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Noise Feasibility Study
Proposed Residential Development
51 & 57 Tannery Street, 208 Emby Drive, (Streetsville)
Mississauga, Ontario
(OPZR-104636)

Prepared for:

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1 Introduction and Summary

HGC Engineering was retained by NYX Tannery LP to conduct a noise feasibility study for their proposed residential development to be located at 51, 57 Tannery Street, 208 Emby Drive, (Streetsville), City of Mississauga, Ontario. There is a Canadian Pacific (CP) railway line located to the east of the site. The study is required by the municipality as part of their planning and approvals process specifically for OPA/ZBA (File No. OPZR-104636).

This study has been updated to reflect the latest site plan which proposes two buildings, 12-storeys and 14-storeys in height. This is a change from the previous proposal of stacked townhouses which was approved. Our previous noise report for the site is titled, "Noise and Vibration Feasibility Study, 51, 57 Tannery Street and 208 Emby Drive, City of Mississauga, Ontario" dated June 24, 2019 and January 19, 2024. This study incorporates minor revisions to the traffic data in Section 4.2 specifically Table III and Appendix B in response to comments from the City of Mississauga. There are no changes to the predicted sound levels or recommendations.

Rail traffic data was obtained from HGC Engineering project files for other projects in the area, originally obtained from GO Transit (GO) and Canadian Pacific (CP) railway personnel. Road traffic data for the nearby roadways was obtained from the City of Mississauga. The data was used to predict future traffic sound levels at the locations of the proposed dwelling façades. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP), CP/GO Transit and the municipality.

The sound level predictions indicate that the future rail and road traffic sound levels will exceed MECP guidelines at the proposed development. Physical mitigation in the form of an earth berm with an acoustic fence on top of the berm is required for the development and has been included in the site plan. Air conditioning will be required for the proposed buildings. Brick veneer or a masonry equivalent exterior wall construction is required for the facades of the buildings with exposure to the railway. Upgraded glazing constructions are required for the proposed buildings. When detailed floor plans and building elevations are available, the glazing construction should be refined and the exterior wall construction should be verified. Warning clauses are recommended to inform future residents of the traffic noise impacts and the nearby commercial uses.

The site is located within 75 m from the railway right of way. Vibration measurements have been completed for this site in the past. Past vibration measurements indicate vibration levels are below the limits. Vibration mitigation is not required for this residential development.

2 Site Description

Figure 1 is a key plan showing the location of the site. The site is located at 51, 57 Tannery Street, 208 Emby Drive, (Streetsville), Mississauga, Ontario. Figure 2 is a proposed site plan prepared by SRM Architects dated 2024-04-22 showing the prediction locations. Appendix D includes the preliminary floor plans and building elevations. Appendix D also includes the proposed berm sections. Appendix E includes a Rail Protection Report.

The proposed residential development will include a 12-storey and 14-storey residential building with three levels of underground parking. A site visit was made by HGC Engineering personnel in December 2023 to make observations of the acoustical environment. During the site visit, it was observed that the railway is the dominant source of noise. Tannery Street, Joymar Drive, and Queen Street South may be considered as secondary sources of noise and have been included in the analysis, although the volumes are low.

The site is located outside of the Lester B. Pearson airport noise contours. A railway is located to the east of the site. An existing 6-storey retirement building is located to the north of the site. The closest building façade is within 75 m from the railway right-of-way. Vibration measurements have been conducted in the past for the subject site and were found to be within the vibration criteria and vibration mitigation is not required for the subject site. Vibration measurements were completed in 2019 and found to be below the vibration criteria. Vibration mitigation is not required for the development site. Lands to the north, west and south are primarily residential. To the northwest, a residential development is proposed, specifically at 180 Rutledge Road. Further to the west is the Streetsville Secondary School. To the further northeast of the subject site is a commercial site that includes stores such as Shoppers Drug Mart, LCBO, Medical Clinic, Bowling, Scotiabank and some small automotive uses. These are too far in distance to impact the subject lands since closer residences exist. Lands to southeast of Tannery Street and Joymar Drive have a planning application with the City to develop the lands as residential townhouses. This eliminates the current existing

stationary noise sources (as indicated on aerial photograph) and therefore these existing businesses do not need to be addressed.

Site visits were completed by HGC Engineering to make observations of the surrounding area. To the south of the subject site. To the south of the subject site, there are a few small auto type businesses, a parking storage area and a coin operated car wash with wash bays facing north. It is our understanding that there are no planning applications for the lands to the south of the subject site.

The following is a list of the businesses to the south of the subject site.

- The LAB Mississauga (Limitless Automotive Boutique), 100 Emby Drive, Unit F (7 days a week, 10 am to 6 pm). Some information was provided by personnel of the LAB business to the south. Some washing occurs in the bays facing south. Body work and painting is not included in those businesses.
- Sunset Pro Autostyling Inc., 100 Emby Drive, (7 days a week, 10 am to 6 pm)
- Krown Streetsville, M – F 9:30 am to 5:30 pm
- Spot Free Car Wash Streetsville, 56 Thomas Street, Streetsville, 24 hours a day, 7 days a week
- Azul Granite & Marble Inc., 44 Thomas Street, Streetsville, 9 am to 6 pm

Significant noise is not expected from the businesses to the south. Many of the businesses are daytime only operations. Noise warning clauses are recommended to be included in the property and tenancy agreements for the proposed development as indicated in Section 6. There are no other significant sources of stationary noise within 500 m of the subject site.

3 Criteria for Acceptable Sound Levels

Guidelines for acceptable levels of road and rail traffic noise impacting residential developments are outlined in the MECP publication NPC-300 “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, Part C release date October 21, 2013 and are listed in Table I below. The values in Table I are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA]. The Federation of Canadian Municipalities (FCM) and Railway

Association of Canada (RAC) "Guidelines for New Development in Proximity to Railway Operations", dated May 2013 (RAC/FCM guidelines were also reviewed dated November 2006).

Table I: Road and Rail Traffic Noise Criteria

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

These criteria apply to road and rail traffic operating on railway rights of way, vehicular traffic, including intercity transit busses operating on Municipal Streets. Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

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

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

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where future nighttime sound levels outside bedroom/living/dining room windows will exceed 60 dBA and future daytime sound levels exceed 65 dBA. The provision for the future installation of central air conditioning is required when nighttime sound levels at the façade are in the range of 51 to 60 dBA or when daytime sound levels at the façade are in the range of 56 to 65 dBA. Sound attenuating building constructions and the use of warning clauses to notify future residents of

possible excesses are also required when nighttime sound levels exceed 55 dBA at the façade due to rail traffic noise and exceed 60 dBA at the façade due to road traffic noise.

Warning clauses to notify future residents of possible excesses are also required when nighttime sound levels exceed 50 dBA at the façade and daytime sound levels exceed 55 dBA in the outdoor living area and at the façade due to road and rail traffic.

MECP guidelines recommend brick veneer or a masonry equivalent construction for the exterior walls from foundation to rafters as a minimum construction for any dwellings which are within 100 m of the right of way of the railway, where the 24-hour L_{EQ} is greater than 60 dBA. CP typically requires brick for the first row of dwellings regardless of setback and sound level.

The railways also provide minimum requirements for safety as well as sound and vibration for proposed residential developments located adjacent to their rights-of-way. These refer to minimum required setbacks, berms, fencing and warning clauses. The reader is referred to a copy of CP requirements and Metrolinx requirements for a new development adjacent to a principal main line, which is located in Appendix A.

3.1 Ground-borne Vibration from Rail Traffic

CP and GO Transit guidelines require measurements of ground-borne vibration when dwelling units are to be located within 75 metres of a principal mainline such as the Galt Subdivision.

Vibration is typically measured in terms of oscillatory velocity or acceleration. The limits for acceptable ground-borne vibration are frequency dependent and are presented as a curve of maximum allowable vibratory acceleration versus frequency. The criterion has been overlaid on the graphs of measured vibration for easy reference (included in Appendix F).

4 Traffic Assessment

4.1 Rail Traffic Data

Rail traffic data for the CP Galt Subdivision was obtained from monitored data from a nearby site along the railway line, and from past HGC Engineering projects in the area since CP does not provide rail data any longer. The CP line is used for freight, way freight and passenger trains and is classified as a principal main line. The maximum permissible train speed in the area of the site is 88 kph (50 mph) for the freight trains and 88 kph (55 mph). In conformance with CP assessment requirements, the maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worst-case estimate of train noise. The data was projected to the year 2034 using a 2.5% per year growth rate and is shown in Table II.

Rail traffic data for the Milton GO Train service was obtained from Metrolinx in their email dated September 12, 2023, attached in Appendix B. The maximum permissible train speed in the area of the site is 88 kph (50 mph) for passenger (GO) trains. The maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worst-case estimate of train noise. The forecasted data was provided and is included in Table II below.

Table II: 2034 Projected and Forecasted Rail Traffic Data

Type of Train	Maximum Number of Cars	Maximum Speed (km/h)	Maximum Number of Locomotives	Volume Day/Night
Freight - *projected*	163	80	4	11.5/10.2
GO Trains - *forecasted*	10	80	1	20/2

Note: +Diesel locomotives have been used in predictions as per the direction from Metrolinx

4.2 Road Traffic Data

Traffic data for Tannery Street and Emby drive was obtained from the City of Mississauga in the form of ultimate AADT, and is provided in Appendix B. Traffic data for Joymar Drive, Queen Street, and Rutledge was obtained from past HGC Engineering projects, originally obtained from the City of Mississauga in the form of ultimate AADT, and is provided in Appendix B.

A commercial vehicle percentage of 4% was assumed and split into 2.2% heavy trucks and 1.8% medium trucks for Tannery Street. A day/night split of 90%/10% was used. The speed limit is 50 km/h provided in the data and this was used in the analysis for Tannery Street.

Traffic data for Emby Drive, Joymar Drive and Rutledge Road was obtained from previous HGC Engineering projects in the area and originally obtained from the City of Mississauga in the form of ultimate AADT, and is provided in Appendix B. The traffic volumes for Emb Drive and Rutledge Road are very low in comparison to the rail traffic and therefore has not been included in the analysis. Table III indicates the data used in the noise analysis.

Table III: Ultimate Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Tannery Street	Daytime	4 320	99	81	4 500
	Nighttime	480	11	9	500
	Total	**4 800**	**110**	**90**	**5 000**
Queen St S (between Main St and Thomas Street)	Daytime	15 278	260	213	15 750
	Nighttime	1 698	29	24	1 750
	Total	**16 975**	**289**	**236**	**17 500**
Joymar Drive	Daytime	4 410	50	41	4 500
	Nighttime	490	6	5	500
	Total	**4 900**	**55**	**45**	**5 000**

Note: +Emby Drive and Rutledge Road are less than 1000 vehicles and considered to be a low volume roadway. Joymar and Queen St are at a significant distance from the development such that the sound levels do not contribute to the sound levels at the proposed buildings.

4.3 Road and Rail Traffic Noise Predictions

To assess the levels of road and rail traffic noise which will impact the study area in the future, sound level predictions were made using STAMSON version 5.04. A sample STAMSON output is included in Appendix C. Train whistle has not been included in the analysis since there is an anti-whistling by-law in effect at Ontario Street, Tannery Street, Thomas Street and Mississauga Road at-grade crossings.

Sound levels were predicted at the plane of the top storey bedroom and/or living/dining room windows during daytime and nighttime hours to investigate ventilation requirements. Prediction locations were chosen around the residential buildings to obtain a representation of the future sound levels as shown in Figure 2. The results of these predictions are summarized in Table IV.

The distance setbacks of the buildings indicated on the site plan were used in the analysis, along with an aerial photo to determine the distance of the buildings to the railway and roadways. The acoustic recommendations may be subject to modifications if the site plan is changed significantly.

Table IV: Future Traffic Sound Levels, [dBA], Without Mitigation

Prediction Location	Description	Daytime at Façade $L_{EQ\text{-}16\ hr}$	Nighttime at Façade $L_{EQ\text{-}8\ hr}$
[A]	East façade facing railway	71	73
[B]	Ground level outdoor area+	68	--
[C]	South façade	67	69
[D]	West façade	61	62
[E]	North façade	67	69

Note: +without mitigation

5 Traffic Noise Recommendations

With no mitigation, there are sound level excesses at the facades of the proposed dwellings with exposure to the railway line and roadways. Recommendations to meet MECP and CP railway guidelines are described.

5.1 Outdoor Living Areas

An earth berm 2.5 to 4.25 m in height in some sections is proposed with a 25 m setback from the railway right of way. This decreased setback of 25 m is less than the typical 30 m from the railway right of way. This decreased setback is appropriate as the measured vibration levels indicate vibration levels are lower than the criteria at a decreased distance. An acoustic wall is also proposed on top of the earth berm. Appendix E includes the Rail Protection Report prepared by Jablonsky, Ast and Partners dated January 5, 2024.

There are landscaped areas in parallel to the railway and a roadway leading to the underground parking ramps from Tannery Street. A seating area associated with the indoor amenity area and ground level terraces are located facing east facing the railway line. An acoustic wall 2.6 m in height on top of the earth berm is required to achieve 56 dBA, which is acceptable to CP railway and has been acceptable to the City of Mississauga in the past.

There are other identified outdoor living areas on the plans provided which are on the shielded side of the building (west side) and do not require noise mitigation. The dwelling units in the proposed residential building may include balconies that are less than 4 m in depth. Balconies less than 4 m in depth are not considered to be outdoor living areas under the MECP guidelines, and therefore are exempt from traffic noise assessment.

5.2 Indoor Living Areas

Central Air Conditioning

The predicted sound levels outside the plane of the top storey bedroom/living/dining room windows of the proposed buildings with exposure to the railway and roadways will be greater than 60 dBA during nighttime hours. Central air conditioning systems are required for the building so that windows may remain closed. The guidelines also recommend warning clauses for these units. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable. Acceptable units are those housed in their own closest with an access door for maintenance.

5.3 Building Façade Constructions

Future traffic sound levels at the façades of the closest dwelling units with exposure to the railway will exceed 60 dBA during the day and 55 dBA at night. MECP guidelines recommend that the windows and walls be designed so that the indoor sound levels comply with MECP noise criteria.

5.3.1 Exterior Wall Construction

According to MECP and CP railway guidelines, the building will require brick veneer or a masonry equivalent construction for exterior walls from foundations to rafters for the facades with exposure to the railway line (north, east and south facades).

5.3.2 Glazing Construction

The detailed floor plans and building elevation drawings indicating bedrooms/living/dining rooms were not yet available at the time of this report. Calculations have been performed to determine the building envelope constructions required to maintain indoor sound levels within MECP guidelines.

Assuming a typical window to floor area of 40% (30% fixed and 10% operable) for the living/dining rooms and 20% (15% fixed and 5% operable) for the bedrooms in the building, the minimum acoustical requirement for the basic window glazing, including glass in fixed sections, swing or sliding doors, and operable windows, is provided in Table V. For an urban environment such as this, a minimum STC rating of 33 is recommended for all windows to noise sensitive spaces such as bedrooms and living/dining rooms.

Table V: Minimum Preliminary STC Requirements

Prediction Location	Description	Space	Glazing STC*
[A]	East Façade	Living/Dining	STC-36
		Bedroom	STC-38
[C]	South Façade	Living/Dining	STC-33
		Bedroom	STC-36
[D]	West Facade	Living/Dining	STC-33
		Bedroom	STC-33
[E]	North Facade	Living/Dining	STC-33
		Bedroom	STC-36

The results indicate that the east façade facing the railway line has significant glazing requirements especially for the bedrooms. It is recommended that bedrooms do not include sliding patio doors and windows areas relative to the floor areas should be kept small, that is, to a maximum of 20% (15% fixed and 5% operable). Bedrooms should be avoided at the corners near the railway.

Sample window assemblies which may achieve the STC requirements are summarized in Table VI below. Note that acoustic performance varies with manufacturer's construction details, and these are only guidelines to provide some indication of the type of glazing likely to be required. Acoustical

test data for the selected assemblies should be requested from the supplier, to ensure that the stated acoustic performance levels will be achieved by their assemblies.

Table VI: Window Constructions Satisfying STC Requirements

STC Requirement	Sample Glazing Configuration (STC)
28 – 29	Any double-glazed unit
30 – 31	3(13)3
32 – 33	4(10)4
34	4(19)4
35 – 36	6(10)4, 5(16)4
37	6(13)4, 6(20)5
38	6(25)5, 6L(13)6
39	6L(13)6, 6(20)5
40	6L(24)6L, 7L(12)6, 6(25)8 (Awning window)

In Table VI, the numbers outside the parentheses indicate minimum pane thicknesses in millimetres and the number in parentheses indicates the minimum inter-pane gap in millimetres. OBC indicates any glazing construction meeting the minimum requirements of the Ontario Building Code.

Operable sections include sliding glass doors and operable windows, and provided that they include a good seal, will not significantly affect overall performance. Operable windows and sliding glass doors must be well-fitted and weather-stripped.

Further Analysis

When detailed floor plans and elevations are available for the building, the required glazing constructions should be refined based on actual window to floor area ratios and the exterior wall should be verified to be a brick veneer or a masonry equivalent construction.

6 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all units with anticipated traffic sound level excess. Examples are provided below.

Suggested wording for buildings with sound level excesses the MECP criteria is given below:

Type A:

> Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and rail traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks.

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

Type B:

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

Suggested wording for dwelling units near existing commercial facilities is as follows:

Type C:

> Purchasers/tenants are advised that due to the proximity of the adjacent existing commercial uses, noise from these facilities at times be audible.

These sample clauses are provided by the MECP as examples, and can be modified by the Municipality as required.

CP's standard warning clause for residential developments located near a principal branch line is provided below. The following sample clause is typical of those included in agreements of purchase and sale or lease on the Lands that are within 300 meters of the railway right-of-way.

Type D:

> Warning: Canadian Pacific Railways Company or its assigns or successors in interest has or have a right-of-way within 300 meters from the land subject hereof. There may be alteration

> to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwellings. CPR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way.

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

Type E:

> Warning: Metrolinx and its assigns and successors in interest operate commuter transit service within 300 metres from the subject land. In addition to the current use of these lands, there may be alterations to or expansions of the rail and other facilities on such lands in the future including the possibility that Metrolinx or any railway entering into an agreement with Metrolinx or any railway assigns or successors as aforesaid may expand their operations, which expansion may affect the environment of the occupants in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual units. Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under these lands.

7 Impact of the Development on the Environment

It is expected that any increase in local traffic associated with the development will not be substantial enough to affect noise levels significantly.

Sound levels from noise sources such as rooftop air-conditioners, cooling towers, exhaust fans, etc. should not exceed the minimum one-hour L_{EQ} ambient (background) sound level from road traffic, at any potentially impacted residential point of reception. Based on the levels observed during our site visit, the typical minimum ambient sound levels in the area are expected to be above the minimum exclusionary limits of 50 dBA or more during the day and 45 dBA or more at night. Thus, any electro-mechanical equipment associated with this development (e.g. emergency generator testing, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges. At the time of this study, the design of the proposed residential buildings was in its initial stages, and the mechanical systems had not yet been developed.

The details of the exhaust fans and mechanical equipment will be reviewed when that information is available. Exhaust/intake vents are noted on the plan for P2 and Level 1, but details are not yet clear. It is also HGC Engineering's experience with numerous developments, that typical HVAC equipment and parking garage exhaust fans can meet the applicable MECP noise criteria at neighbouring residential uses, either with low noise emission fans or relocation of the fans or through mitigation in the form of duct silencers or acoustic lining. Prior to building permit, an acoustical consultant should review the mechanical drawings and details of potential exhaust vents/fans, when available, to help ensure that the noise impact of the development on the environment, and of the development on itself, are maintained within acceptable levels.

8 Impact of the Development on Itself

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2020, specifies the minimum required sound insulation characteristics for demising partitions, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute or elevator shaft must meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity or commercial spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.

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

9 Summary and Recommendations

The results of the study indicate that the proposed residential development is feasible. Future road and rail traffic sound levels will exceed CP railway guidelines, but feasible means exist to reduce the impact to within acceptable limits. The following recommendations are provided in regard to noise mitigation.

1. Central air conditioning is required for the proposed residential buildings. The location installation and sound rating of the air conditioning devices should comply with NPC-300, as applicable.

2. Upgraded glazing constructions are required for the east, north and south façades. The exterior wall construction is required to be brick veneer or a masonry equivalent construction. When detailed floor plans and building elevations are available, the glazing constructions should be refined based on actual window to floor area ratios, and the exterior wall construction should be verified. Section 5.3.2 provides recommendations for window areas along the east facade, specifically for the bedrooms which must be kept relatively small.

3. Tarion Builder's Bulletin B19R requires that the internal design of condominium projects integrates suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself are maintained within acceptable levels. Outdoor sound emissions should also be checked to ensure compliance with the City of Mississauga noise by-law.

Table VII, below, summarizes the recommendations for the buildings in the proposed development.

Table VII: Summary of Noise Control Requirements and Noise Warning Clauses

Prediction Location	Description	+Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Brick Exterior Wall Construction**	Upgraded Glazing Construction+
[A]	East building façade	--	Central A/C	A, B, C, D, E	✓	LRDR: STC-36 BR: STC-38
[C]	South building façade	--			✓	LRDR: STC-33 BR: STC-36
[D]	West building façade	--			✓	LRDR: STC-33 BR: STC-33
[E]	North building façade	--			--	LRDR: STC-33 BR: STC-36

Notes:
-- no specific requirement
*The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.
** Brick veneer or a masonry equivalent construction is required.
OBC – meeting the minimum requirements of the Ontario Building Code
** When building elevations are available, an acoustical consultant should verify the exterior wall construction to be brick, masonry or an acoustical equivalent.
+When detailed floor plans are available, an acoustical consultant should provide revised glazing constructions based on actual window to floor area ratios.
OBC – meeting the minimum requirements of the Ontario Building Code

9.1 Implementation

To ensure that the sound control recommendations outlined above are properly implemented in the site design, it is recommended that:

1. Prior to the issuance of building permits for this development, the Municipality's building inspector or a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario should certify that the exterior walls of the building are in conformance to the approved noise report.

2. Prior to the issuance of building permits for this development, a Professional Engineer qualified to perform acoustical engineer services in the Province of Ontario should review the architectural plans and building elevations to refine glazing requirement based on actual window to floor areas ratios.

Figure 1 - Key Plan

SRM architects+ urban*designers

MONTCREST Asset Management

SITE PLAN

A0.1

DRAFT COPY FOR REVIEW

0 3 6 15

Scale 1 : 300 FULL SIZE

2024-04-22

Figure 2 - Proposed Site Plan Showing Prediction Locations

APPENDIX A

Principal Mainline Requirements

CANADIAN PACIFIC RAILWAY

PRINCIPAL MAIN LINE REQUIREMENTS

1. Berm, or combination berm and noise attenuation fence, having extensions or returns at the ends, to be erected on adjoining property, parallel to the railway right-of-way with construction according to the following:

   a) Minimum total height 5.5 metres above top-of-rail;
   b) Berm minimum height 2.5 metres and side slopes not steeper than 2.5 to 1.
   c) Fence, or wall, to be constructed without openings and of a durable material weighing not less than 20 kg. per square metre (4 lb/sq.ft.) of surface area.

   No part of the berm/noise barrier is to be constructed on railway property.

   A clause should be inserted in all offers of purchase and sale or lease, and be registered on title or included in the lease for each dwelling affected by any noise and vibration attenuation measures, advising that any berm, fencing, or vibration isolation features implemented are not to be tampered with or altered, and further that the owner shall have the sole responsibility for and shall maintain these features.

   Dwellings must be constructed such that the interior noise levels meet the criteria of the appropriate Ministry. A noise study should be carried out by a professional noise consultant to determine what impact, if any, railway noise would have on residents of proposed subdivisions and to recommend mitigation measures, if required. The Railway may consider other measures recommended by the study.

2. Setback of dwellings from the railway right-of-way to be a minimum of 30 metres. While no dwelling should be closer to the right-of-way than the specified setback, an unoccupied building, such as a garage, may be built closer. The 2.5 metre high earth berm adjacent to the right-of-way must be provided in all instances.

3. Ground vibration transmission to be estimated through site tests. If in excess of the acceptable levels, all dwellings within 75 metres of the nearest track should be protected. The measures employed may be:

   a) Support the building on rubber pads between the foundation and the occupied structure so that the maximum vertical natural frequency of the structure on the pads is 12 Hz;
   b) Insulate the building from the vibration originating at the railway tracks by an intervening discontinuity or by installing adequate insulation outside the building, protected from the compaction that would reduce its effectiveness so that vibration in the building became unacceptable; or
   c) Other suitable measures that will retain their effectiveness over time.

4. A clause should be inserted in all offers of purchase and sale or lease and in the title deed or lease of each dwelling within 300m of the railway right-of-way, warning prospective purchasers or tenants of the existence of the Railway's operating right-of-way; the possibility of alterations including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of noise and vibration attenuating measures in the design of the subdivision and individual units, and that the Railway will not be responsible for complaints or claims arising from the use of its facilities and/or operations.

5. Any proposed alterations to the existing drainage pattern affecting railway property must receive prior concurrence from the Railway, and be substantiated by a drainage report to be reviewed by the Railway.

6. A 1.83 metre high chain link security fence be constructed and maintained along the common property line of the Railway and the development by the developer at his expense, and the developer is made aware of the necessity of including a covenant running with the lands, in all deeds, obliging the purchasers of the land to maintain the fence in a satisfactory condition at their expense.

7. Any proposed utilities under or over railway property to serve the development must be approved prior to their installation and be covered by the Railway's standard agreement.

PRINCIPAL MAIN LINE REQUIREMENTS

A. Safety setback of dwellings from the railway rights-of-way to be a minimum of 30 metres in conjunction with a safety berm. The safety berm shall be adjoining and parallel to the railway rights-of-way with returns at the ends, 2.5 metres above grade at the property line, with side slopes not steeper than 2.5 to 1.

B. Noise attenuation barrier shall be adjoining and parallel to the railway rights-of-way, having returns at the ends, and a minimum total height of 5.5 metres above top-of-rail. Acoustic fence to be constructed without openings and of a durable material weighing not less than 20 kg. per square metre of surface area. Subject to the review of the noise report, GO Transit may consider other measures recommended by an approved Noise Consultant.

C. Ground-borne vibration transmission to be evaluated in a report through site testing to determine if dwellings within 75 metres of the railway rights-of-way will be impacted by vibration conditions in excess of 0.14 mm/sec RMS between 4 Hz and 200 Hz. The monitoring system should be capable of measuring frequencies between 4 Hz and 200 Hz, $\pm$3 dB with an RMS averaging time constant of 1 second. If in excess, isolation measures will be required to ensure living areas do not exceed 0.14 mm/sec RMS on and above the first floor of the dwelling.

D. The Owner shall install and maintain a chain link fence of minimum 1.83 metre height along the mutual property line.

E. The following clause should be inserted in all development agreements, offers to purchase, and agreements of Purchase and Sale or Lease of each dwelling unit within 300m of the railway right-of-way.

> **Warning:** The Greater Toronto Transit Authority, carrying on business as GO Transit, and its assigns and successors in interest has or have a right-of-way within 300 metres 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 GO Transit or any railway entering into an agreement with GO Transit to use the right-of-way or their assigns or successors as aforesaid may expand their operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). GO Transit 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.

F. Any proposed alterations to the existing drainage pattern affecting the railway right-of-way must receive prior concurrence from GO Transit and be substantiated by a drainage report to the satisfaction of GO Transit.

G. The Owner shall through restrictive covenants to be registered on title and all agreements of purchase and sale or lease provide notice to the public that the safety berm, fencing and vibration isolation measures implemented are not to be tampered with or altered and further that the Owner shall have sole responsibility for and shall maintain these measures to the satisfaction of GO Transit.

H. The Owner enter into an Agreement stipulating how GO Transit's concerns will be resolved and will pay GO Transit's reasonable costs in preparing and negotiating the agreement.

I. The Owner may be required to grant GO Transit an environmental easement for operational emissions, registered on title against the subject property in favour of GO.

APPENDIX B

Traffic Information

Sheeba Paul

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: September 12, 2023 1:13 PM
To: Sheeba Paul
Subject: RE: rail traffic data for a noise study update in Streetsville

Follow Up Flag: Follow up
Flag Status: Flagged

Good afternoon Sheeba,

The data that Justin had provided you is correct. Metrolinx's Rail-Forecast was updated around December 2022, so what you have in the attached PDF was the old train trip data. The current data, projected to 2032, are what Justin has provided, which I do note, forecasts fewer trips than our previous data.

Hope this helps, should you have any additional questions please let me know.

Regards,
Farah Faroque (she/her)
Project Analyst, Third Party Projects Review
10 Bay Street | Toronto | Ontario | M5J 2N8
T: 437.900.2291

METROLINX

From: Sheeba Paul <spaul@hgcengineering.com>
Sent: September 12, 2023 11:58 AM
To: Rail Data Requests <RailDataRequests@metrolinx.com>
Subject: RE: rail traffic data for a noise study update in Streetsville

Hello Justin,

Any comments on my email?

Ms. Sheeba Paul, MEng, PEng
Senior Associate

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

From: Sheeba Paul
Sent: Thursday, September 7, 2023 7:11 PM
To: Rail Data Requests <RailDataRequests@metrolinx.com>
Subject: RE: rail traffic data for a noise study update in Streetsville

Hello Justin

Could you check over this data again?

I have attached the data I have for this line further up in Streetsville and it is very different.

Please let me know which data is correct.

Ms. Sheeba Paul, MEng, PEng
Senior Associate

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

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: Wednesday, July 5, 2023 1:51 PM
To: Sheeba Paul <spaul@hgcengineering.com>
Subject: RE: rail traffic data for a noise study update in Streetsville

Hi Sheeba,

Further to your request dated June 23rd , 2023, the subject lands (at 1725 Barbertown Road, Mississauga) are located within 300 metres of the CP Galt Subdivision (which carries Milton 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 1 locomotives and 10 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 22 trains. The planned detailed trip breakdown is listed below:

	1 Diesel Locomotive		1 Diesel Locomotive
Day (0700-2300)	20	Night (2300-0700)	2

The current track design speed near the subject lands is 50 mph (80 km/h).

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

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

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

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

Justin Neale
Third Party Projects Review Team
Metrolinx | 10 Bay Street | Toronto | Ontario | M5J 2W3

From: Sheeba Paul <spaul@hgcengineering.com>
Sent: June 23, 2023 1:45 PM
To: Rail Data Requests <RailDataRequests@metrolinx.com>
Subject: RE: rail traffic data for a noise study update in Streetsville

Hello,

HGC Engineering is performing a noise study for a proposed development at 1725 Barbertown Road in Mississauga. The railway line is located within 300 m of the site.

https://www.google.com/maps/place/1725+Barbertown+Rd,+Mississauga,+ON+L5M+6J2/@43.5764489,-79.6985291,943m/data=!3m1!1e3!4m6!3m5!1s0x882b41a0843252b9:0x1abf582c9661877!8m2!3d43.576331!4d-79.6955925!16s%2Fg%2F11hbn4lv6h?entry=ttu

Please provide the rail data for the railway line. Typically we require number of train passbys, train type (passenger or freight), number of locomotives, number of rail cars, speed and if whistles are blown in the area. We will also need the number of trains during the daytime (07:00 to 23:00) and nighttime (23:00 to 07:00).

Thank you.

Ms. Sheeba Paul, MEng, PEng
Senior Associate

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

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.

NOISE REPORT FOR PROPOSED DEVELOPMENT

Date:	19-May-24

REQUESTED BY:

Name:	Sheeba Paul
Company:	HGC Engineering

PREPARED BY:

Name	Bertuen Mickle
Tel#:	(905) 615-3200

MISSISSAUGA

Location: -Enby Drive : Thomas Street to North End
-Tannery Street: between Crumbie/Broadway Street and Joymar Drive

ID# 419

ON SITE TRAFFIC DATA

Specific	*Street Names*				
	Enby Drive	Tannery Street			
AADT:	1,000	5,000			
# of Lanes:	2 Lanes	2 Lanes			
% Trucks:	1%	4%			
Medium/Heavy Trucks Ratio:	55/45	55/45			
Day/Night Split:	90/10	90/10			
Posted Speed Limit:	50km/h	50km/h			
Gradient Of Road:	<2%	<2%			
Ultimate R.O.W:	15.30m	20m			

Comments: Ultimate Traffic Data Only

NOISE REPORT FOR PROPOSED DEVELOPMENT

Date: 22-Dec-21

REQUESTED BY:

Name: Sheeba Paul, M.Eng., P.Eng.

Company: HGC Engineering

PREPARED BY:

Nam Steven Guan

Tel#: 905-615-3200 ext. 5933

MISSISSAUGA

Location: Tannery Street - Joymar Drive to Queen Street South
Queen Street South (1) - Thomas Street to Main Street
Queen Street South (2) - Main Street to Britannia Road West
Rutledge Road - north of Tannery Street
Joymar Drive - north of Thomas Street

ID 527

ON SITE TRAFFIC DATA

Specific	*Street Names*				
[redacted]	Tannery St	Queen St S (1)	Queen St S (2)	Rutledge Rd*	Joymar Dr
AADT:	5,000	17,500	14,000	1,000	5,000
# of Lanes:	2 Lanes	2 Lanes	2 Lanes	2 Lanes	2 Lanes
% Trucks:	3%	3%	3%	2%	2%
Medium/Heavy Trucks Ratio:	55/45	55/45	55/45	55/45	55/45
Day/Night Split:	90/10	90/10	90/10	90/10	90/10
Posted Speed Limit:	50 km/h	40 km/h	40 km/h	50 km/h	40 km/h
Gradient Of Road:	<2%	<2%	<2%	<2%	<2%
Ultimate R.O.W:	20 m	20 m	20 m	17.5 m	20 m

Comments:

Ultimate traffic data only (2041).

*Note: the City does not have any traffic counts for Rutledge Road. The traffic data provided is a rough estimate.

APPENDIX C

STAMSON 5.04 Output

```
STAMSON 5.0        NORMAL REPORT        Date: 04-07-2024 21:20:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: arev.te              Time Period: Day/Night 16/8 hours
Description:   Daytime and nighttime sound levels at location [A], East
façade facing railway

Rail data, segment # 1: CP (day/night)
-------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
  1. Freight     !  11.5/10.2  !  80.0 !  4.0 !163.0 !Diesel! Yes
  2. GO          !  20.0/2.0   !  80.0 !  1.0 ! 10.0 !Diesel! Yes

Data for Segment # 1: CP (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  :  41.00 / 41.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
No Whistle
Elevation                 :  33.00 m
Reference angle           :   0.00

Results segment # 1: CP (day)
-----------------------------

LOCOMOTIVE (0.00 + 70.63 + 0.00) = 70.63 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  75.00  -4.37   0.00   0.00   0.00   0.00  70.63
-------------------------------------------------------------------------

WHEEL (0.00 + 63.68 + 0.00) = 63.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  68.04  -4.37   0.00   0.00   0.00   0.00  63.68
-------------------------------------------------------------------------

Segment Leq : 71.43 dBA

Total Leq All Segments: 71.43 dBA

Results segment # 1: CP (night)
-------------------------------

LOCOMOTIVE (0.00 + 72.59 + 0.00) = 72.59 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  76.96  -4.37   0.00   0.00   0.00   0.00  72.59
```

```
------------------------------------------------------------------------

WHEEL (0.00 + 65.75 + 0.00) = 65.75 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
------------------------------------------------------------------------
   -90     90   0.00  70.12  -4.37   0.00   0.00   0.00   0.00  65.75
------------------------------------------------------------------------

Segment Leq : 73.41 dBA

Total Leq All Segments: 73.41 dBA

Road data, segment # 1: Tannery (day/night)
-------------------------------------------
Car traffic volume  :  4320/480   veh/TimePeriod  *
Medium truck volume :    99/11    veh/TimePeriod  *
Heavy truck volume  :    81/9     veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   5000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   2.20
    Heavy Truck  % of Total Volume     :   1.80
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Tannery (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  86.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  33.00 m
Reference angle           :   0.00

Road data, segment # 2: Queen St (day/night)
-------------------------------------------
Car traffic volume  : 15278/1698  veh/TimePeriod  *
Medium truck volume :   260/29    veh/TimePeriod  *
Heavy truck volume  :   213/24    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  17500
```

```
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.65
    Heavy Truck  % of Total Volume     :   1.35
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Queen St (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  :  86.00 / 223.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   0.00 m
Reference angle           :   0.00

Results segment # 1: Tannery (day)
----------------------------------

Source height = 1.16 m

ROAD (0.00 + 49.82 + 0.00) = 49.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  60.41   0.00  -7.58  -3.01   0.00   0.00   0.00
49.82
-------------------------------------------------------------------------
---

Segment Leq : 49.82 dBA

Results segment # 2: Queen St (day)
-----------------------------------

Source height = 1.08 m

ROAD (0.00 + 49.03 + 0.00) = 49.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.66  63.08   0.00 -12.59  -1.46   0.00   0.00   0.00
49.03
-------------------------------------------------------------------------
---

Segment Leq : 49.03 dBA

Total Leq All Segments: 52.45 dBA
```

```
Results segment # 1: Tannery (night)
------------------------------------

Source height = 1.16 m

ROAD (0.00 + 43.28 + 0.00) = 43.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.00  53.88   0.00  -7.58  -3.01   0.00   0.00   0.00
43.28
-------------------------------------------------------------------------
---

Segment Leq : 43.28 dBA

Results segment # 2: Queen St (night)
------------------------------------

Source height = 1.08 m

ROAD (0.00 + 35.66 + 0.00) = 35.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.66  56.58   0.00 -19.46  -1.46   0.00   0.00   0.00
35.66
-------------------------------------------------------------------------
---

Segment Leq : 35.66 dBA

Total Leq All Segments: 43.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.48
                           (NIGHT): 73.41
```

```
STAMSON 5.0        NORMAL REPORT        Date: 26-04-2024 00:59:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: bom.te               Time Period: 16 hours
Description:


Rail data, segment # 1: CP
--------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
  1. Freight     !  11.5/10.2  !  80.0 !  4.0 !163.0 !Diesel! Yes
  2. GO          !  20.0/2.0   !  80.0 !  1.0 ! 10.0 !Diesel! Yes

Data for Segment # 1: CP
------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  38.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with
barrier)
No Whistle
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  18.00 m
Source elevation          : 159.23 m
Receiver elevation        : 159.20 m
Barrier elevation         : 163.00 m
Reference angle           :   0.00

Results segment # 1: CP
-----------------------

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       4.00 !        1.50 !       -1.10 !       161.90
       0.50 !        1.50 !       -2.76 !       160.24

LOCOMOTIVE (0.00 + 55.86 + 0.00) = 55.86 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.44  75.00  -5.79  -1.05   0.00   0.00 -12.30  55.86
-------------------------------------------------------------------------

WHEEL (0.00 + 45.75 + 0.00) = 45.75 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
```

```
   -90     90   0.54  68.04  -6.22  -1.25   0.00   0.00 -14.83  45.75
-------------------------------------------------------------------------

Segment Leq : 56.26 dBA

Total Leq All Segments: 56.26 dBA

TOTAL Leq FROM ALL SOURCES:       56.26
```

STAMSON 5.0 NORMAL REPORT Date: 04-07-2024 21:20:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: drev.te Time Period: Day/Night 16/8 hours
Description: ***Daytime and nighttime sound levels at location [D], West façade***

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

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. Freight	11.5/10.2	80.0	4.0	163.0	Diesel	Yes
2. GO	20.0/2.0	80.0	1.0	10.0	Diesel	Yes

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

Angle1 Angle2	-90.00 deg	-60.00 deg
Wood depth	0	(No woods.)
No of house rows	0 / 0	
Surface	1	(Absorptive ground surface)
Receiver source distance	88.00 / 88.00	m
Receiver height	1.50 / 1.50	m
Topography	3	(Elevated; no barrier)
No Whistle		
Elevation	33.00 m	
Reference angle	0.00	

Results segment # 1: CP (day)

LOCOMOTIVE (0.00 + 59.54 + 0.00) = 59.54 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-60	0.00	75.00	-7.68	-7.78	0.00	0.00	0.00	59.54

WHEEL (0.00 + 52.58 + 0.00) = 52.58 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-60	0.00	68.04	-7.68	-7.78	0.00	0.00	0.00	52.58

Segment Leq : 60.34 dBA

Total Leq All Segments: 60.34 dBA

Results segment # 1: CP (night)

LOCOMOTIVE (0.00 + 61.49 + 0.00) = 61.49 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-60	0.00	76.96	-7.68	-7.78	0.00	0.00	0.00	61.49

```
-------------------------------------------------------------------------

WHEEL (0.00 + 54.65 + 0.00) = 54.65 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90    -60   0.00  70.12  -7.68  -7.78   0.00   0.00   0.00  54.65
-------------------------------------------------------------------------

Segment Leq : 62.31 dBA

Total Leq All Segments: 62.31 dBA

Road data, segment # 1: Tannery (day/night)
-------------------------------------------
Car traffic volume  :  4320/480   veh/TimePeriod  *
Medium truck volume :    99/11    veh/TimePeriod  *
Heavy truck volume  :    81/9     veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   5000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   2.20
    Heavy Truck  % of Total Volume     :   1.80
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Tannery (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  86.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  33.00 m
Reference angle           :   0.00

Road data, segment # 2: Jymar (day/night)
-----------------------------------------
Car traffic volume  :  4410/490   veh/TimePeriod  *
Medium truck volume :    50/6     veh/TimePeriod  *
Heavy truck volume  :    41/5     veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   5000
```

```
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :  10.00
    Medium Truck % of Total Volume     :   1.10
    Heavy Truck  % of Total Volume     :   0.90
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Jymar (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  : 150.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  86.00 m
Reference angle           :   0.00

Results segment # 1: Tannery (day)
----------------------------------

Source height = 1.16 m

ROAD (0.00 + 49.82 + 0.00) = 49.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90      0   0.00  60.41   0.00  -7.58  -3.01   0.00   0.00   0.00
49.82
-------------------------------------------------------------------------
---

Segment Leq : 49.82 dBA

Results segment # 2: Jymar (day)
--------------------------------

Source height = 0.98 m

ROAD (0.00 + 46.72 + 0.00) = 46.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  56.72   0.00 -10.00   0.00   0.00   0.00   0.00
46.72
-------------------------------------------------------------------------
---

Segment Leq : 46.72 dBA

Total Leq All Segments: 51.55 dBA
```

```
Results segment # 1: Tannery (night)
------------------------------------

Source height = 1.16 m

ROAD (0.00 + 43.28 + 0.00) = 43.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90      0   0.00  53.88   0.00  -7.58  -3.01   0.00   0.00   0.00
43.28
-------------------------------------------------------------------------
---

Segment Leq : 43.28 dBA

Results segment # 2: Jymar (night)
----------------------------------

Source height = 1.00 m

ROAD (0.00 + 42.80 + 0.00) = 42.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  50.39   0.00  -7.58   0.00   0.00   0.00   0.00
42.80
-------------------------------------------------------------------------
---

Segment Leq : 42.80 dBA

Total Leq All Segments: 46.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.88
                           (NIGHT): 62.41
```

STAMSON 5.0 NORMAL REPORT Date: 04-07-2024 21:19:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: e.te Time Period: Day/Night 16/8 hours
Description: ***Daytime and nighttime sound levels at location [E] North façade***

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

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
1. Freight	11.5/10.2	80.0	4.0	163.0	Diesel	Yes
2. GO	20.0/2.0	80.0	1.0	10.0	Diesel	Yes

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

Angle1 Angle2	-90.00 deg	0.00 deg
Wood depth	0	(No woods.)
No of house rows	0 / 0	
Surface	1	(Absorptive ground surface)
Receiver source distance	54.00 / 54.00	m
Receiver height	1.50 / 1.50	m
Topography	3	(Elevated; no barrier)
No Whistle		
Elevation	33.00 m	
Reference angle	0.00	

Results segment # 1: CP (day)

LOCOMOTIVE (0.00 + 66.43 + 0.00) = 66.43 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	75.00	-5.56	-3.01	0.00	0.00	0.00	66.43

WHEEL (0.00 + 59.47 + 0.00) = 59.47 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	68.04	-5.56	-3.01	0.00	0.00	0.00	59.47

Segment Leq : 67.23 dBA

Total Leq All Segments: 67.23 dBA

Results segment # 1: CP (night)

LOCOMOTIVE (0.00 + 68.38 + 0.00) = 68.38 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	76.96	-5.56	-3.01	0.00	0.00	0.00	68.38

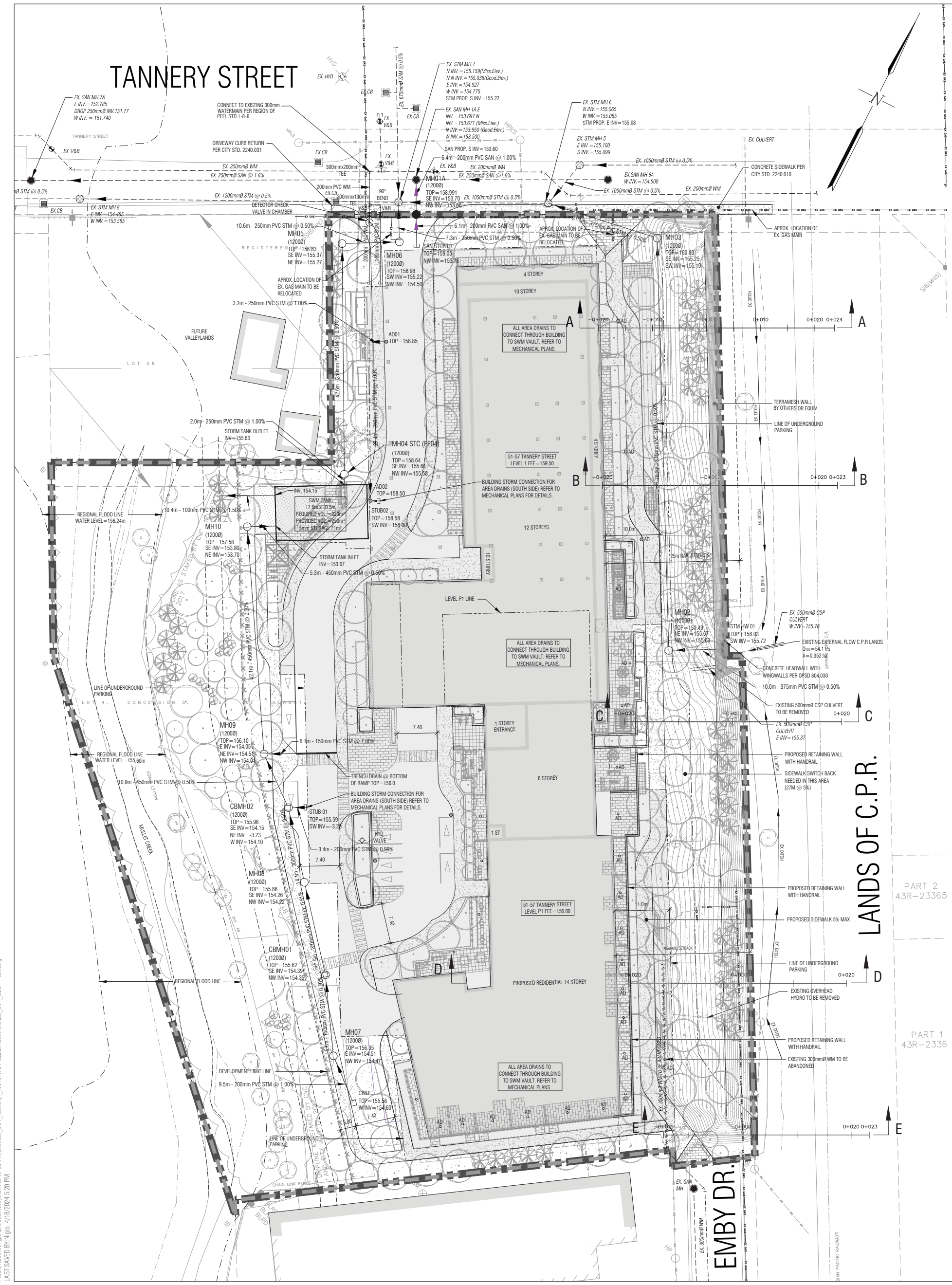
```
-------------------------------------------------------------------------

WHEEL (0.00 + 61.55 + 0.00) = 61.55 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90      0   0.00  70.12  -5.56  -3.01   0.00   0.00   0.00  61.55
-------------------------------------------------------------------------

Segment Leq : 69.20 dBA

Total Leq All Segments: 69.20 dBA

Road data, segment # 1: Tannery (day/night)
-------------------------------------------
Car traffic volume  :  4320/480   veh/TimePeriod  *
Medium truck volume :    99/11    veh/TimePeriod  *
Heavy truck volume  :    81/9     veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):   5000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   2.20
    Heavy Truck  % of Total Volume     :   1.80
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Tannery (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  :  86.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      3       (Elevated; no barrier)
Elevation                 :  33.00 m
Reference angle           :   0.00


Road data, segment # 2: Joymar (day/night)
-------------------------------------------
Car traffic volume  :  4410/490   veh/TimePeriod  *
Medium truck volume :    50/6     veh/TimePeriod  *
Heavy truck volume  :    41/5     veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:
```

```
    24 hr Traffic Volume (AADT or SADT):   5000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :  10.00
    Medium Truck % of Total Volume     :   1.10
    Heavy Truck  % of Total Volume     :   0.90
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Joymar (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 188.00 / 188.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Tannery (day)
----------------------------------

Source height = 1.16 m

ROAD (0.00 + 52.83 + 0.00) = 52.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  60.41   0.00  -7.58   0.00   0.00   0.00   0.00
52.83
-------------------------------------------------------------------------
---

Segment Leq : 52.83 dBA

Results segment # 2: Joymar (day)
---------------------------------

Source height = 0.98 m

ROAD (0.00 + 34.03 + 0.00) = 34.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.66  56.72   0.00 -18.23  -4.47   0.00   0.00   0.00
34.03
-------------------------------------------------------------------------
---

Segment Leq : 34.03 dBA

Total Leq All Segments: 52.89 dBA
```

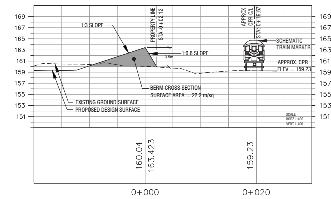
```
Results segment # 1: Tannery (night)
------------------------------------

Source height = 1.16 m

ROAD (0.00 + 46.30 + 0.00) = 46.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -90     90   0.00  53.88   0.00  -7.58   0.00   0.00   0.00   0.00
46.30
-------------------------------------------------------------------------
---

Segment Leq : 46.30 dBA

Results segment # 2: Joymar (night)
-----------------------------------

Source height = 1.00 m

ROAD (0.00 + 27.69 + 0.00) = 27.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
     0     90   0.66  50.39   0.00 -18.23  -4.47   0.00   0.00   0.00
27.69
-------------------------------------------------------------------------
---

Segment Leq : 27.69 dBA

Total Leq All Segments: 46.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.39
                           (NIGHT): 69.22
```

APPENDIX D

Supporting Drawings



SECTION A–A PROFILE



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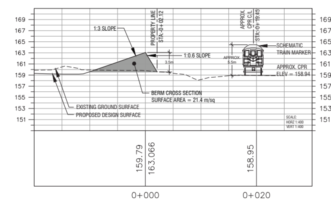
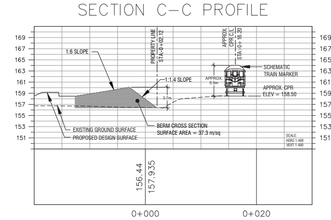
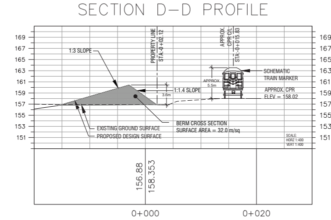


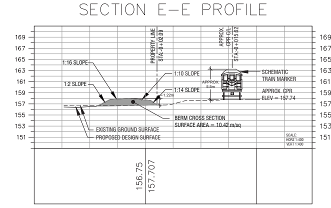
SECTION C–C PROFILE



SECTION D–D PROFILE



SECTION E–E PROFILE



GENERAL NOTES:

1. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
2. ALL THE CONSTRUCTION WORK FOR THIS PROJECT SHALL COMPLY WITH THE STANDARD DRAWINGS AND SPECIFICATIONS OF THE CITY OF MISSISSAUGA AND THE ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
3. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH ALL OTHER CONTRACTORS AND PREVENT CONSTRUCTION CONFLICTS.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS PROVIDED BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY EACH UTILITY PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
5. ROAD OCCUPANCY/ACCESS PERMIT MUST BE OBTAINED 48 HOURS PRIOR TO COMMENCING ANY WORKS WITHIN THE MUNICIPAL ROAD ALLOWANCE.

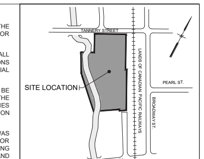
SITE GRADING:

1. ALL DISTURBED GRASSED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER. THE RELOCATION OF TREES AND SHRUBS SHALL BE SUBJECT TO APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT OR ENGINEER.
2. ALL GRANULAR BASE AND SUB-BASE MATERIALS SHALL BE GRADED AND COMPACTED TO 100% STANDARD PROCTOR DENSITY, FREE OF DEPRESSIONS.
3. THE PAVEMENT STRUCTURE SHALL BE CONSTRUCTED OF THE MINIMUM THICKNESSES OF MATERIALS AS PER THE GEOTECHNICAL REPORT (MTE OCT. 2019) AND MISSISAUGA STANDARDS, OR A MINIMUM OF THE FOLLOWING:

   CAR PARK AREA (LIGHT DUTY ASPHALT)
   90mm - ASPHALT HOT MIX
   90mm - ASPHALT HOT MIX
   150mm - OPSS 1010 GRANULAR 'A' BASE
   350mm - OPSS 1010 GRANULAR 'B' SUB-BASE

   FIRE ROUTE/TRUCK ENTRANCE (HEAVY DUTY ASPHALT)
   140mm - ASPHALT HOT MIX
   140mm - ASPHALT HOT MIX
   150mm - OPSS 1010 GRANULAR 'A' BASE
   350mm - OPSS 1010 GRANULAR 'B' SUB-BASE

4. PROVIDE SUBDRAINS, MINIMUM LENGTH OF 3.0m EXTENDING FROM ALL CATCHBASINS AND CATCHBASIN MANHOLES TO DRAIN THE GRANULAR SUB-BASE LAYER AS PER DETAIL ON DRAWING D1.
5. ALL BARRIER CURB WITHIN THE SITE TO BE CONSTRUCTED AS PER DETAIL ON DRAWING D1, UNLESS OTHERWISE SPECIFIED.
6. TRENCH BACKFILL WITHIN THE SITE TO BE CONSTRUCTED AS PER DETAIL ON DRAWING D1, UNLESS OTHERWISE SPECIFIED.
7. FROST SLABS ARE REQUIRED AT ALL DOOR LOCATIONS WHERE PROPOSED OUTSIDE GRADE IS FLUSH WITH FINISHED FLOOR ELEVATION.
8. ALL WORK SHALL BE SUBJECT TO THE CONDITIONS AND REQUIREMENTS OF CITY ROAD OCCUPANCY PERMIT.
9. INSPECTIONS: ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE MUNICIPALITY WHEN REQUIRED BY THE MUNICIPALITY.
10. REFER TO SITE PLAN FOR DIMENSIONS AND DETAILS.
11. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT AS PER DETAIL ON DRAWING D1. ALL JOINTS MUST BE SEALED AS PER DETAIL.
12. TRANSITIONS WITHIN THE SUBGRADE WITHIN 1.2m FROM THE TOP OF PAVEMENT SHOULD INCLUDE 3H:1V TRANSITIONS AS PER DETAIL ON DRAWING D1.
13. EMBANKMENTS TO BE SLOPED AT MAX. 3:1, UNLESS OTHERWISE SPECIFIED.
14. ALL PAVEMENT MARKING, LINE PAINTING, DIRECTIONAL LINES/ARROWS ETC, SHALL BE PLACED IN ACCORDANCE WITH THE ARCHITECTURAL SITE PLAN OR THE OWNER'S TRAFFIC ENGINEERING CONSULTANT'S DRAWINGS. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT BASED PAINT IN ACCORDANCE WITH OPSS 712.
15. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER 1 (ONE) SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS.
16. ACCESSIBLE ENTRANCES, WALKWAYS, RAMPS, CURB CUTS AND FLUSH THRESHOLDS TO AND FROM THE BUILDING AS PER OBC AND MISSISSAUGA ACCESSIBILITY DESIGN HANDBOOK REQUIREMENTS.



KEYPLAN:
N.T.S.

SITE PLAN PREPARED BY: SRM ATCHITECTS INC., MARCH.11TH, 2024.

TOPOGRAPHIC & LEGAL: PREPARED BY: FIDDELS CLIPSHAM INC. DATED JULY 18TH, 2017

COORDINATES: ELEV. 159.56. CUT CROSS ON THE SIDEWALK OPPOSITE #51 TANNERY ST. LOCATED 18.1m SW FROM THE MOST WESTERLY RAIL OF C.P.R. LINE, 4.3m SW FROM THE GAS VENT PIPE & 21.2m NW FROM THE WV.

CITY BENCHMARK: ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK NO. 909 HAVING A PUBLISHED ELEV. OF 456.903 METRES.

NOTES:
1. This drawing is the exclusive property of Greystone Engineering Inc. The reproduction of any part without prior written consent of this office is strictly prohibited.
2. The contractor shall verify all dimensions, levels and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing s to be read and understood in conjunction with all other plans and documents applicable to this project.

NOT FOR CONSTRUCTION

T. M. RICKETTS
APR. 19, 2024

Number	Issued/Revision	Date	Auth.
1	ISSUED FOR XX	23/??/??	TR

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Suite 200
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(416) 440-0058

Client:
MONTCREST

Drawing Title:

C.P.R. BERM CROSS SECTIONS

51-57 TANNERY STREET
(CITY FILE #: OPZR-104636)
RESIDENTIAL DEVELOPMENT
MISSISSAUGA, ON

Drawn By:	Checked By:	Scale:	Drawing No.:
NG	TR	1:400	SEC1
Date (yy.mm.dd): 2023-XX-XX	Job No.: 23-904	Revision No.:	

51,57 Tannery Street and Emby Drive

Mississauga, Ont.

Architectural Package

April 22, 2024

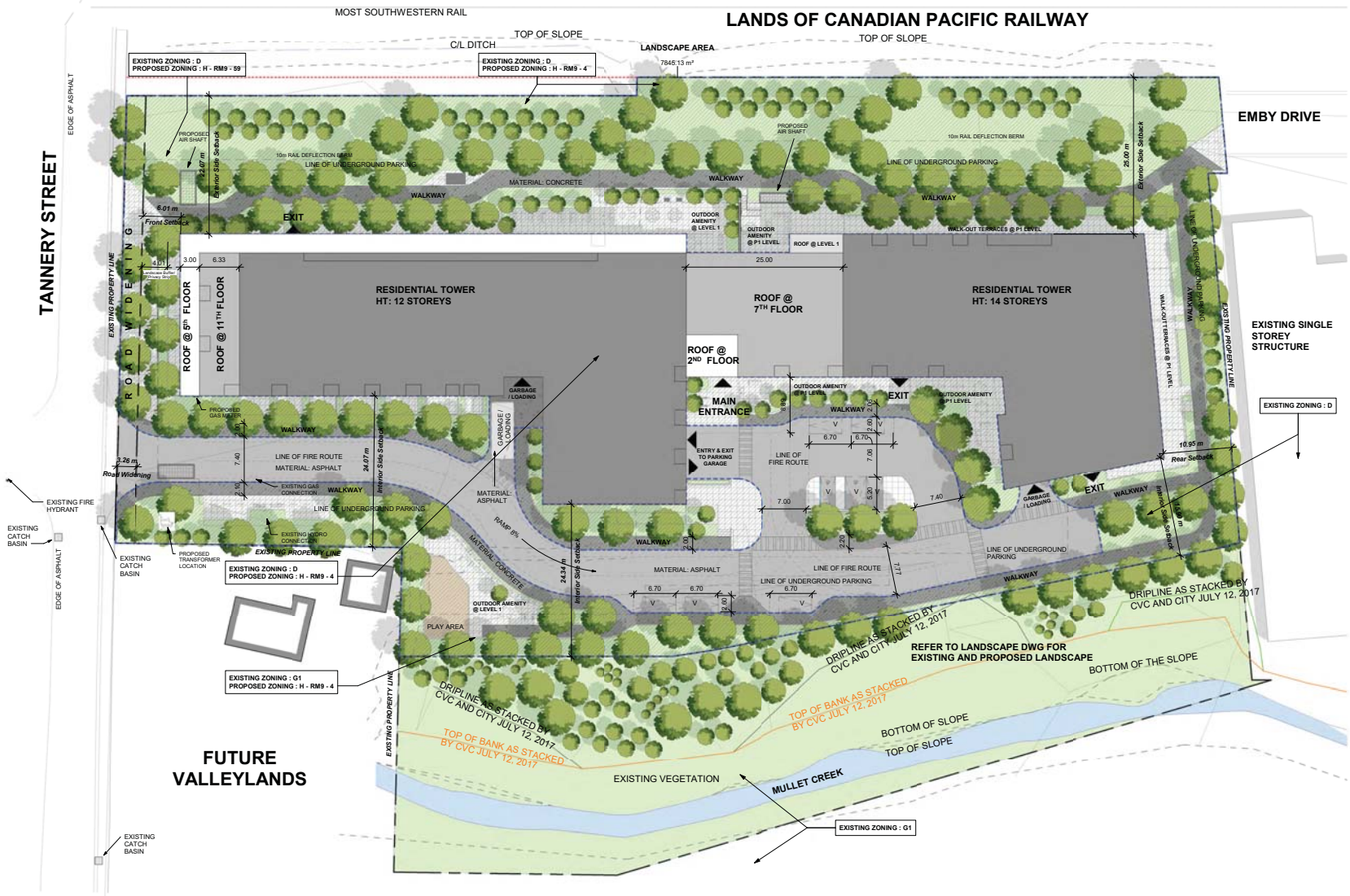
SRM architects+ urban*designers

MONTCREST Asset Management

COVER

DRAFT COPY
FOR REVIEW

2024-04-22



SRM architects+ urban*designers

MONTCREST Asset Management

SITE PLAN

A0.1

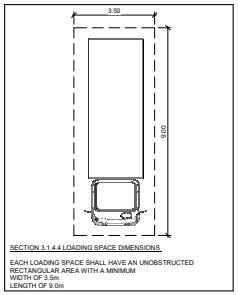
DRAFT COPY
FOR REVIEW

0 3 6 15

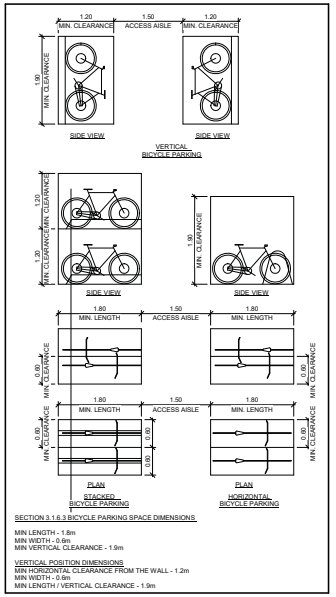
Scale 1 : 300 FULL SIZE

2024-04-22

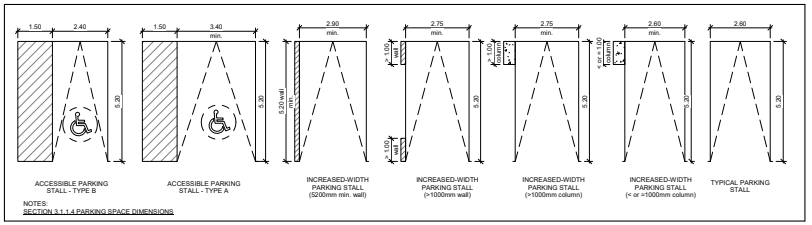
5 **CONTEXT PLAN**
N.T.S.



4 **LOADING SPACE DIMENSIONS**
1 : 100



3 **BICYCLE PARKING DIMENSIONS**
1 : 50



2 **PARKING STALL DIMENSIONS**
1 : 100

SITE DATA

51-57 Tannery St and 208 Embry Dr., Mississauga, ON

ZONING	H-RM5-59; H-RM9-4	
DATA	HECTARES	ACRES
LOT AREA (EXISTING)	1.863	4.578
DEVELOPMENT LOT AREA	1.426	3.522
DEDICATION (ROAD WIDENING)	0.023	0.058
DEDICATION (VALLEY LANDS)	0.404	0.998
	REQUIRED	PROVIDED
SETBACKS — FRONT YARD (m)		6.0 m
SETBACKS — INTERIOR SIDE YARD (m)		10.95 m
SETBACKS — EXTERIOR SIDE YARD (m)		25 m
SETBACKS — REAR YARD (m)		16.05 m

BUILDING DATA

DATA	PROVIDED
TOTAL DENSITY (# of units)	633 units
BUILDING AREA (m²)	4,389.2 m² (47,245 ft²)
GROSS FLOOR AREA (DEFINED AS PER ZONING)	47,931.8 m² (515,934 ft²)
GROSS CONSTRUCTION AREA (EXCLUDING PARKING)	51,399.1 m² (553,256 ft²)
GROSS CONSTRUCTION AREA (INCL. PARKING)	73,757 m² (793,918 ft²)
NUMBER OF STOREYS	14
BUILDING HEIGHT (m)	+/- 50.75 m
DENSITY (FSI) GFA / EXISTING LOT AREA	2.58

AMENITY AREA

REQUIRED	RATE	AREA
	5.6 m² / UNIT	= 633 UNITS x 5.6 = **3,544.8 m²** (38,156 ft²)
PROVIDED	**RATE**	**AREA**
	5.6 m² / UNIT INDOOR	INDOOR **1,381.8 m²** (14,874 ft²) OUTDOOR **2,164.5 m²** (23,296 ft²) **TOTAL = 3,546.3 m²** (38,172 ft²)

LANDSCAPE AREA

TYPE	REQUIRED	PROPOSED
LANDSCAPE AREA (DEFINED AS PER ZONING; SEE BELOW)	40% OF LOT AREA = 7,411.3 m² (70,774.8 ft²)	7845.13 m² (84,444 ft²)

Landscaped Area means any outdoor area on a lot, located at grade, including the landscaped buffer, that is suitable for the growth and maintenance of grass, flowers, shrubs, trees and other vegetation, as well as other landscape features, and may include walkways, berms, retaining walls and outdoor amenity areas, but shall not include, driveways, aisles, ramps or condominium roads, parking areas whether surfaced or not, bicycle parking space - class b, curbs, any open space beneath or within any building, structure or part thereof, or any exterior garbage storage or handling area. (0150-2014), (0181-2015)(LPAT Order 2019 February 15), (0116-2022)

UNIT SCHEDULE (ENTIRE DEVELOPMENT)

UNIT TYPE	COUNT	AREA (SQ. FT.) AREA (TOTAL)	AREA (SQ. FT.) AREA (Min - Max)	PERCENTAGE	AVG. SUITE SIZE (SQ.FT.)
STUDIO	31	13394	374 - 458	5%	432
1 BED	175	94284	468 - 672	28%	539
1 BED + D	167	110333	589 - 756	26%	661
2 BED	170	131480	703 - 907	27%	773
2 BED + D	17	15792	789 - 977	3%	929
3 BED	73	78033	869 - 1455	12%	1069
TOTAL	**633**			**100%**	**700**

UNIT AND PARKING BREAKDOWN

UNIT TYPE	UNITS	REQUIRED BY ZBL* RATE	REQUIRED BY ZBL* PARKING	PROPOSED RATE	PROPOSED PARKING
STUDIO	31	0.9	27.9	0.8	24.8
1 BED	342	0.9	307.8	0.8	273.6
2 BED	187	0.9	168.3	0.8	149.6
3 BED	73	0.9	65.7	0.8	58.4
TOTAL (RESIDENTIAL)					506
VISITOR PARKING	633	0.2	126.6	0.15	94.95
TOTAL	**633**		**696**		**601**
				LEVEL P1	110
				LEVEL P2	269
				LEVEL P3	223
				TOTAL	**602**
NUMBER OF BARRIER FREE PARKING SPACES (INCLUDES TOTAL PARKING SPACES)	2.0 SPACES + 2% OF THE TOTAL = 14			TYPE A 11	TYPE B 4
EV PARKING (RESIDENTIAL) (20% OF THE TOTAL REQ. RESI. PARKING SPACES)	**20% X 506 = 101.2**			**101 (Incl. Total Resi. Parking Count)**	
EV PARKING (VISITOR) (10% OF THE TOTAL REQ. VISITOR PARKING SPACES)	**10% X 95 = 9.5**			**10 (Incl. Total Visitor Parking Count)**	

***NOTE:**
Required parking is based on Zoning By-law No.0225-2007

BIKE PARKING

TYPE	REQUIRED	PROPOSED
CLASS A (INDOOR)	0.6 / UNIT = 380 STALLS	391 STALLS
CLASS B (OUTDOOR)	THE GREATER OF 0.05 / UNIT **OR** 6 0.05 / UNIT = 32 STALLS	36 STALLS
TOTAL	**412 STALLS**	**426 STALLS**

1 **PROJECT STATISTICS**
N.T.S.

PROJECT NORTH

SRM architects+ urban*designers

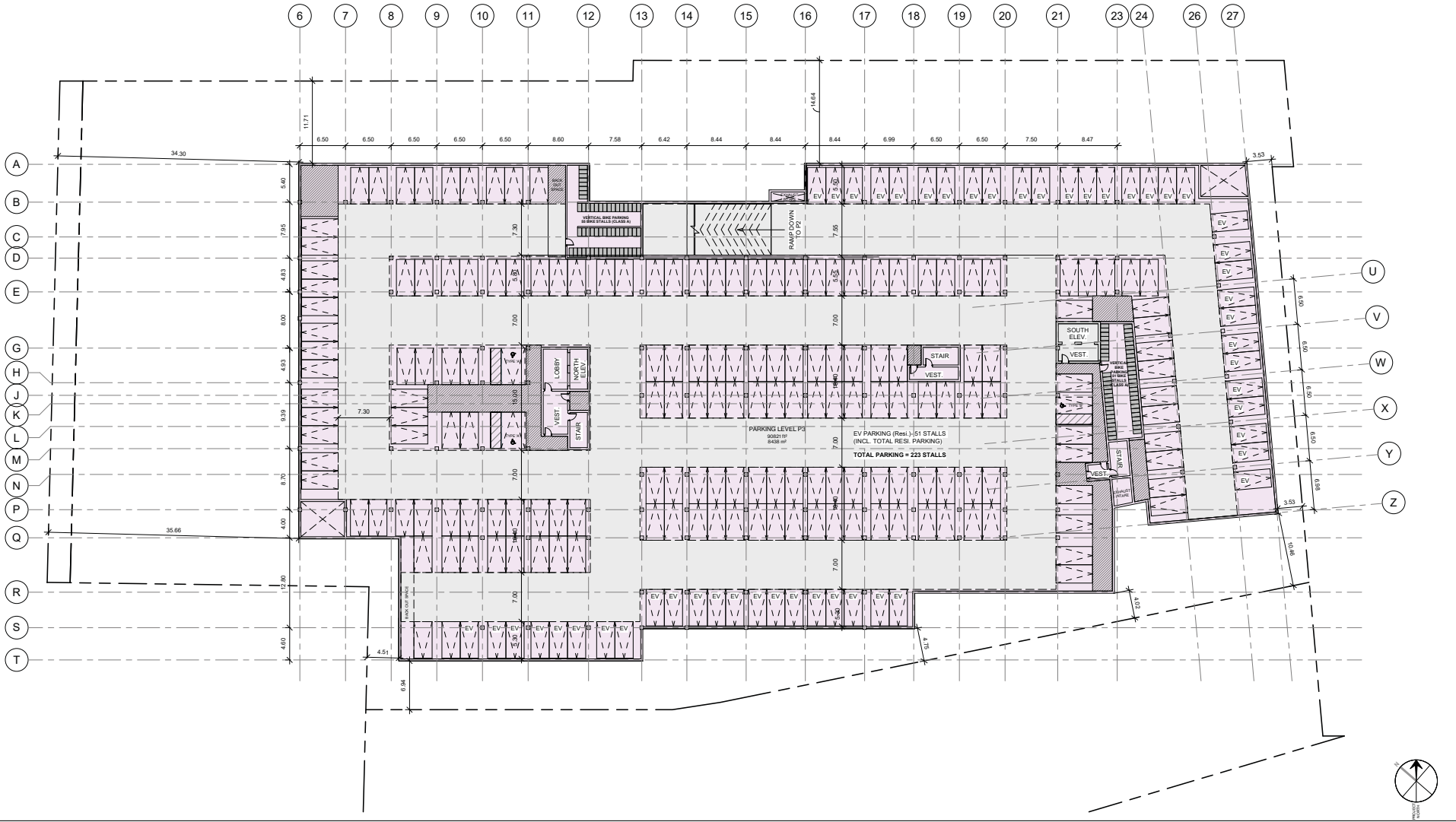
MONTCREST Asset Management

CONTEXT PLAN & STATISTICS

A1.1

DRAFT COPY FOR REVIEW

2024-04-22



SRM architects+ urban*designers

MONTCREST Asset Management

PARKING LEVEL P3

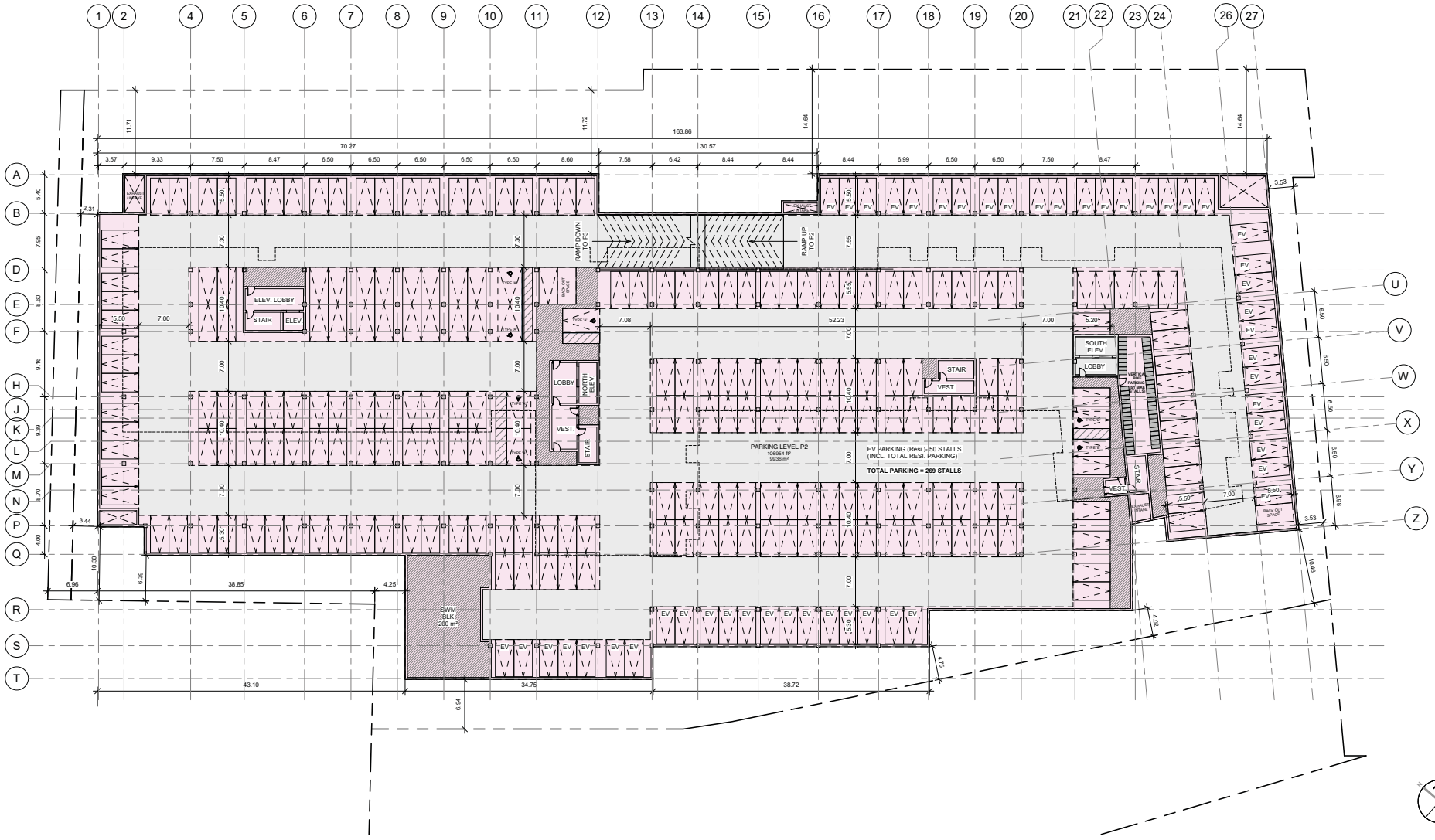
A2.1

DRAFT COPY
FOR REVIEW

0 2.5 5 12.5

Scale 1 : 250 FULL SIZE

2024-04-22



SRM architects+ urban*designers

MONTCREST Asset Management

PARKING LEVEL P2

A2.2

DRAFT COPY
FOR REVIEW

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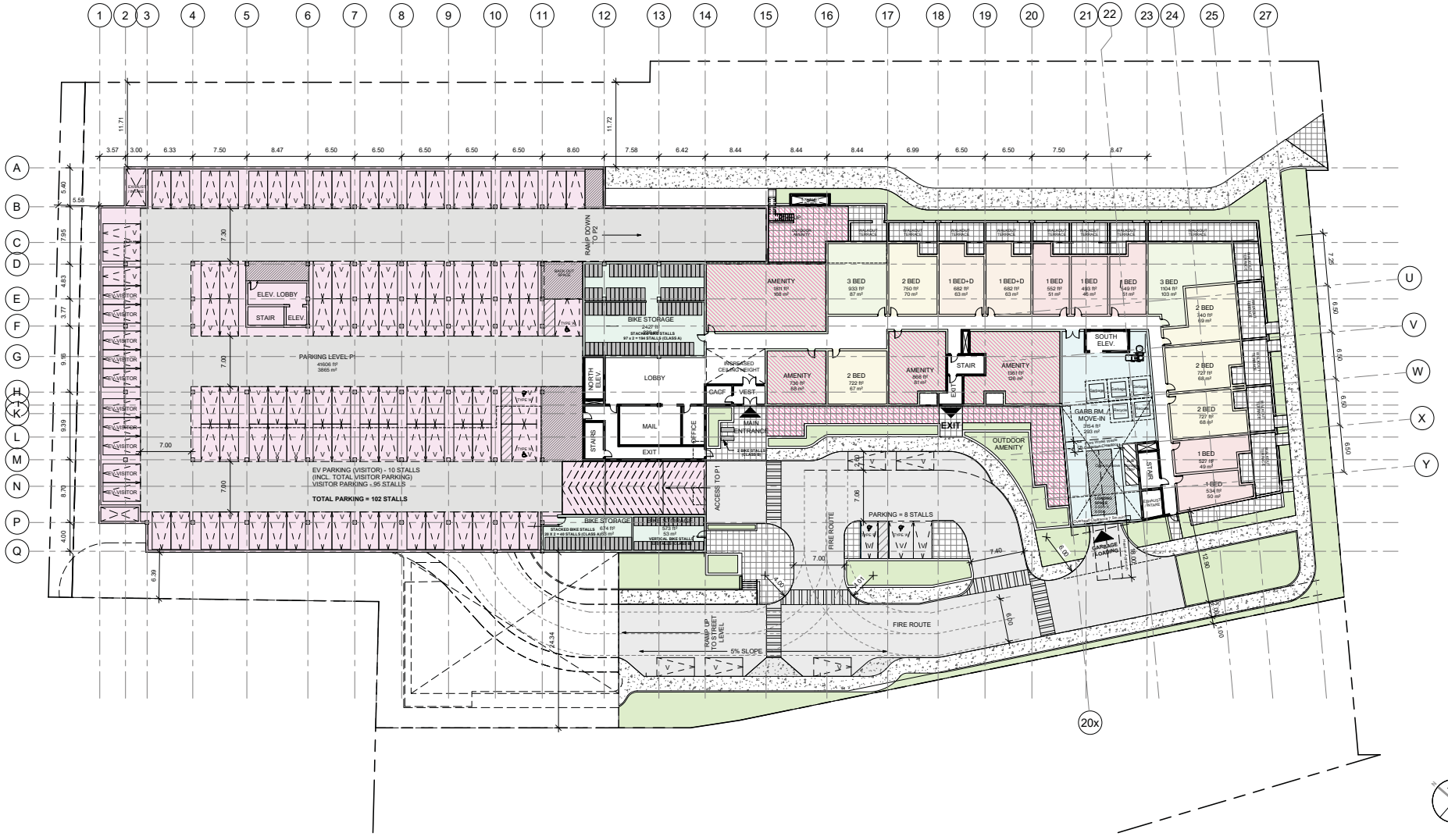

SRM architects+ urban*designers

MONTCREST Asset Management

PARKING LEVEL P1

A2.3

DRAFT COPY
FOR REVIEW

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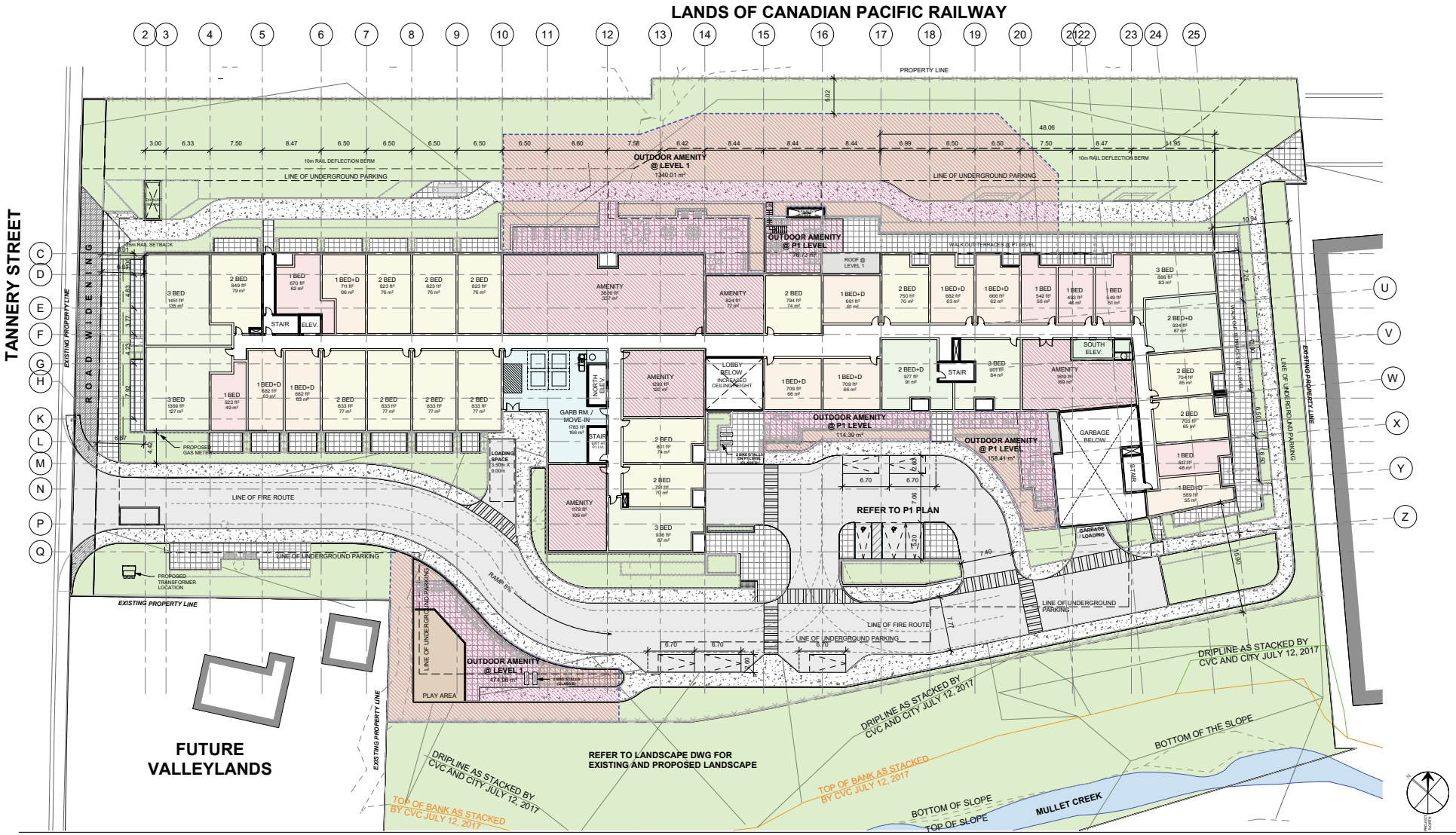
Scale 1 : 250 FULL SIZE

2024-04-22



SRM architects+ urban*designers

MONTCREST Asset Management

LEVEL 1

A2.4

DRAFT COPY FOR REVIEW

Scale 1 : 250 FULL SIZE

0 2.5 5 12.5

2024-04-22

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MONTCREST Asset Management

LEVELS 2-4

A2.5

DRAFT COPY
FOR REVIEW

0 2.5 5 12.5

Scale 1 : 250 FULL SIZE

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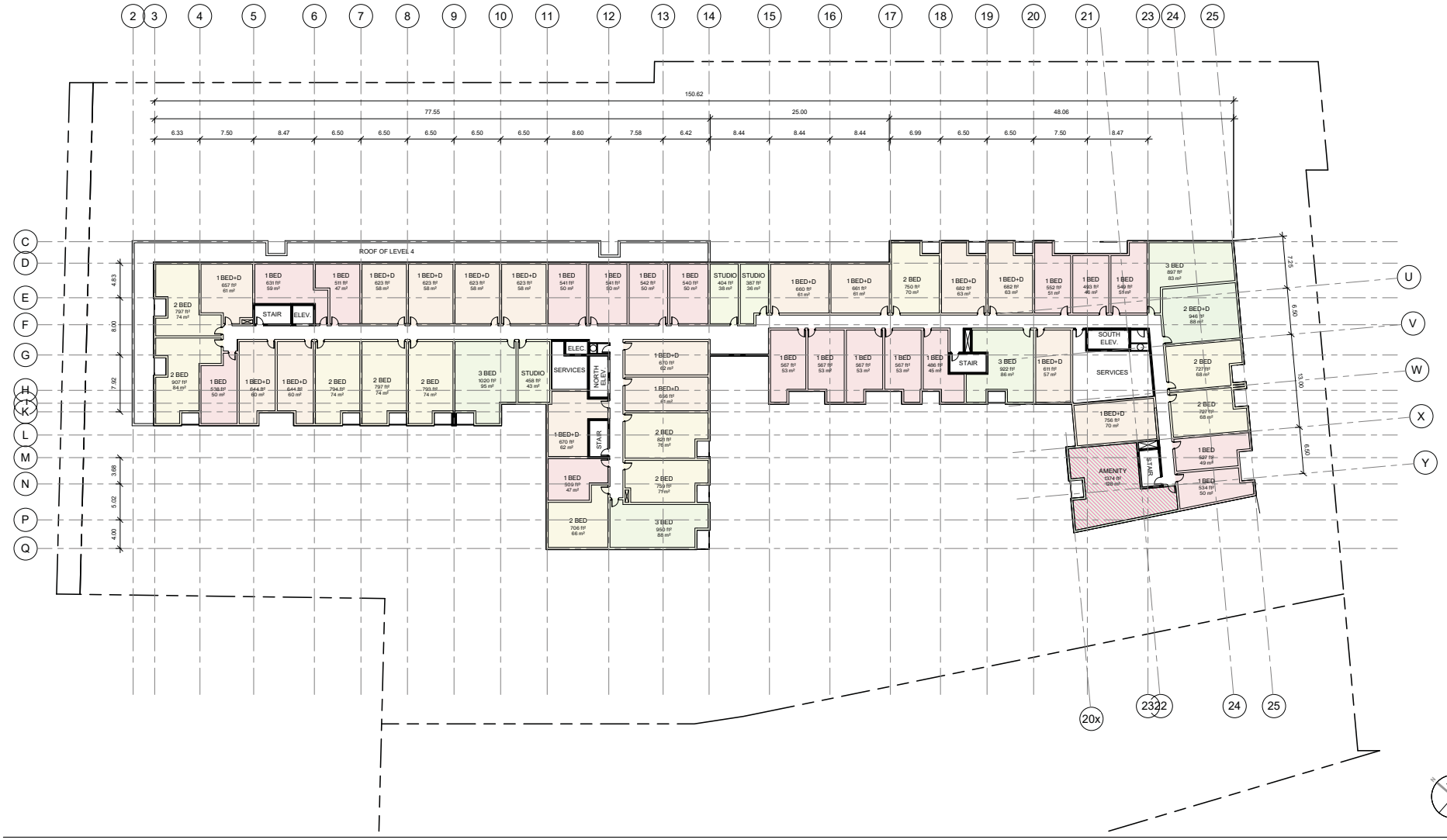

SRM architects+ urban*designers

MONTCREST Asset Management

LEVELS 5

A2.6

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FOR REVIEW

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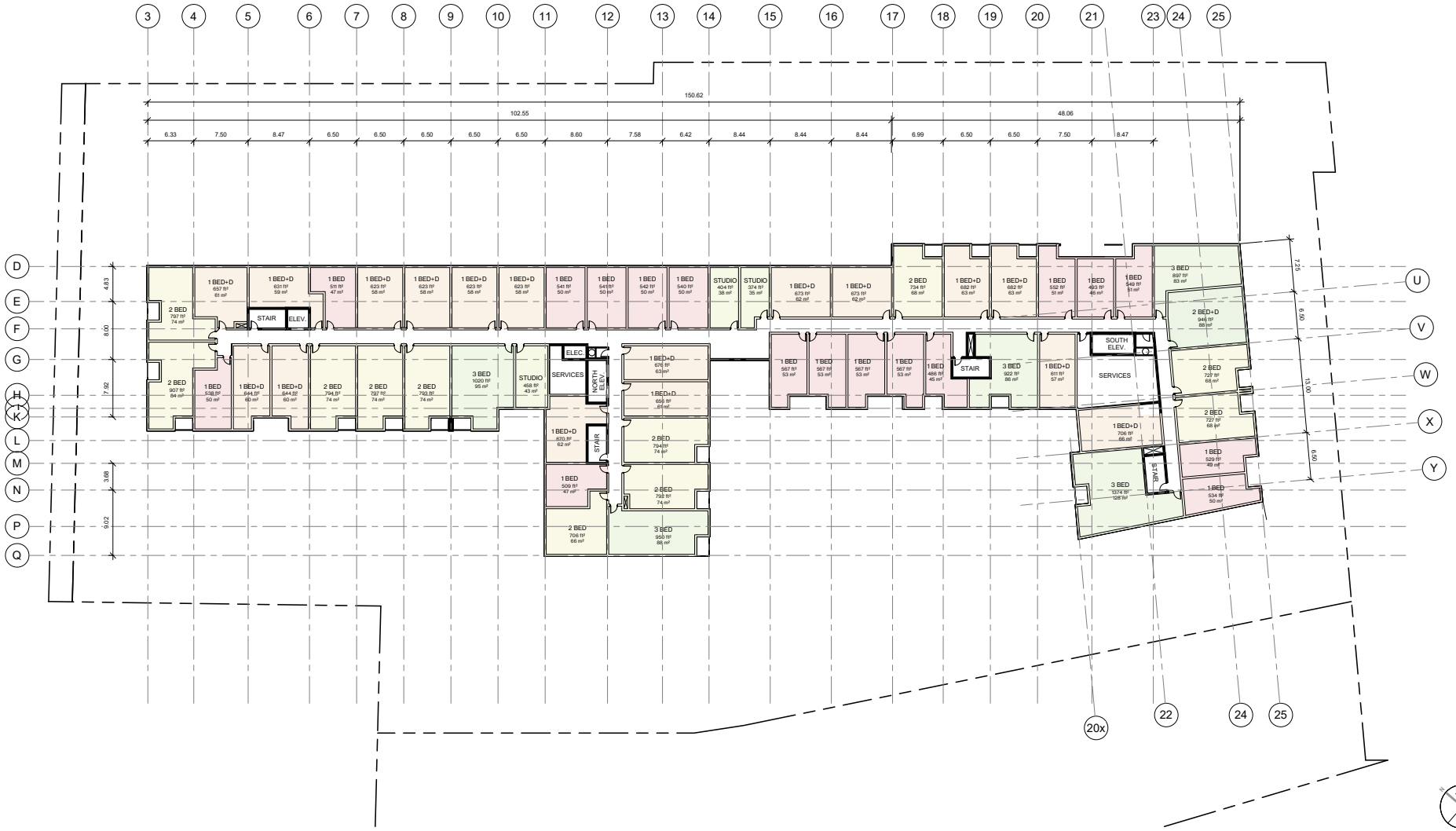

SRM architects+ urban*designers

MONTCREST Asset Management

LEVEL 6

A2.7

DRAFT COPY
FOR REVIEW

Scale 1 : 250 FULL SIZE

0 2.5 5 12.5

2024-04-22

SRM architects+ urban*designers

MONTCREST Asset Management

LEVEL 7-10

A2.8

DRAFT COPY
FOR REVIEW

0 2.5 5 12.5

Scale 1 : 250 FULL SIZE

2024-04-22

SRM architects+ urban*designers

MONTCREST Asset Management

LEVELS 11-12

A2.9

DRAFT COPY
FOR REVIEW

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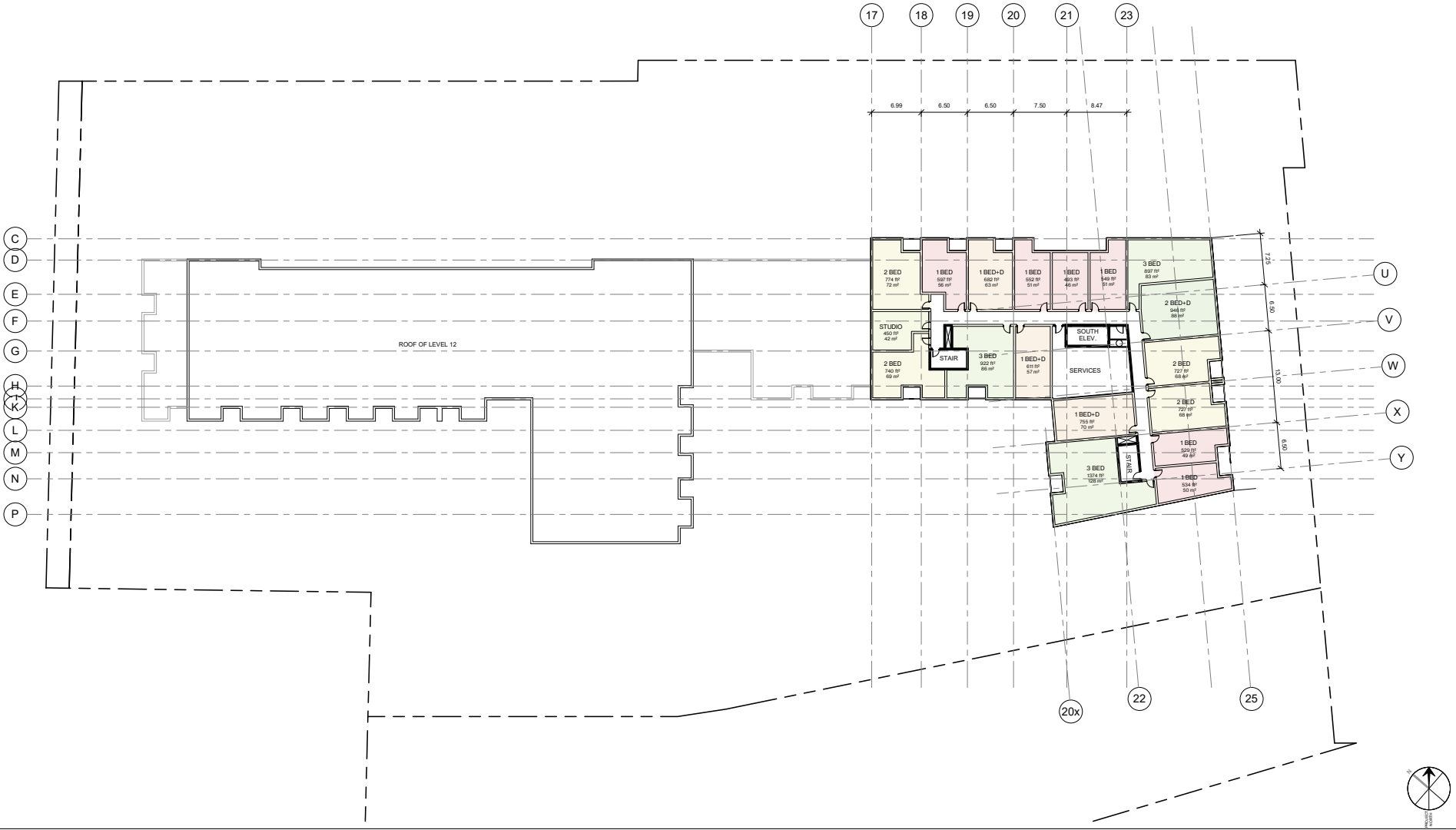
2024-04-22



SRM architects+ urban*designers

MONTCREST Asset Management

LEVELS 13-14

A2.10

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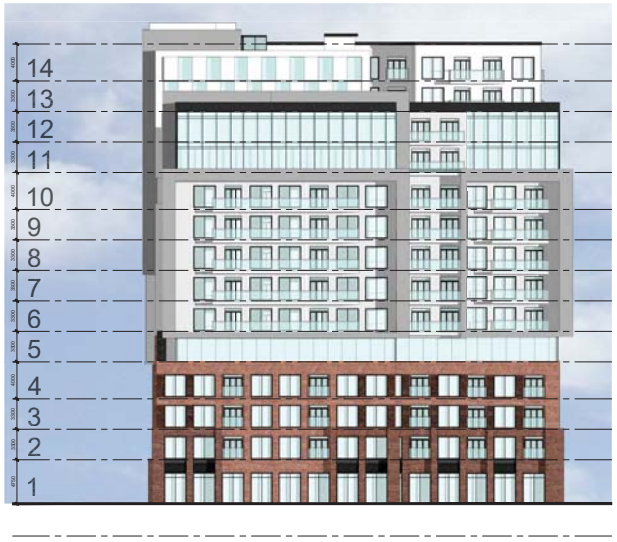
FOR REVIEW

0 2.5 5 12.5

Scale 1 : 250 FULL SIZE

2024-04-22

1 East Elevation
Facing the Railway Corridor



2 North Elevation
Facing Tannery Street

1 West Elevation
Facing the Creek

2 South Elevation
Facing Emby Drive

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MONTCREST Asset Management

BUILDING PERSPECTIVE

A4.1

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2024-04-22

SRM architects+ urban*designers

MONTCREST Asset Management

BUILDING PERSPECTIVE

A4.2

DRAFT COPY
FOR REVIEW

2024-04-22

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MONTCREST Asset Management

BUILDING PERSPECTIVE

A4.3

DRAFT COPY
FOR REVIEW

2024-04-22

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MONTCREST Asset Management

BUILDING PERSPECTIVE

A4.4

DRAFT COPY
FOR REVIEW

2024-04-22

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MONTCREST Asset Management

BUILDING PERSPECTIVE

A4.5

DRAFT COPY
FOR REVIEW

2024-04-22

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MONTCREST Asset Management

BUILDING PERSPECTIVE

A4.6

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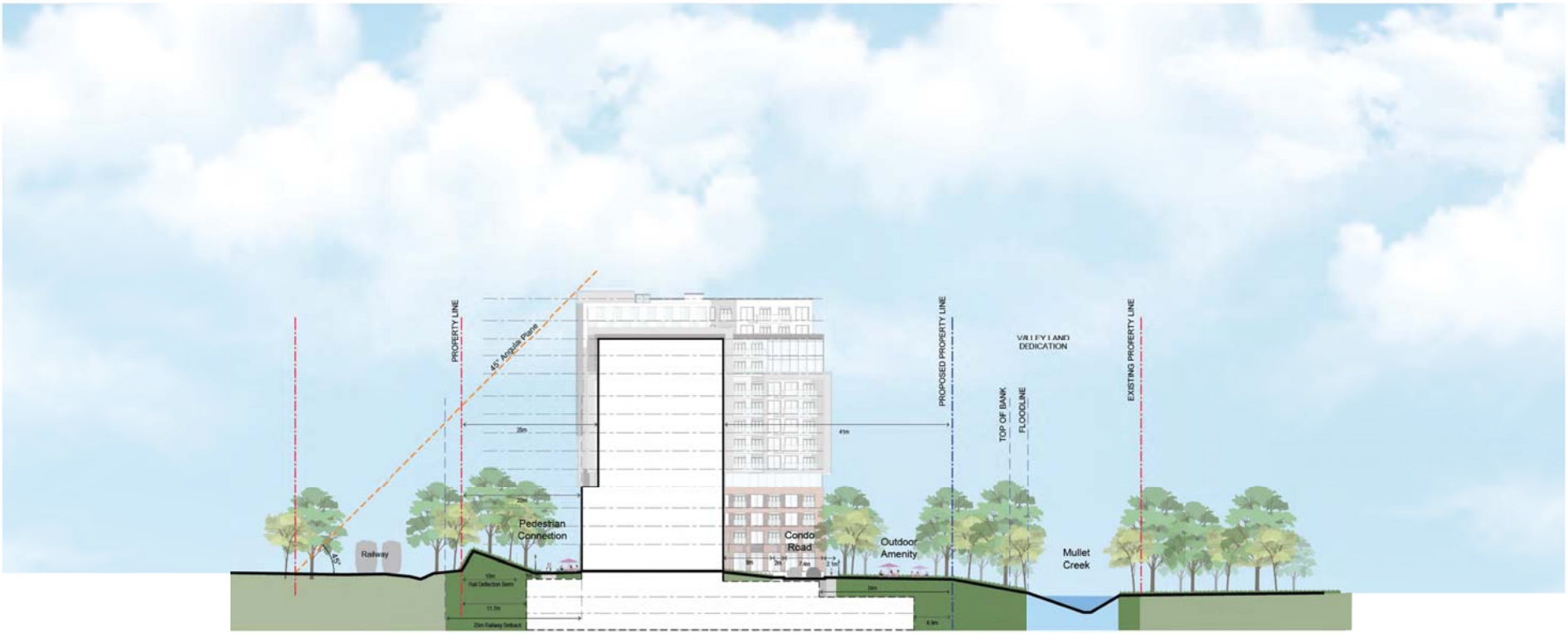
FOR REVIEW

2024-04-22



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MONTCREST Asset Management

SECTION - NORTH SOUTH

A5.1

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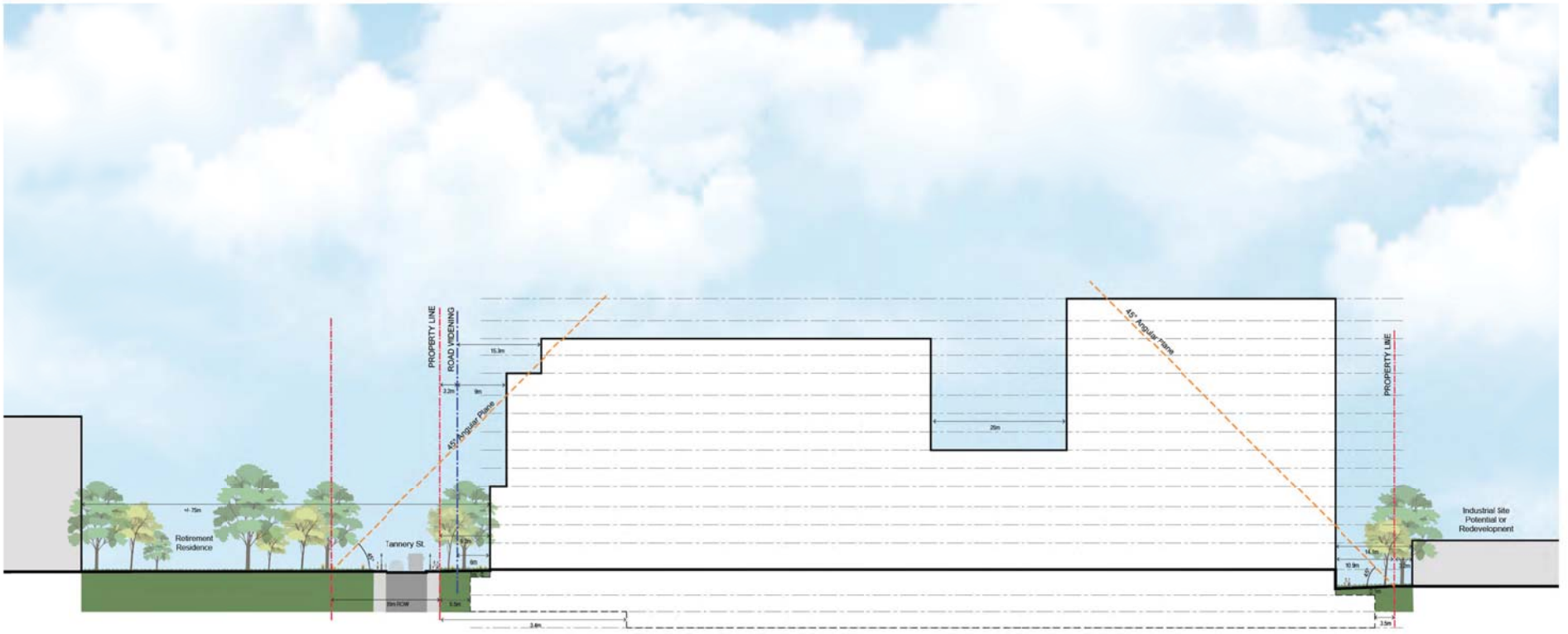
FOR REVIEW

2024-04-22



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MONTCREST Asset Management

SECTION - EAST WEST

A5.2

DRAFT COPY
FOR REVIEW

2024-04-22

APPENDIX E

Supporting Information

Rail Protection Report
51-57 TANNERY STREET

Prepared For
Montcrest Asset Management

By

Jablonsky, Ast and Partners
Consulting Engineers
400-3 Concorde Gate
Toronto, ON
M3C 3N7

JAP Project No. 23096

Table of Contents

Scope and Context

This report has been prepared to establish the structural implications of providing a rail protection for a proposed residential development from the detrimental consequences of an accidental derailment of trains beside the property.

The proposed development is located at 51-57 Tannery St in Mississauga and is located immediately west a CP rail corridor (Galt Subdivison Mile 17.35) which also carries Go Rail Service. The development consists of two residential towers at 51-57 Tannery St in Mississauga and will be setback 25m from the easternmost mutual property line. The site will require rail protection along its east property line which is proposed to be in the form of an earthen berm.

The site was previously submitted and approved in 2021 / 2021 (JAP #20219, AECOM #6015447). The project at that time was a townhouse development protected by an earthen berm for the north portion of the site and a crash wall for the south portion of the site. That development was also set back 25m.

Berm Design Criteria

We have reviewed the "Guidelines for New Development in Proximity to Railway Operations" prepared by the Federation of Canadian Municipalities and the Railway Association of Canada dated May 2013. Based on the type of rail line, the standard berm with a 30m setback should have a minimum height of 2.5m with side slopes not greater than 2.5 to 1. It also acknowledges that reduction in setback of up to 5m can be achieved with an increase in height of the berm. Based on this and response memo from Aecom dated December 1, 2020, the standard berm for a 25m setback would have a minimum height of 3m with side slopes not greater than 2.5 to 1. This equates to a cross sectional area of 22.5m^3/m width.

We have chosen to provide a berm with a steeper railside slope to maximize useability of the site area. This berm has a height greater than or equal to 3m high and has a cross section greater than or equal to 22.5m^3/m. See Appendix A for site plan and berm cross sections and Appendix B for berm cross section calculations.

To act as a return at each end, the berm at the north and south ends extends beyond the face of the building and the minimum berm height of 3m has been provided up to a distance of 6m from the mutual property line.

Conclusions

This report has been prepared to examine the option of providing a crash barrier to protect the structure behind it from the effects of a train derailment. Based on the forces provided in the

AECOM guidelines, the berm provided will provide at least the same level of rail safety for nearby residents, workers, visitors, and shoppers as the required 30m setback and berm.

Disclaimer

This report was prepared for the exclusive use of Montcrest Asset Management by Jablonsky, Ast and Partners Consulting Engineers. The material in it reflects Jablonsky, Ast and Partners Consulting Engineers' best judgement in light of the information available to it at the time of preparation. In the preparation of this report, Jablonsky, Ast and Partners Consulting Engineers has relied in good faith on information provided by others.

Any use which a third party makes of this report, or any reliance on, or decisions taken, based on it, are the responsibility of such third parties. Jablonsky, Ast and Partners Consulting Engineers accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

We trust the foregoing will be of use. Should you have any questions, please do not hesitate to contact the office.

Yours very truly,

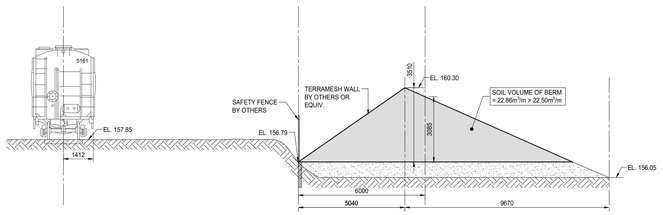
JABLONSKY AST & PARTNERS
CONSULTING ENGINEERS

Craig Slama, P. Eng.

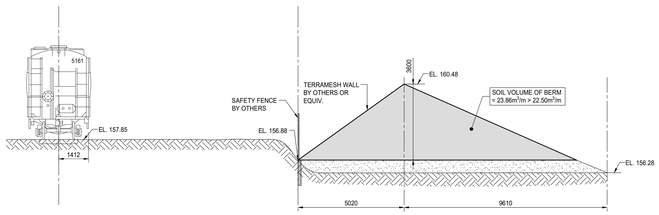
APPENDIX ‘A’

Site Plan and Sections

DERAILMENT PLAN
SCALE N.T.S.



SECTION 1
SCALE 1:100 SKS-1



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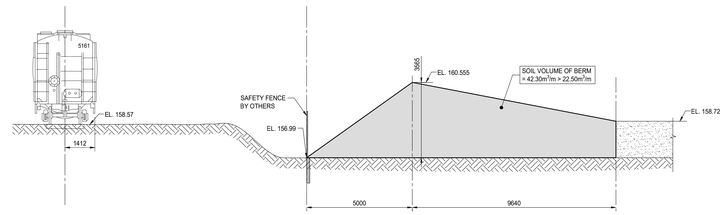

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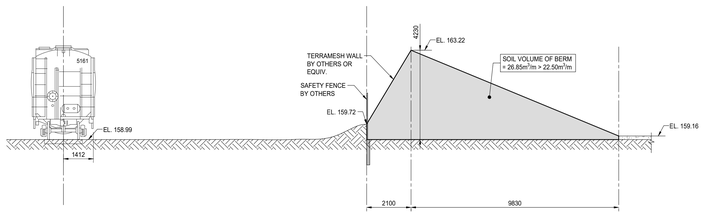

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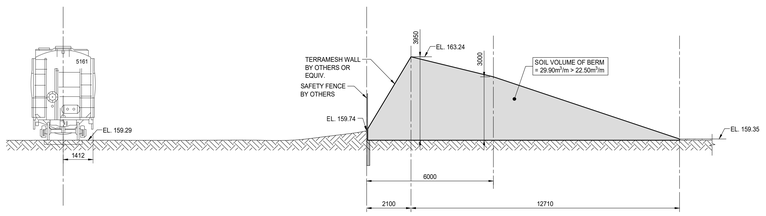
SCALE 1:100 SKS-1



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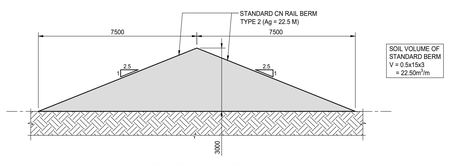
SCALE 1:100 SKS-1



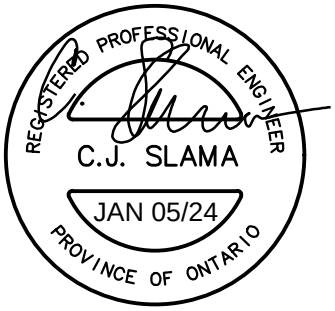
3M STANDARD BERM
SCALE 1:100 SKS-1

Jablonsky, Ast and Partners
CONSULTING ENGINEERS
400-3 CONCORDE GATE
TORONTO, ON., M3C 3N7
TEL. 416-447 7405
FAX 416-447 2771

PROJECT/DWG. TITLE	57 TANNERY DERAILMENT PLAN
JOB NUMBER	23096
DRAWN C.C.	DATE 2024-01-05
SCALE AS NOTED	SKETCH No SKS-1

APPENDIX ‘B’

Berm Cross Section Calculations



JAP Berm Volume Calculator

Job Name:	51-57 Tannery
Job #:	23096
Description:	1 / SKS-1

STANDARD BERM PROPERTIES

h_{30m}	=	required berm height based on 30m setback	=	2.50	m
s	=	berm slope	=	2.50	
SB	=	proposed setback distance	=	25	m
h_{STD}	=	standard berm height = h_{30m} - (30-SB) * 0.1	=	3.00	m
w_{STD}	=	standard berm width = h_{STD} * s * 2	=	15.00	m
A_{STD}	=	standard berm area = h_{STD} * w_{STD} / 2	=	22.50	m^2/m

BERM GEOMETRY

EL_R	=	top of rail elevation	=	157.85	masl
EL_{PL}	=	elevation at property line	=	156.79	masl
EL_T	=	elevation at toe of slope	=	156.05	masl
EL_P	=	elevation at peak of berm	=	160.30	masl
d_1	=	distance from property line to peak	=	5,040	mm
d_2	=	distance from peak to slope toe	=	9,670	mm
EL_B	=	base of berm elevation = MIN (EL_R, EL_{PL})	=	156.79	mm
h	=	height of berm = EL_P - EL_B	=	3,510	mm
h_{PL}	=	height of berm at PL = EL_{PL} - EL_B	=	-	mm
d_3	=	distance from peak to berm toe = d2 * (EL_P - EL_B) / (EL_P - EL_T)	=	7,986	mm
A	=	d_1 * (h + h_{PL}) / 2 + d_3 * h / 2	=	22.86	m^2/m
$A > A_{REQ}$	=	area check	=	OK	
$h > h_{REQ}$	=	height check	=	OK	

JAP Berm Volume Calculator

Job Name:	51-57 Tannery
Job #:	23096
Description:	2 / SKS-1

STANDARD BERM PROPERTIES

h_{30m}	=	required berm height based on 30m setback	=	2.50	m
s	=	berm slope	=	2.50	
SB	=	proposed setback distance	=	25	m
h_{STD}	=	standard berm height = h_{30m} - (30-SB) * 0.1	=	3.00	m
w_{STD}	=	standard berm width = h_{STD} * s * 2	=	15.00	m
A_{STD}	=	standard berm area = h_{STD} * w_{STD} / 2	=	22.50	m^2/m

BERM GEOMETRY

EL_R	=	top of rail elevation	=	157.85	masl
EL_{PL}	=	elevation at property line	=	156.88	masl
EL_T	=	elevation at toe of slope	=	156.28	masl
EL_P	=	elevation at peak of berm	=	160.48	masl
d_1	=	distance from property line to peak	=	5,020	mm
d_2	=	distance from peak to slope toe	=	9,610	mm
EL_B	=	base of berm elevation = MIN (EL_R, EL_{PL})	=	156.88	mm
h	=	height of berm = EL_P - EL_B	=	3,600	mm
h_{PL}	=	height of berm at PL = EL_{PL} - EL_B	=	-	mm
d_3	=	distance from peak to berm toe = d2 * (EL_P - EL_B) / (EL_P - EL_T)	=	8,237	mm
A	=	d_1 * (h + h_{PL}) / 2 + d_3 * h / 2	=	23.86	m^2/m
$A > A_{REQ}$	=	area check	=	OK	
$h > h_{REQ}$	=	height check	=	OK	

JAP Berm Volume Calculator

Job Name:	51-57 Tannery
Job #:	23096
Description:	3 / SKS-1

STANDARD BERM PROPERTIES

h_{30m}	=	required berm height based on 30m setback	=	2.50	m
s	=	berm slope	=	2.50	
SB	=	proposed setback distance	=	25	m
h_{STD}	=	standard berm height = h_{30m} - (30-SB) * 0.1	=	3.00	m
w_{STD}	=	standard berm width = h_{STD} * s * 2	=	15.00	m
A_{STD}	=	standard berm area = hSTD * w_{STD} / 2	=	22.50	m^2/m

BERM GEOMETRY

EL_R	=	top of rail elevation	=	158.57	masl
EL_{PL}	=	elevation at property line	=	156.99	masl
EL_T	=	elevation at toe of slope	=	158.72	masl
EL_P	=	elevation at peak of berm	=	160.56	masl
d_1	=	distance from property line to peak	=	5,000	mm
d_2	=	distance from peak to slope toe	=	9,640	mm
EL_B	=	base of berm elevation = MIN (ELR, ELPL)	=	156.99	mm
h	=	height of berm = ELP - ELB	=	3,565	mm
h_{PL}	=	height of berm at PL = ELPL - ELB	=	-	mm
d_3	=	distance from peak to berm toe = d2 * (ELP - ELB) / (ELP - ELT)	=	18,728	mm
A	=	d1 * (h + hPL) / 2 + d3 * h / 2	=	42.30	m2/m
$A > A_{REQ}$	=	area check	=	OK	
$h > h_{REQ}$	=	height check	=	OK	

JAP Berm Volume Calculator

Job Name:	51-57 Tannery
Job #:	23096
Description:	4 / SKS-1

STANDARD BERM PROPERTIES

h_{30m}	=	required berm height based on 30m setback	=	2.50	m
s	=	berm slope	=	2.50	
SB	=	proposed setback distance	=	25	m
h_{STD}	=	standard berm height = h_{30m} - (30-SB) * 0.1	=	3.00	m
w_{STD}	=	standard berm width = h_{STD} * s * 2	=	15.00	m
A_{STD}	=	standard berm area = h_{STD} * w_{STD} / 2	=	22.50	m^2/m

BERM GEOMETRY

EL_R	=	top of rail elevation	=	158.99	masl
EL_{PL}	=	elevation at property line	=	159.72	masl
EL_T	=	elevation at toe of slope	=	159.16	masl
EL_P	=	elevation at peak of berm	=	163.22	masl
d_1	=	distance from property line to peak	=	2,100	mm
d_2	=	distance from peak to slope toe	=	9,830	mm
EL_B	=	base of berm elevation = MIN (EL_R, EL_{PL})	=	158.99	mm
h	=	height of berm = EL_P - EL_B	=	4,227	mm
h_{PL}	=	height of berm at PL = EL_{PL} - EL_B	=	730	mm
d_3	=	distance from peak to berm toe = d2 * (EL_P - EL_B) / (EL_P - EL_T)	=	10,242	mm
A	=	d_1 * (h + h_{PL}) / 2 + d_3 * h / 2	=	26.85	m^2/m
$A > A_{REQ}$	=	area check	=	OK	
$h > h_{REQ}$	=	height check	=	OK	

JAP Berm Volume Calculator

Job Name:	51-57 Tannery
Job #:	23096
Description:	5 / SKS-1

STANDARD BERM PROPERTIES

h_{30m}	=	required berm height based on 30m setback	=	2.50	m
s	=	berm slope	=	2.50	
SB	=	proposed setback distance	=	25	m
h_{STD}	=	standard berm height = h_{30m} - (30-SB) * 0.1	=	3.00	m
w_{STD}	=	standard berm width = h_{STD} * s * 2	=	15.00	m
A_{STD}	=	standard berm area = h_{STD} * w_{STD} / 2	=	22.50	m^2/m

BERM GEOMETRY

EL_R	=	top of rail elevation	=	159.29	masl
EL_{PL}	=	elevation at property line	=	159.74	masl
EL_T	=	elevation at toe of slope	=	159.35	masl
EL_P	=	elevation at peak of berm	=	163.24	masl
EL_{P2}	=	elevation at secondary peak of berm	=	162.03	masl
d_1	=	distance from property line to peak	=	2,100	mm
d_2	=	distance from peak to slope toe	=	12,650	mm
d_4	=	distance from peak to secondary peak	=	3,900	mm
EL_B	=	base of berm elevation = MIN (EL_R, EL_{PL})	=	159.29	mm
h	=	height of berm = EL_P - EL_B	=	3,950	mm
h_2	=	height of berm at secondary peak = EL_{P2} - EL_B	=	2,737	mm
h_{PL}	=	height of berm at PL = EL_{PL} - EL_B	=	450	mm
d_3	=	distance from peak to berm toe = d2 * (EL_P - EL_B) / (EL_P - EL_T)	=	12,845	mm
A	=	d_1 * (h + h_{PL}) / 2 + d4 * (h + h_2) / 2 + (d_3-d_4) * h_2 / 2	=	29.90	m^2/m
$A > A_{REQ}$	=	area check	=	OK	
$h > h_{REQ}$	=	height check	=	OK	

APPENDIX F

Vibration Assessmeetn

Vibration Measurements

CP, MECP and Metrolinx requires an assessment of ground-borne vibration through measurement if building foundations are to be located within 75 metres of the right-of-way. Measurements were performed at the anticipated location of the closest dwelling, approximately 21 m from the railway right of way. The results of the measurements are presented in Figures 4 to 8 in Appendix F. Table 6 shows the maximum RMS vibration velocity measurements during each of the train pass-bys.

Table 6: Peak Vibration Measurements of Train Pass-bys

Train Pass-by	Type of Train	Measured Vibration Level (mm/s)	Criteria (mm/s)
1	Freight	0.12	0.14
2	Freight	0.11	0.14
3	Passenger	0.06	0.14
4	Freight	0.11	0.14
5	Passenger	0.06	0.14

Vibration levels are below the CP, MECP and Metrolinx limit of 0.14 mm/s. Vibration mitigation measures are not required for the proposed development.

Figure 4a: Pass-by 1
Measured Vibratory Velocity Level

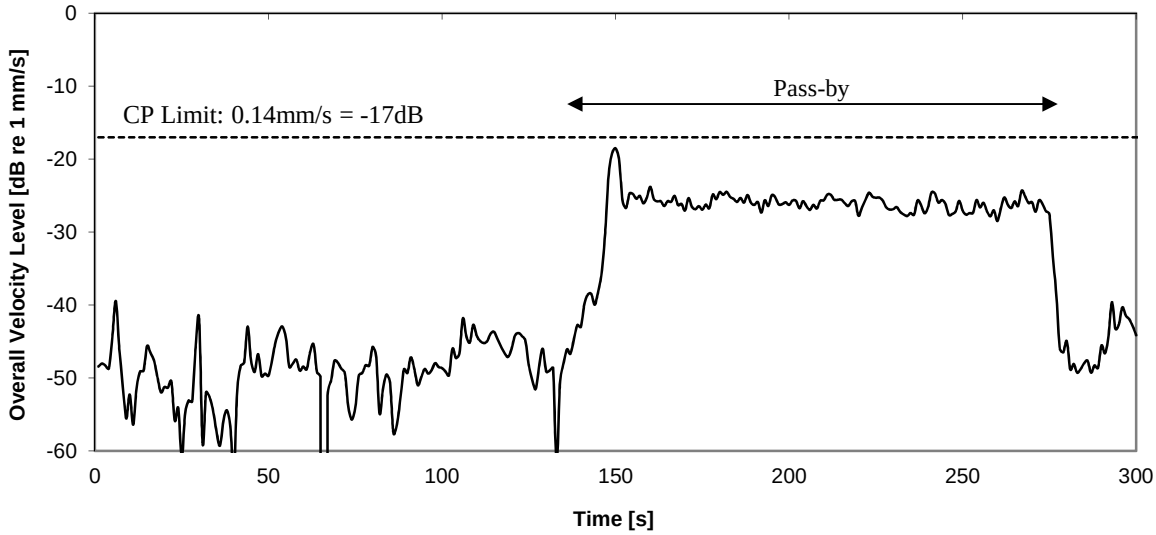


Figure 4b: Pass-by 1
Acceleration Spectrum @ Peak Level (1 sec. Duration)

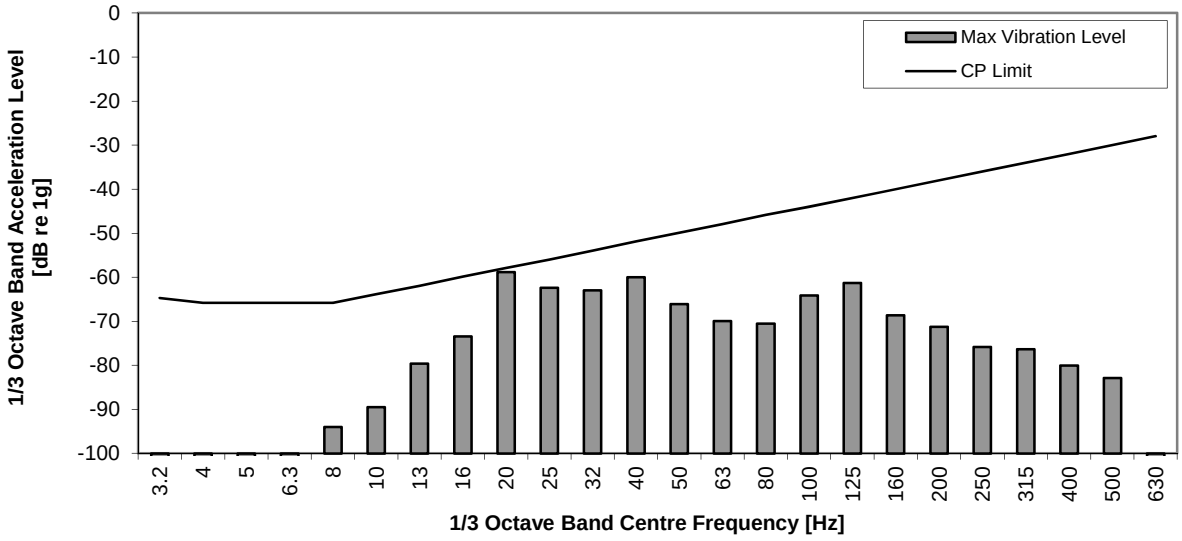


Figure 5a: Pass-by 2
Measured Vibratory Velocity Level

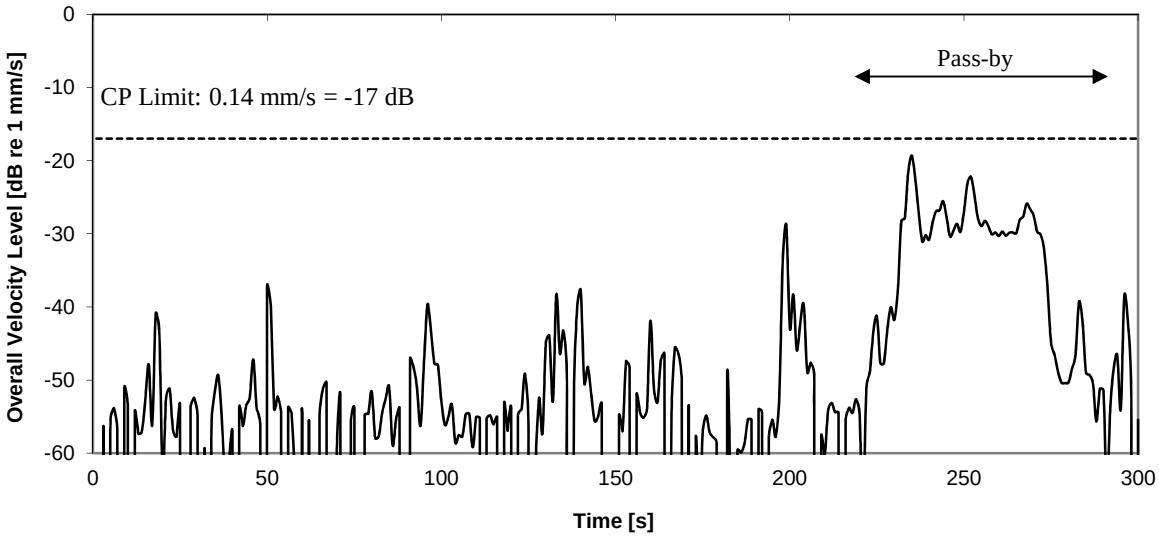


Figure 5b: Pass-by 2
Acceleration Spectrum @ Peak Level (1 sec. Duration)

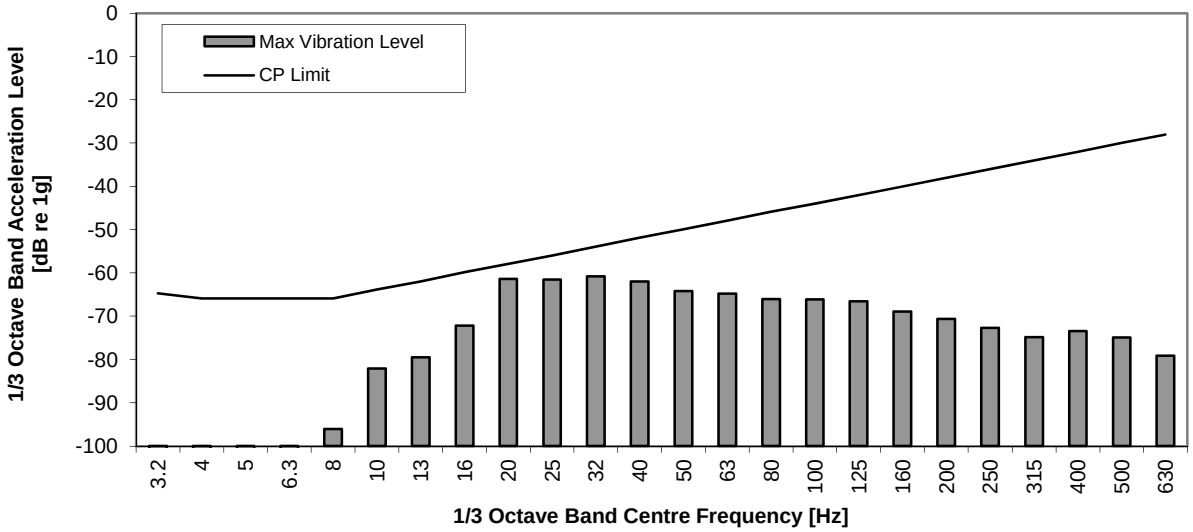


Figure 6a: Pass-by 3
Measured Vibratory Velocity Level

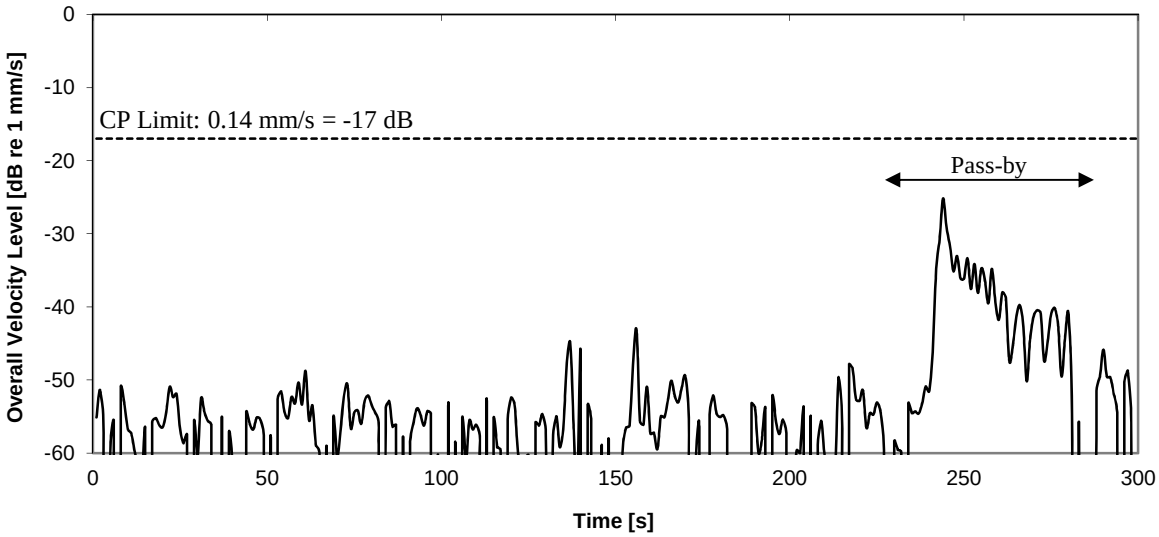


Figure 6b: Pass-by 3
Acceleration Spectrum @ Peak Level (1 sec. Duration)

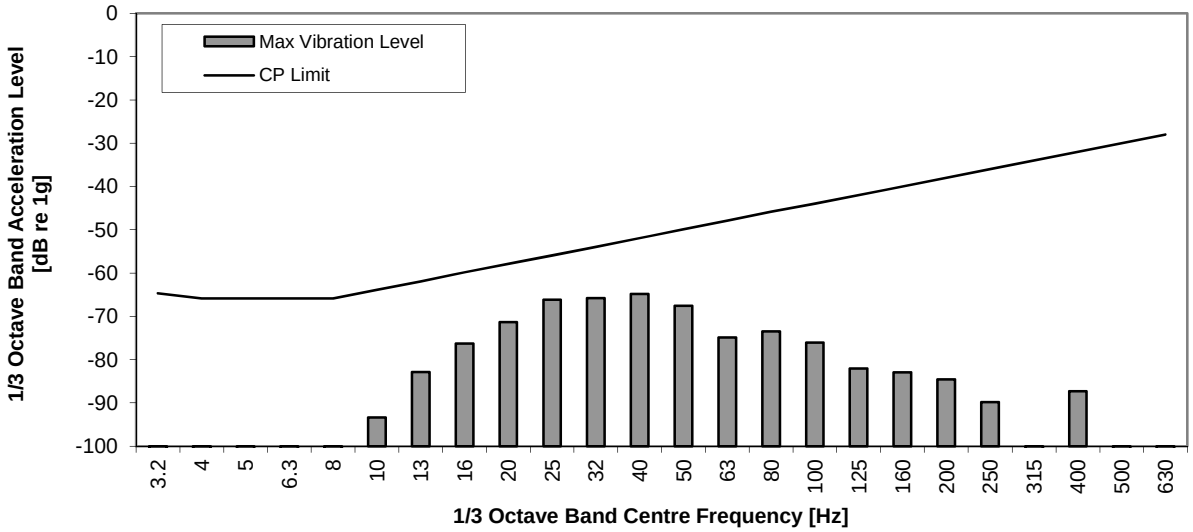


Figure 7a: Pass-by 4
Measured Vibratory Velocity Level

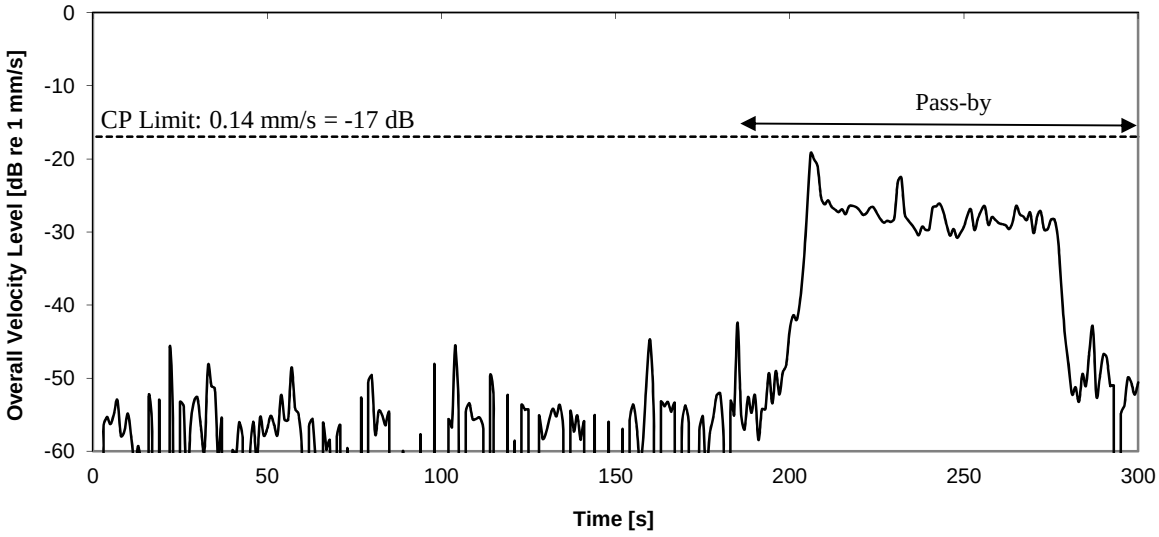


Figure 7b: Pass-by 4
Acceleration Spectrum @ Peak Level (1 sec. Duration)

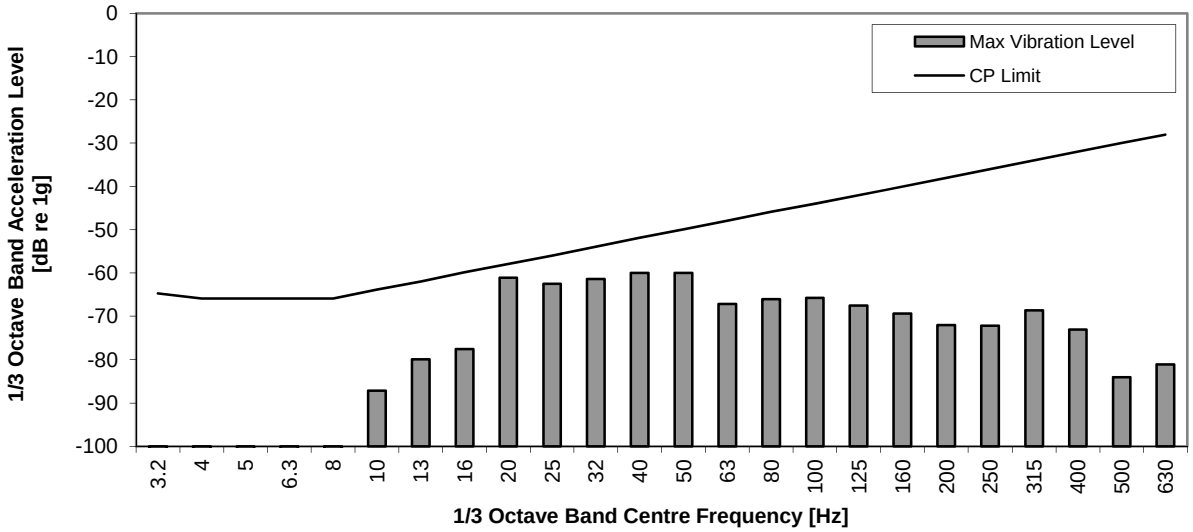


Figure 8a: Pass-by 5
Measured Vibratory Velocity Level

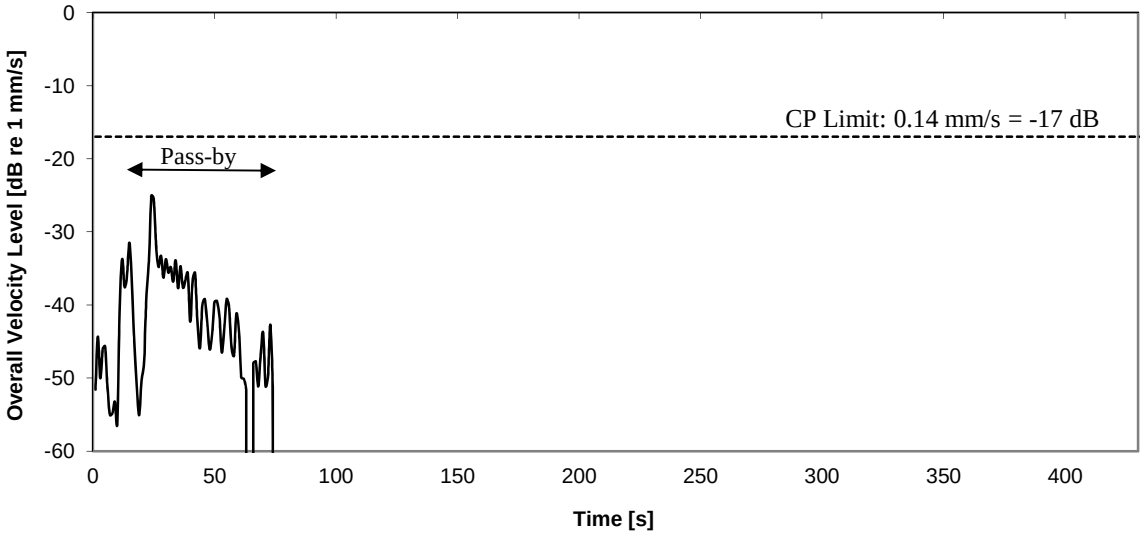


Figure 8b: Pass-by 5
Acceleration Spectrum @ Peak Level (1 sec. Duration)