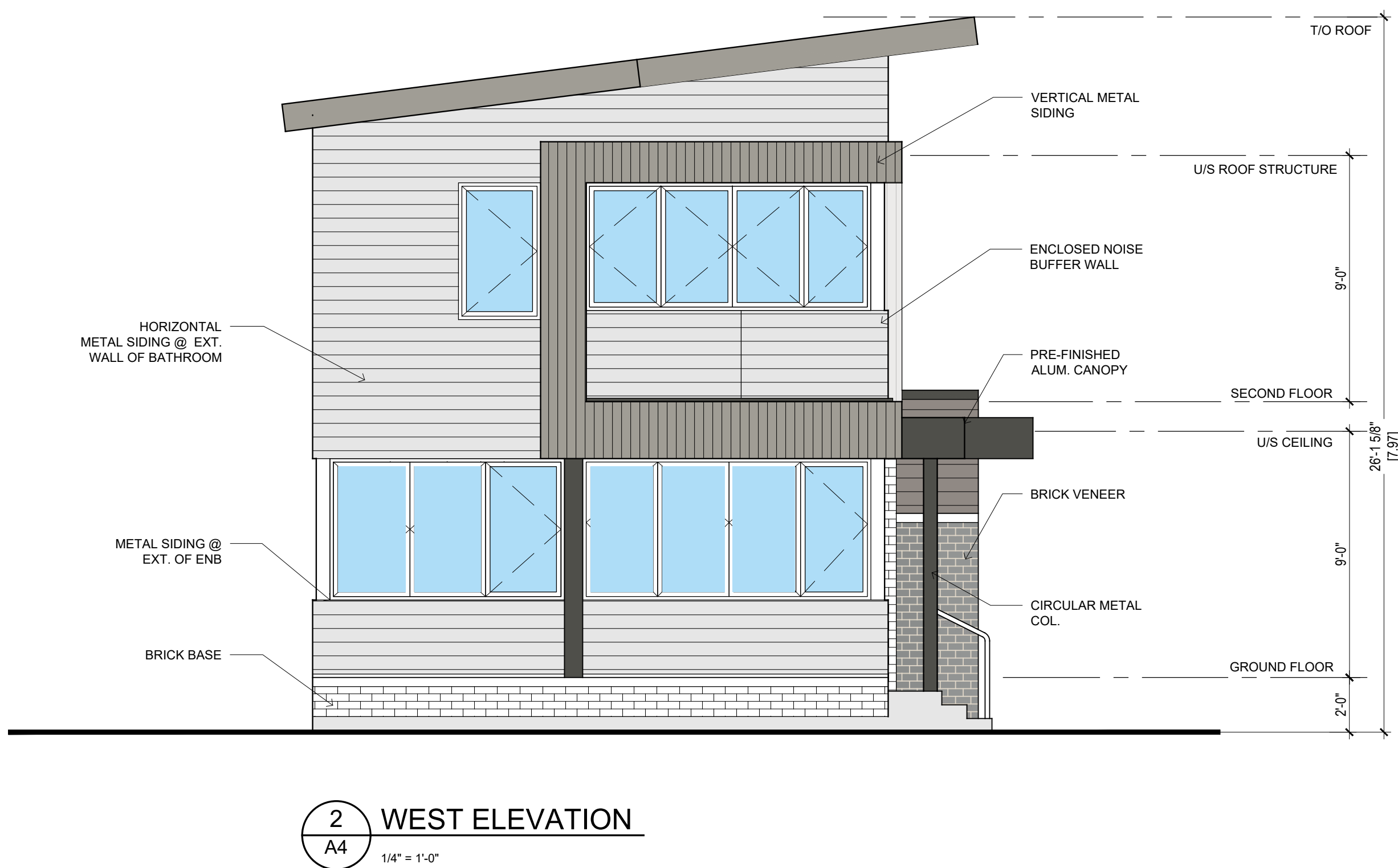
DRAWING SCALE:
1/4"=1'-0"

PROJECT NUMBER:
18053

DRAWING VERSION:

PLOT DATE:
December 2, 2024

DRAWING SHEET NUMBER:
A3



SOUND RATING			
<u>LOCATION</u>		WALL TAG	<u>STC</u>
LOT A			
NORTH, WEST, & EAST FACADES		BRICK/MASONRY (EW1)	54
ENB EXTERIOR WALL		METAL SIDING (EW2)	44
ENB INTERIOR WALL		BRICK/MASONRY (EW1)	54
SOUTH FACADE		METAL SIDING	N/A
ALL FACADES & ENBs		WINDOW	33

DRAWING VERSION:	A4
PLOT DATE: December 2, 2024	

NOT FOR
CONSTRUCTION

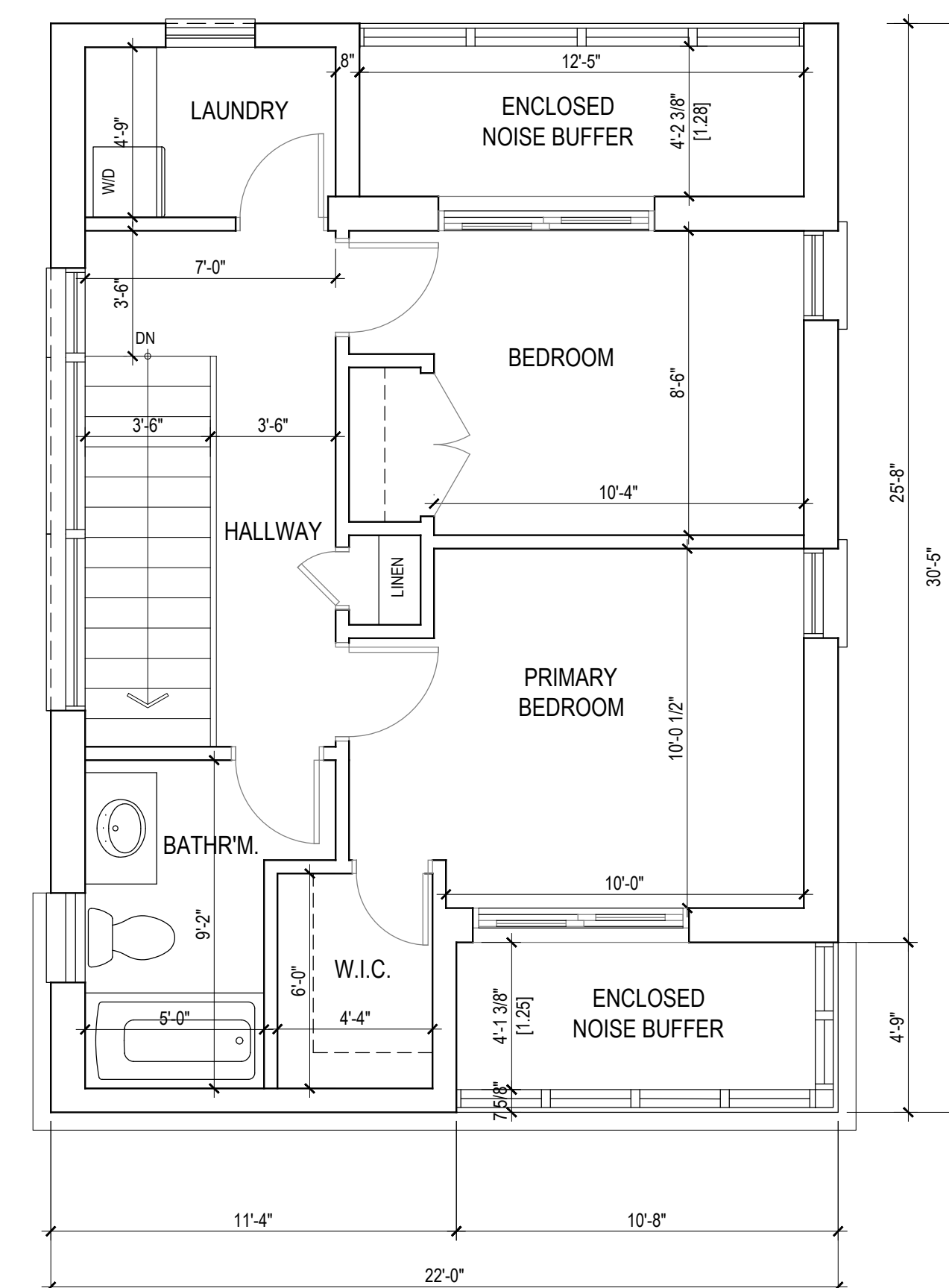
Diagram illustrating the exterior stud wall (metal siding) construction. The wall consists of a STUD WALL (metal siding) with a continuous acoustic seal top & bottom. The wall is shown in cross-section, with the exterior side on the left and the interior side on the right. The wall is labeled EXTERIOR. The interior side is labeled CEILING. The wall is labeled ENB. The wall is labeled CONTINUOUS ACOUSTIC SEAL TOP & BOTTOM. The wall is labeled STUD WALL.

EW2 EXTERIOR STUD WALL (METAL SIDING)

PRE-FINISHED METAL SIDING
 FURRING CHANNELS
 AIR/MOISTURE BARRIER SYSTEM
 5/8" OSB SHEATHING
 2"x6" WOOD STUDS @ 24" O.C.
 R-22 BATT INSULATION (5-1/2")
 6 mil POLYETHYLENE VAPOUR BARRIER
 1/2" TYPE 'X' GYPSUM BOARD

NOTE:
 ALL PENETRATIONS THROUGH AIR BARRIER
 ARE TO BE SEALED

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KEY TO DETAIL LOCATION		
No. No.	DETAIL NUMBER DRAWING SHEET NUMBER	
DRAWING SETS ISSUED		
ISSUED FOR CLIENT REVIEW	No.	DATE (DD.MM.YY)
ISSUED FOR CLIENT REVIEW	1.	07.05.24
PORCH UPDATED FOR ZONING	2.	31.05.24
REISSUED FOR CONSULTANT COORDINATION	3.	20.06.24
SJC RATINGS UPDATED	4.	04.07.24
UPDATED PER NOISE REPORT	5.	08.08.24
	6.	06.11.24
ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED		
REVISIONS TO DRAWING		
	No.	DATE (DD.MM.YY)
BUILDING PERMIT NUMBER:		
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VANSITMART SINGLES 115 & 121 VANSITMART HAMILTON, ONTARIO		
DRAWING SHEET TITLE:		
LOT B FLOOR PLANS		
DRAWING SCALE:		PROJECT NUMBER:
1/4"=1'-0"		18053
DRAWING VERSION:		DRAWING SHEET NUMBER:
PLOT DATE: December 2, 2024		A6



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STC RATINGS UPDATED	5.	08.08.24
UPDATED PER NOISE REPORT	6.	06.11.24

REVISIONS TO DRAWING	No.	DATE (DD,MM,YY)
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DRAWING(S) SUBJECT TO
CHANGE.

DRAWING SHEET TITLE:

LOT B
ELEVATIONS

DRAWING VERSION:	A7
PLOT DATE:	December 2, 2024



Appendix C: Traffic Data



System Engineering
Engineering Services

1 Administration Road
Concord, ON, L4K 1B9
T: 905.669.3264
F: 905.760.3406

Train Count Data

TRANSMITTAL

To: Thorton Tomasetti
Destinataire : 23-366 Revus Avenue,
Mississauga, ON
L5G 4S5

Project : GRM- 40.49 Kenilworth Avenue N Hamilton ON

Att'n: Robert Fuller

Routing: RFuller@ThorntonTomasetti.com

From: Umair Naveed
Expéditeur :

Date: 09/27/2022

Cc: Adjacent Development
CN via e-mail

☐ Urgent ☐ For Your Use ☐ For Review ☒ For Your Information ☐ Confidential

**Re: Train Traffic Data – CN Grimsby Subdivision near Kenilworth
Avenue N in Hamilton, 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,

Umair Naveed
Officer Public Works – Eastern Canada
Permits.gld@cn.ca

Date: 2022/09/27

Project Number: GRM –40.49- Kenilworth Avenue N , Hamilton, ON

Dear Robert:

Re: Train Traffic Data – CN Grimsby Subdivision near Kenilworth Avenue N in Hamilton, ON

The following is provided in response to Robert’s 2022/06/20 request for information regarding rail traffic in the vicinity of grade separation at Kenilworth Avenue N in Hamilton, ON at approximately Mile 40.49 on CN’s Grimsby 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	4	140	30	4
Way Freight	0	25	30	4
Passenger	2	10	30	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	0	140	30	4
Way Freight	2	25	30	4
Passenger	0	10	30	2

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

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are 3(Three) at-grade crossing in the immediate vicinity of the study area at Mile 39.50 Parkdale Avenue, Mile 41.02 Ottawa Street and Mile 41.54 Gage Avenue. Anti-whistling bylaws are in effect at these crossings. 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.

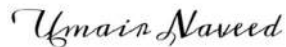
With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The double mainline track is considered continuously welded rail throughout the study area. This location is near CN's Hamilton yard. Be advised, that any development within 1000m of a yard should take extra measures to understand and assess noise impacts and the creation of noise due to CN operations within the yard as this is not reflected in the data provided.

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 cursive script that reads "Umair Naveed".

Umair Naveed
Officer Public Works – Eastern Canada
Permits.gld@cn.ca

Fuller, Robert

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: Monday, November 28, 2022 10:25 AM
To: Fuller, Robert
Subject: RE: Train Volume Data Request - Kenilworth Avenue North & Vansitmart Avenue

[External Sender]

Good morning,

Further to your request dated November 23, 2022, the subject lands (121 Vansitmart Avenue, Hamilton) are located within 300 metres of the CN Grimsby Subdivision (which carries Lakeshore West GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 93 trains. The planned detailed trip breakdown is listed below:

	1 Diesel Locomotive	2 Diesel Locomotives		1 Diesel Locomotive	2 Diesel Locomotives
Day (0700-2300)	81	7	Night (2300-0700)	3	2

The current track design speed near the subject lands is 30 mph (48 km/h).

There are *anti-whistling by-laws* in affect near the subject lands at Wellington St, and Victoria Ave.

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



From: Fuller, Robert <RFuller@ThorntonTomasetti.com>
Sent: November 22, 2022 1:56 PM
To: Rail Data Requests <RailDataRequests@metrolinx.com>
Subject: Train Volume Data Request - Kenilworth Avenue North & Vansitmart Avenue

You don't often get email from rfuller@thorntontomasetti.com. [Learn why this is important](#)

EXTERNAL SENDER: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

EXPÉDITEUR EXTERNE: Ne cliquez sur aucun lien et n'ouvrez aucune pièce jointe à moins qu'ils ne proviennent d'un expéditeur fiable, ou que vous ayez l'assurance que le contenu provient d'une source sûre.

Good afternoon,

I'm writing to request train volume data in relation to a noise study for a proposed residential development in the vicinity of the Lakeshore West GO Train line (121 Vansitmart Avenue, Hamilton, in the vicinity of the intersection of Kenilworth Avenue North & Vansitmart Avenue).

The following train data is requested for the Metrolinx train volumes on this rail line:

Requested Train Data:

- Number of trains per day during daytime (07:00-23:00)
- Number of trains per day during night-time (23:00-07:00)
- Types of trains
- Annual growth rate for train volume
- Number of train cars
- Number of locomotives
- Speed of trains
- Any whistle signals in the area

Please let us know if there is any fee required to obtain the train volume data and the payment method.

Sincerely,

Robert Fuller, P.Eng. | Project Engineer

Thornton Tomasetti | 23-366 Revus Avenue, Mississauga, ON L5G 4S5, Canada

Direct +1.905.629.3583 | **Main** +1.905.271.7888 | **Cell** +1.647.769.7161

RFuller@ThorntonTomasetti.com | www.ThorntonTomasetti.com

This e-mail is intended only for the person or entity to which it is addressed. If you received this in error, please contact the sender and delete all copies of the e-mail together with any attachments.

Appendix D: Transportation Noise Predictions

Appendix D to Report PED23172a

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STAMSON 5.0 NORMAL REPORT Date: 06-10-2023 10:43:01
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POW1R.te Time Period: Day/Night 16/8 hours
 Description:

Rail data, segment # 1: CNRail (day/night)

Train Type	! Trains	! Speed ! ! (km/h)	!# loc ! !/Train!	!# Cars! !/Train!	Eng type	!Cont !weld
* 1. Freight	! 5.4/0.0	! 50.0	! 4.0	!140.0	!Diesel!	Yes
* 2. WayFreight	! 0.0/2.7	! 50.0	! 4.0	! 25.0	!Diesel!	Yes
* 3. Passenger	! 2.7/0.0	! 50.0	! 2.0	! 10.0	!Diesel!	Yes
* 4. GO	! 88.0/5.0	! 50.0	! 2.0	! 12.0	!Diesel!	Yes

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1. Freight	! 4.0/0.0	! 2.50	! 12.00
2. WayFreight	! 0.0/2.0	! 2.50	! 12.00
3. Passenger	! 2.0/0.0	! 2.50	! 12.00
4. GO	! 88.0/5.0	! 2.50	! 0.00

Data for Segment # 1: CNRail (day/night)

Angle1	Angle2	: -90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	49.00 / 49.00	m
Receiver height	:	7.50 / 7.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
No Whistle	:		
Reference angle	:	0.00	

Results segment # 1: CNRail (day)

LOCOMOTIVE (0.00 + 65.39 + 0.00) = 65.39 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	73.60	-7.22	-0.99	0.00	0.00	0.00	65.39

WHEEL (0.00 + 55.68 + 0.00) = 55.68 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	64.64	-7.76	-1.19	0.00	0.00	0.00	55.68

Segment Leq : 65.83 dBA

Total Leq All Segments: 65.83 dBA

Results segment # 1: CNRail (night)

LOCOMOTIVE (0.00 + 57.79 + 0.00) = 57.79 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	66.01	-7.22	-0.99	0.00	0.00	0.00	57.79

WHEEL (0.00 + 47.30 + 0.00) = 47.30 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	56.26	-7.76	-1.19	0.00	0.00	0.00	47.30

Segment Leq : 58.16 dBA

Total Leq All Segments: 58.16 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.83
(NIGHT): 58.16

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STAMSON 5.0 NORMAL REPORT Date: 06-10-2023 10:45:33
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POW2R.te Time Period: Day/Night 16/8 hours
 Description:

Rail data, segment # 1: CNRail (day/night)

Train Type	! Trains	! Speed ! ! (km/h)	!# loc ! !/Train!	!# Cars! !/Train!	Eng type	!Cont !weld
* 1. Freight	! 5.4/0.0	! 50.0	! 4.0	!140.0	!Diesel!	Yes
* 2. WayFreight	! 0.0/2.7	! 50.0	! 4.0	! 25.0	!Diesel!	Yes
* 3. Passenger	! 2.7/0.0	! 50.0	! 2.0	! 10.0	!Diesel!	Yes
* 4. GO	! 88.0/5.0	! 50.0	! 2.0	! 12.0	!Diesel!	Yes

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1. Freight	! 4.0/0.0	! 2.50	! 12.00
2. WayFreight	! 0.0/2.0	! 2.50	! 12.00
3. Passenger	! 2.0/0.0	! 2.50	! 12.00
4. GO	! 88.0/5.0	! 2.50	! 0.00

Data for Segment # 1: CNRail (day/night)

Angle1	Angle2	: -90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	49.00 / 49.00	m
Receiver height	:	7.50 / 7.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
No Whistle	:		
Reference angle	:	0.00	

Results segment # 1: CNRail (day)

LOCOMOTIVE (0.00 + 65.39 + 0.00) = 65.39 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	73.60	-7.22	-0.99	0.00	0.00	0.00	65.39

WHEEL (0.00 + 55.68 + 0.00) = 55.68 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	64.64	-7.76	-1.19	0.00	0.00	0.00	55.68

Segment Leq : 65.83 dBA

Total Leq All Segments: 65.83 dBA

Results segment # 1: CNRail (night)

LOCOMOTIVE (0.00 + 57.79 + 0.00) = 57.79 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	66.01	-7.22	-0.99	0.00	0.00	0.00	57.79

WHEEL (0.00 + 47.30 + 0.00) = 47.30 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	56.26	-7.76	-1.19	0.00	0.00	0.00	47.30

Segment Leq : 58.16 dBA

Total Leq All Segments: 58.16 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.83
(NIGHT): 58.16

Appendix D to Report PED23172a

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STAMSON 5.0 NORMAL REPORT Date: 06-10-2023 10:46:22
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POW3R.te Time Period: Day/Night 16/8 hours
 Description:

Rail data, segment # 1: CNRail (day/night)

Train Type	! Trains	! Speed ! (km/h)	!# loc !/Train	!# Cars !/Train	!Eng type	!Cont !weld
* 1. Freight	! 5.4/0.0	! 50.0	! 4.0	!140.0	!Diesel	! Yes
* 2. WayFreight	! 0.0/2.7	! 50.0	! 4.0	! 25.0	!Diesel	! Yes
* 3. Passenger	! 2.7/0.0	! 50.0	! 2.0	! 10.0	!Diesel	! Yes
* 4. GO	! 88.0/5.0	! 50.0	! 2.0	! 12.0	!Diesel	! Yes

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1. Freight	! 4.0/0.0	! 2.50	! 12.00
2. WayFreight	! 0.0/2.0	! 2.50	! 12.00
3. Passenger	! 2.0/0.0	! 2.50	! 12.00
4. GO	! 88.0/5.0	! 2.50	! 0.00

Data for Segment # 1: CNRail (day/night)

Angle1	Angle2	: -90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	1	(Absorptive ground surface)
Receiver source distance	:	105.00 / 105.00 m	
Receiver height	:	7.50 / 7.50 m	
Topography	:	1	(Flat/gentle slope; no barrier)
No Whistle	:		
Reference angle	:	0.00	

Results segment # 1: CNRail (day)

LOCOMOTIVE (0.00 + 60.74 + 0.00) = 60.74 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	73.60	-11.87	-0.99	0.00	0.00	0.00	60.74

WHEEL (0.00 + 50.68 + 0.00) = 50.68 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	64.64	-12.76	-1.19	0.00	0.00	0.00	50.68

Segment Leq : 61.15 dBA

Total Leq All Segments: 61.15 dBA

Results segment # 1: CNRail (night)

LOCOMOTIVE (0.00 + 53.14 + 0.00) = 53.14 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.41	66.01	-11.87	-0.99	0.00	0.00	0.00	53.14

WHEEL (0.00 + 42.30 + 0.00) = 42.30 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	56.26	-12.76	-1.19	0.00	0.00	0.00	42.30

Segment Leq : 53.48 dBA

Total Leq All Segments: 53.48 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.15
(NIGHT): 53.48

Appendix D to Report PED23172a

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STAMSON 5.0 NORMAL REPORT Date: 26-07-2024 13:32:37
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: OLA1.te Time Period: Day/Night 16/8 hours
 Description:

Rail data, segment # 1: CNRail (day/night)

Train Type	! Trains	! Speed ! (km/h)	!# loc !/Train	!# Cars! /Train	Eng type	!Cont !weld
* 1. Freight	5.4/0.0	50.0	4.0	140.0	!Diesel!	Yes
* 2. WayFreight	0.0/2.7	50.0	4.0	25.0	!Diesel!	Yes
* 3. Passenger	2.7/0.0	50.0	2.0	10.0	!Diesel!	Yes
* 4. GO	88.0/5.0	50.0	2.0	12.0	!Diesel!	Yes

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type:	! Unadj. !	Annual % !	Years of !
No Name	! Trains !	Increase !	Growth !
1. Freight	4.0/0.0	2.50	12.00
2. WayFreight	0.0/2.0	2.50	12.00
3. Passenger	2.0/0.0	2.50	12.00
4. GO	88.0/5.0	2.50	0.00

Data for Segment # 1: CNRail (day/night)

Angle1	Angle2	: -90.00 deg	90.00 deg
Wood depth		: 0	(No woods.)
No of house rows		: 0 / 0	
Surface		: 1	(Absorptive ground surface)
Receiver source distance		: 151.00 / 151.00 m	
Receiver height		: 1.50 / 1.50 m	
Topography		: 2	(Flat/gentle slope; with barrier)
No Whistle			
Barrier angle1		: -90.00 deg	Angle2 : 0.00 deg
Barrier height		: 5.00 m	
Barrier receiver distance		: 3.00 / 3.00 m	
Source elevation		: 0.00 m	
Receiver elevation		: 0.00 m	
Barrier elevation		: 0.00 m	
Reference angle		: 0.00	

Results segment # 1: CNRail (day)

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
4.00	1.50	1.55	1.55
0.50	1.50	1.48	1.48

LOCOMOTIVE (0.00 + 41.86 + 53.36) = 53.66 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.28	73.60	-12.89	-3.75	0.00	0.00	-15.11	41.86
0	90	0.58	73.60	-15.90	-4.34	0.00	0.00	0.00	53.36

WHEEL (0.00 + 31.44 + 43.52) = 43.78 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.39	64.64	-13.94	-3.97	0.00	0.00	-15.28	31.44
0	90	0.66	64.64	-16.65	-4.47	0.00	0.00	0.00	43.52

Segment Leq : 54.08 dBA

Total Leq All Segments: 54.08 dBA

Results segment # 1: CNRail (night)

Barrier height for grazing incidence

Source Height	Receiver (m)	Barrier Height	Barrier Height	Elevation of Barrier Top
4.00	!	1.50	!	1.55
0.50	!	1.50	!	1.48

LOCOMOTIVE (0.00 + 34.26 + 45.77) = 46.07 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.28	66.01	-12.89	-3.75	0.00	0.00	-15.11	34.26
0	90	0.58	66.01	-15.90	-4.34	0.00	0.00	0.00	45.77

WHEEL (0.00 + 23.06 + 35.14) = 35.40 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.39	56.26	-13.94	-3.97	0.00	0.00	-15.28	23.06
0	90	0.66	56.26	-16.65	-4.47	0.00	0.00	0.00	35.14

Segment Leq : 46.43 dBA

Total Leq All Segments: 46.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.08
(NIGHT): 46.43

Appendix E: Measured Sound Levels

Weather Conditions

Prevailing weather conditions at the time of sound level measurements were as follows, based on information recorded at the Hamilton Airport weather station operated by NAVCAN, obtained by TT from Environment and Climate Change Canada's *Historical Data* portal.

Parameter	Conditions (October 27, 2022)
Wind Direction	North
Wind Speed	11 km/h
Relative Humidity	67%
Pressure	99.91 kPa
Temperature	6 °C
Cloud Cover	Cloudy
Precipitation	None

Instrumentation

Measurements were conducted using a Brüel & Kjær model 2250 Sound Level Meter / Analyzer, serial number 3007997 fitted with a Brüel & Kjær model 4189 free-field microphone transducer, serial number 2983426.

A wind screen was used for all outdoor measurements. All equipment was within its laboratory calibration window, and was field calibrated before and after measurements using a Bruel & Kjaer Type 4231 calibrator, serial number 2623794.

Measurement Methodology

Measurement methodology was based on the procedures identified in NPC-103 and NPC-300, specifically:

Steady Noise Sources:

NPC-103 defines a steady noise as having a maximum difference of 6 dB between the lowest and highest observed sound levels.

NPC-103 requires that measurements of steady noise to be conducted using slow response, and A-weighting, with a minimum of six (6) 15 second observations of the minimum, average, and maximum sound level. The one-hour equivalent sound level (Leq) to be reported is the arithmetic average of the observed average sound pressure level readings.

TT's sound level meter was configured to log 15 second readings for a period of 2 minutes (8 readings). The logged data included slow response maximum and minimum values in 1/3 octave bands and dBA broadband, as well as Leq values in 1/3 octave bands and dBA broadband. The values used for the purposes of modelling noise impacts were the arithmetic average of Leq results from each reading, in each 1/3 octave band.

Impulse Noise Sources:

NPC-103 requires that measurements of impulse noise be conducted using impulse response, and A-weighting. If at least one impulse occurs in every 5-minute period over the course of 20 minutes, then a

minimum of twenty (20) impulse events should be recorded, and the logarithmic mean impulse sound level (LLM) to be reported is the combined log average of the impulse peaks recorded. Otherwise, individual impulse event peaks should be measured and reported separately.

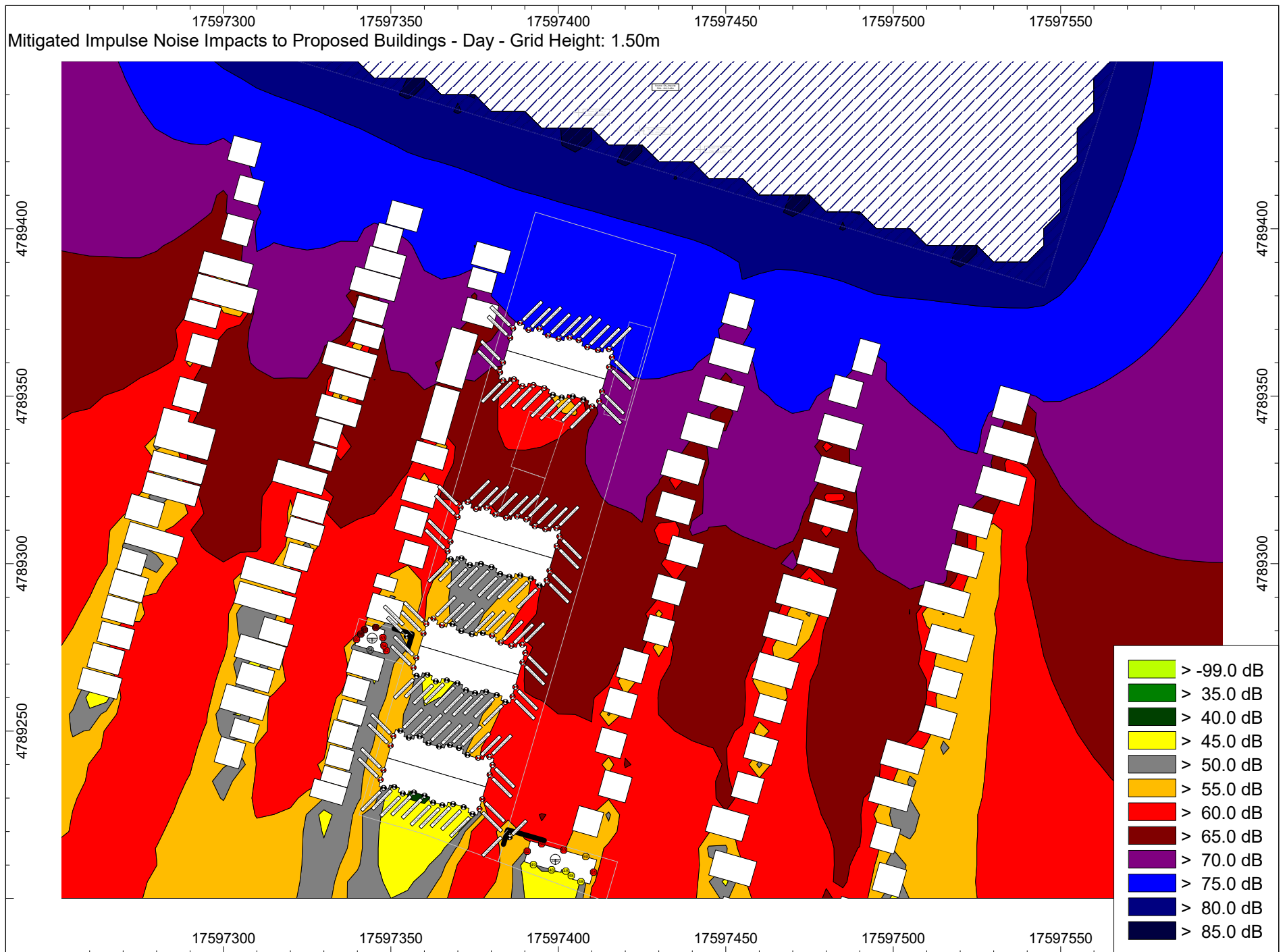
Due to the infrequent nature of the rail yard activities, individual impulse events were recorded separately.

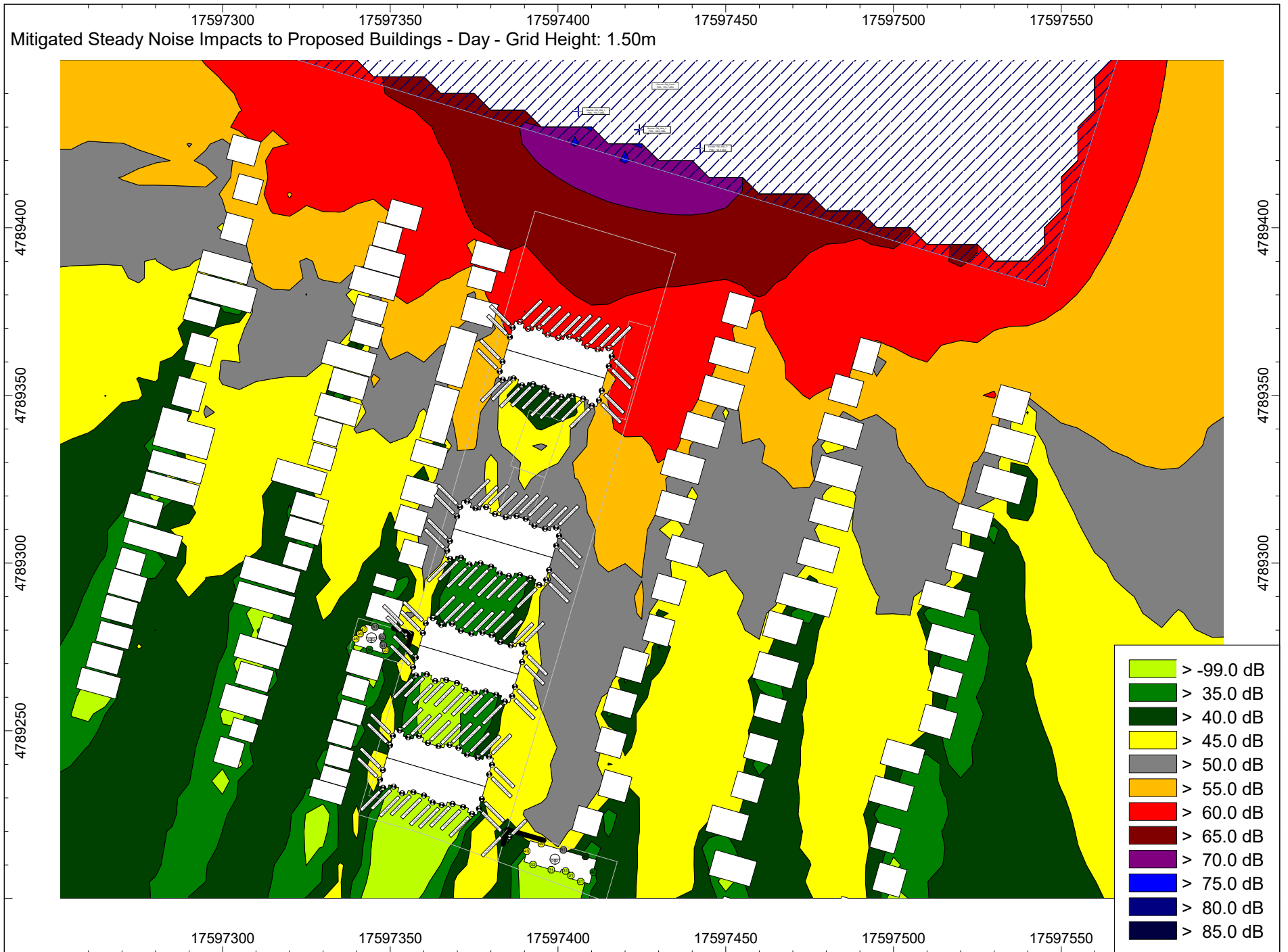
Measurement Results

The following table provides a summary of the reported results from each sound level measurement.

Reading ID	Start Time	Description	Octave Band (Hz)	Sound Pressure Level (dB)
SNS-01	2022/09/21 14:52	Steady noise observed from the Project site.	31.5	62.9
			63	63.6
			125	59.1
			250	56.8
			500	49.7
			1000	48.5
			2000	51.4
			4000	45.4
			8000	29.5
			Total (L _{eq} , dBA)	56.3
INS-01	2022/09/21 14:52	Train coupling noise.	31.5	85.7
			63	83.8
			125	80.9
			250	69.4
			500	64.4
			1000	65.9
			2000	65.1
			4000	56.4
			8000	39.8
			Total (dBA)	71.8
INS-02	2022/09/21 14:52	Train departure (slack-taking) noise.	31.5	94.0
			63	93.7
			125	91.7
			250	84.6
			500	76.1
			1000	78.1
			2000	78.9
			4000	73.3
			8000	64.4
			Total (dBA)	85.8

Appendix F: CadnaA Calculation Output





Appendix G: Other Correspondence

Fuller, Robert

From: Proximity <proximity@cn.ca>
Sent: Wednesday, November 27, 2024 10:32 AM
To: sbeedie@urbansolutions.info
Cc: jules.calzavara@dentons.com; max.reedijk@dentons.com; Matt Johnston; Fuller, Robert; DinaG@knymh.com
Subject: 2024-11-27_architectural plans and update Noise study_121 Vansitmart Avenue
Attachments: 18053-Vansitmart-Lot A-Detached-Architectural-24-11-08.pdf; 18053-Vansitmart-Lot B-Detached-Architectural-24-11-08.pdf; 18053-Vansitmart-Townhouses-Architectural-24-11-08.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

[External Sender]

Hello Scott,

CN reviewed the attached architectural plans. The mitigation included in our September 25, 2024 peer review letter are shown correctly on the attached plans.

Please update the noise study to reflect the peer review comments and the attached architectural plans.

Thank you

Ashkan Matlabi, Urb. OUQ. MCIP, MBA

Urbaniste sénior / Senior Planner (CN Proximity)
Planning, Landscape Architecture and Urban Design
Urbanisme, architecture de paysage et design urbain



E : proximity@cn.ca

From: Scott Beedie <sbeedie@urbansolutions.info>

Sent: November 14, 2024 11:05 AM

To: Dalila Giusti <dalila@jadeacoustics.com>; Proximity <proximity@cn.ca>

Cc: Matt Johnston <mjohnston@urbansolutions.info>; Dina Ghaly <DinaG@knymh.com>; Fuller, Robert <RFuller@ThorntonTomasetti.com>; Przemyslaw Myszkowski <ShemM@knymh.com>

Subject: 2024-09-18_121 Vansitmart Avenue Noise Peer Review

Hi Dalila,

In keeping with our discussions during our October 18th meeting, attached is the draft updated Architectural drawings for your preliminary review to ensure they are satisfactory. Once you confirm the proposed mitigation measures address any outstanding concerns, we will finalize and formally submit – along with the updated Noise Study for the subject lands.

Kindly advise how long you will need to conduct your review.

Thanks,
Scott

Scott Beedie, MCIP, RPP
Planner



3 Studebaker Place, Unit 1, Hamilton, ON L8L 0C8

T: (905) 546-1087 **C:** (905) 807-7727

Email: sbeedie@urbansolutions.info

Website: https://secure-web.cisco.com/1aCa8NWUVsUZjNH8w3Gem9PBTfDcS6a6jM1CPEhwnBgUsMnSh9xeDPJ2-RY6rU465EWRxgu3f9yMp07NUdySUVwAFJo2Lz-saaPESkm5oy_KL7aSwCkFL3187mx6eUMeX2X8WT3jCNYHcCoHZqHDS20ii2QC7-VP9xWH7RzZ9fY4tP6kvDqLk7aTwhbe2zMBxt8WEhatVeiHI5KkPR522V_8j-SnI9CTO_Ve2ZL-vaZynENfEtBoGCcymjmgwVILS-rglxDMfTndVL1gsGuJRq247353nEujgkKLNhepcEZj2y2brlH5wEi3feO9MvZN2mgxoE62VnLErAigXc9p0ZyDjEaulLUlyDzhjx4U417JxHJFnBtkoJwalPMYCYe0k039L-1u3ns6232XqWC4OrSWAmv1dObG7SmYl1dpNTk/https%3A%2F%2Furbansolutions.info

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