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Noise Feasibility Study
Proposed Residential Development
North of Britannia Road and West of Regional Road 25
Town of Milton, Ontario

Prepared for:

Mattamy Homes Ltd.
7880 Keele Street, Unit 3
Vaughan, Ontario
L4K 4G7

Prepared by

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and

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Reviewed by

Sheeba Paul, MEng, PEng

July 26, 2023

HGC Project No. 02200974

VERSION CONTROL

Noise Feasibility Study,
North of Britannia Road and West of Regional Road 25,
Town of Milton, Ontario.

Ver.	Date	Version Description / Changelog	Prepared By
0	July 27, 2023	Noise Feasibility Study in support of approvals process.	V. Garcia/ A. Rogers/ S. Paul

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Table of Contents

1 Introduction & Summary

HGC Engineering was retained by Mattamy Homes Ltd. to conduct a noise feasibility study for proposed residential development located north of Britannia Road and west of Regional Road 25 in Milton, Ontario. Lands surrounding the subject site are a mixture of existing, proposed and future residential lands. The study is required by the Municipality as part of the planning and approvals process.

The primary noise sources impacting the site were determined to be road traffic on Britannia Road and Regional Road 25. A secondary source of noise is road traffic on Etheridge Avenue. Relevant road traffic data was obtained from the Region of Halton and the BA Group and was used to predict future traffic sound levels at the locations of the proposed residential façades and in the outdoor living areas. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP), Region and the Municipality.

The sound level predictions indicate that the future road traffic sound levels will exceed MECP and the Regional guidelines at the proposed development. Air conditioning systems are required for the proposed buildings. Upgraded building and glazing constructions will be required for the proposed buildings closest to Regional Road 25 and Britannia Road. Acoustic barriers will be required for the outdoor amenity areas located at grade and on rooftops closest to the roadways. Preliminary acoustical requirements are specified in this report. Warning clauses are recommended to inform future residents of the road traffic noise impacts and to address sound level excesses to notify residents of the nearby proposed commercial uses.

2 Site Description & Noise Sources

The proposed residential development is located north of Britannia Road and west of Regional Road 25, in the Town of Milton, Ontario. Figure 1 shows an aerial photo illustrating the location of the site. Proposed site plans prepared by Core Architects dated July 14, 2023, for the South Block in Figure 2a; and dated July 12, 2023, for the North Block in Figure 2b, also show the prediction locations. The proposed development will include several midrise buildings ranging in height from 12 to 15-storeys, along with associated roadways. A holdout property located at 6110 Regional Road 25 has not been included in the analysis.

HGC Engineering personnel visited the site in January 2023. The acoustical environment surrounding the site is urban in nature. The primary sources of sound impacting the site are vehicular traffic on Regional Road 25 and Britannia Road. A secondary source of sound is road traffic on Etheridge Avenue.

The surrounding lands are existing and future residential lands. The Halton Waste Management site is located approximately 700 m to the south of Britannia Road. The Town of Milton Civic Operations Centre is located approximately 500 m to the south of Britannia Road. These areas are not considered to be significant sources of stationary noise due to the significant background sounds from road traffic from both Britannia Road and Regional Road 25. There are no significant sources of stationary noise within 500 m of the subject site.

3 Noise Level Criteria

3.1 Road Traffic Noise

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

Table 1: MECP Road Traffic Noise Criteria (dBA)

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

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

The MECP guidelines allow the daytime sound levels in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. Note that not all OLAs necessarily require protection, if there are other protected outdoor areas accessible to the residents. The Town of Milton has a maximum fence height of 2.4 m along major roadways. The remainder of the required barrier height can be made up with an earth berm. The Region of Halton has a minimum acoustic barrier height of 2.4 m and maximum height of 3.5 m along regional roads.

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

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA 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 plane of the bedroom or living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom or living/dining room window due to road traffic.

4 Traffic Noise Predictions

4.1 Road Traffic

Road traffic data for Regional Road No. 25 and Britannia Road were obtained from the Region of Halton in the form of annual average daily traffic (AADT) for the year 2031 and are included in Appendix A. The data was further projected to the year 2033 with the growth rate of 2.5% per year. A commercial percentage of 6% was applied to both roadways and was evenly split into 3% medium trucks and 3% heavy trucks. A day/night split of 90%/10% in conjunction with a speed limit of 70 km/h was applied to the roadways.

Projected road traffic data to the year 2028 for Etheridge Avenue was obtained from the BA Group in an email dated January 27, 2023 (included in Appendix A). The data was provided in the form of AADT volumes. The data was further projected to the year 2033 using a 2.5% per year growth rate. A heavy vehicle percentage of 1.0% was provided in the data. A commercial vehicle percentage of 1.6% was calculated, split into 0.6% medium trucks and 1.0% heavy trucks. A day/night split of 90%/10% was used in the analysis. A speed limit of 50 km/h was assumed for Etheridge Avenue.

Table 2: Projected Road Traffic Data to 2033

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Regional Road No. 25	Daytime	45 330	1 447	1 447	48 224
	Nighttime	5 037	161	161	5 359
	Total	**50 367**	**1 608**	**1 608**	**53 583**
Britannia Road	Daytime	45 330	1 447	1 447	48 224
	Nighttime	5 037	161	161	5 359
	Total	**50 367**	**1 608**	**1 608**	**53 583**
Etheridge Avenue	Daytime	9 163	56	93	9 312
	Nighttime	1 018	6	10	1 034
	Total	**10 181**	**62**	**103**	**10 346**

4.2 Road Traffic Noise Predictions

To assess the levels of road traffic noise which will impact the site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. A sample STAMSON output is included in Appendix B.

The proposed building footprints as indicated on the site plan were used in the analysis. Sound levels were also predicted at the plane of the top storey bedroom/living/dining room windows during daytime and nighttime hours to investigate ventilation requirements.

Prediction locations were chosen around the proposed development, as shown in Figure 2, to obtain a good representation of the future sound levels at various façades with exposure to the roadways. The results of these predictions are summarized in Table 3. The acoustic requirements may be subject to modifications if the site plan is changed significantly.

Table 3: Predicted Future Sound Levels [dBA], Without Mitigation

Prediction Location	Description	Daytime – in OLA $L_{EQ(16)}$	Daytime - at Façade $L_{EQ(16)}$	Nighttime - at Façade $L_{EQ(8)}$
[A]	North façade of Building 1	--	69	63
[B]	East façade of Building 1	--	72	66
[C]	West façade of Building 1	--	61	54
[D]	East façade of Building 2	--	71	65
[E]	West façade of Building 3	--	63	56
[F]	North façade of Building 4	--	70	63
[G]	East façade of Building 4	--	74	67
[H]	South façade of Building 4	--	74	67
[I]	West façade of Building 4	--	68	62
[J]	East façade of Building 5	--	71	65
[K]	South façade of Building 7	--	66	62
[L]	West at grade OLA of Phase 4	61	--	--
[M]	At grade OLA of Phase 5	<55	--	--
[N]	Rooftop OLA of Building 1*	<55	--	--
[O]	8th Floor terrace of Building 1*	<55	--	--
[P]	Rooftop OLA of Building 3*	<55	--	--
[Q]	8th Floor terrace of Building 3*	57	--	--
[R]	Rooftop OLA of Building 4*	<55	--	--
[S]	6th Floor terrace of Building 4*	61	--	--
[T]	Rooftop OLA of Building 6*	<55	--	--
[U]	8th Floor terrace of Building 6*	57	--	--
[V]	Rooftop OLA of Building 7*	<55	--	--
[W]	8th Floor terrace of Building 7*	<55	--	--

Note: *Assuming a standard minimum 1.07 m high solid parapet along the roof edge.

5 Traffic Noise Recommendations

With no mitigation, there will be sound level excesses at the proposed buildings within the development. The following discussion outlines recommendations for ventilation requirements, upgraded building façade constructions, and warning clauses to achieve the noise criteria stated in Table 1.

5.1 Outdoor Living Areas

Balconies and terraces may be provided for the individual units of the proposed buildings that are less than 4 m in depth. These balconies and terraces are not considered to be outdoor living areas

for assessment under MECP guidelines, and therefore physical mitigation will not be required. Since there are common outdoor amenity terraces provided for the buildings in the development, large private terraces are not considered OLAs under MECP guidelines.

The predicted sound level in the at grade outdoor amenity area on the west side of Phase 4 (Prediction Location [L]) is 61 dBA, 6 dBA in excess if the MECP limit of 55 dBA. Physical mitigation in the form of an acoustic barrier is required for this area. An acoustic barrier 2.4 m in height will be required along the south side of the OLA to reduce traffic noise in the area to 57 dBA. The 2 dBA sound level excess is acceptable to the MECP with the use of a noise warning clause. No further mitigation is required.

The predicted sound level in the large 6th Floor terrace on the west side of Building 4 (Prediction Location [S]) is 61 dBA, 6 dBA in excess of the MECP limit of 55 dBA, with the inclusion of a standard minimum 1.07 m high solid parapet around the area. Physical mitigation in the form of an acoustic barrier is required for this area. An acoustic barrier 1.4 m in height will be required along the edges of the terrace to reduce traffic noise in the area to 59 dBA. The 4 dBA sound level excess is acceptable to the MECP with the use of a noise warning clause. No further mitigation is required. Alternatively, if the terrace is reduced to less than 4 m in depth from the building, an acoustic barrier is not required.

The predicted sound levels in the 8th Floor terraces of Building 3 and Building 6 (Prediction Locations [Q] and [U]) will be 57 dBA with a minimum 1.07 m high solid parapet wall. The 2 dBA sound level excess is acceptable to the MECP with the use of a noise warning clause. No further mitigation is required.

For all remaining outdoor amenity spaces and large terraces, the predicted sound level will be within 55 dBA. No additional noise abatement is required for these spaces. There are several at grade amenity spaces along Regional Road 25 that may be used as part of the retail facilities included on the ground floor. Since there are several common outdoor amenity areas, both elevated and at grade, that are provided for the use of all residents, these amenity spaces do not require an assessment.

The preliminary locations of the required acoustic barriers are shown in Figure 3. The wall component of the barrier should be of a solid construction with a surface density of no less than 20 kg/m^2. The walls may be constructed from a variety of materials such as glass, wood, brick, pre-cast concrete or other concrete/wood composite systems provided that it is free of gaps or cracks. The heights and extents of the barriers should be chosen to reduce the sound levels in the OLA's to below 60 dBA and as close to 55 dBA as is technically, administratively and economically feasible, subject to the approval of the municipality. When grading information is available, the acoustic barrier heights for OLA's at grade should be refined.

5.2 Indoor Living Areas and Ventilation Requirements

Central Air Conditioning

The predicted sound levels outside the windows of the proposed buildings will be greater than 65 dBA during the daytime hours and/or greater than 60 dBA during the nighttime hours. To address these excesses, the MECP guidelines recommend that the dwelling units be equipped with central air conditioning systems, so that the windows can be closed.

Window or through-the-wall air conditioning units are not recommended for any commercial or residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. Acceptable units are those housed in their own closet with an access door for maintenance. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable. The guidelines also recommend warning clauses for all units with ventilation requirements.

5.3 Building Facade Constructions

Predicted sound levels at the building facades were used to determine sound insulation requirements of the building envelope. The required acoustic insulation of the wall and window components was determined using methods developed by the National Research Council (NRC).

Exterior Wall Constructions

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

Exterior Doors

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

Acoustical Requirements for Glazing

At the time of this report, detailed floor plans and elevations are not available. Assuming a typical window to floor area of 60% (40% fixed and 20% operable) for the living/dining rooms and bedrooms, the minimum acoustical requirement for the basic window glazing, including glass in fixed sections, swing or sliding doors, and operable windows, is provided in Table 4.

Table 4: Required Minimum Glazing STC for Specific Facades

Prediction Locations	Description	Glazing STC[1, 2,3]
[A]	North façade of Building 1	STC-31
[B]	East façade of Building 1	STC-34
[C]	West façade of Building 1	OBC
[D]	East façade of Building 2	STC-33
[E]	West façade of Building 3	OBC
[F]	North façade of Building 4	STC-32
[G]	East façade of Building 4	STC-36
[H]	South façade of Building 4	STC-36
[I]	West façade of Building 4	STC-30
[J]	South façade of Building 5	STC-33
[K]	West façade of Building 7	STC-29

Note:
[1] Based on assumed window to floor area ratios of 60% (40% fixed and 20% operable).
[2] STC requirement refers to fixed glazing. Small leaks through operable doors and windows are assumed, however, tight weather seals should be provided to reduce such leakage to the extent feasible.
[3] Sound entering through windows and walls comprised of precast/masonry panels, and spandrel glass panels
OBC – Ontario Building Code

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

Further Review

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

5.4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all the dwellings with anticipated traffic sound level excesses. The following noise warning clauses are required for specific units for the development.

As required by the Region of Halton:

Type A:

> Purchasers/tenants are advised that this development and associated units are in close proximity to a Regional road. Halton Regional roads are classified as major arterial roadways and as such: Serve mainly inter-regional and regional travel demands; May serve an Intensification Corridor; Accommodate all truck traffic; Accommodate higher order transit services and high occupancy vehicle lanes; Connect Urban Areas in different municipalities; Carry high volumes of traffic; Distribute traffic to and from Provincial Freeways and Highways; Accommodate active transportation. Truck traffic is permitted on all Regional roads, and is one of the functions of the Regional road network. Therefore, sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as sound levels exceed the sound level limits of the Municipality and the Ministry of Environment, Conservation and Parks.

Suggested wording for future dwellings with sound level excesses.

Type B:

> Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.

Suggested wording for future dwellings with daytime OLA sound levels exceeding the MECP criteria by 6 dB or more, for which physical mitigation has been provided is given below.

Type C:

> Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions interfere with some activities of the dwelling occupants as sound

> levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

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

Type D:

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

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

6 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 constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

7 Impact of the Development on the Environment

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

8 Summary of Recommendations

The following list and Table 5 summarize the recommendations made in this report. The reader is referred to previous sections of the report where these recommendations are applied and discussed in more detail.

1. Central air conditioning is required for the proposed buildings.

2. Upgraded building and glazing constructions are required for the proposed buildings with direct exposure to Regional Road 25 or Britannia Road. When detailed floor plans and building elevations are available, the glazing constructions should be refined based on actual window to floor area ratios.

3. Acoustic barriers are required for some of the outdoor amenity spaces at grade and large terraces. Details are provided in Section 5.1 and Figure 3. The height and extent of the noise barrier shall be reviewed when siting and grading plans are available.

4. Noise warning clauses to inform the occupants of the sound level excesses should be placed in the property and tenancy agreements and offers of purchase and sale.

Table 5: Summary of Traffic Noise Control Requirements & Noise Warning Clauses

Prediction Location	Location	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Required STC+
[A]	North façade of Building 1	--	Air Conditioning	A, B, C, D	STC-31
[B]	East façade of Building 1	--			STC-34
[C]	West façade of Building 1	--			OBC
[D]	East façade of Building 2	--			STC-33
[E]	West façade of Building 3	--			OBC
[F]	North façade of Building 4	--			STC-32
[G]	East façade of Building 4	--			STC-36
[H]	South façade of Building 4	--			STC-36
[I]	West façade of Building 4	--			STC-30
[J]	South façade of Building 5	--			STC-33
[K]	West façade of Building 7	--			STC-29
[L]	West at grade OLA of Phase 4	✓	--	--	--
[M]	At grade OLA of Phase 5	--	--	--	--
[N]	Rooftop OLA of Building 1*	--	--	--	--
[O]	8th Floor terrace of Building 1*	--	--	--	--
[P]	Rooftop OLA of Building 3*	--	--	--	--
[Q]	8th Floor terrace of Building 3*	--	--	--	--
[R]	Rooftop OLA of Building 4*	--	--	--	--
[S]	6th Floor terrace of Building 4*	✓	--	--	--
[T]	8th Floor terrace of Building 6*	--	--	--	--
[U]	Rooftop OLA of Building 6*	--	--	--	--
[V]	8th Floor terrace of Building 7*	--	--	--	--
[W]	Rooftop OLA of Building 7*	--	--	--	--

Notes:
-- no specific requirement
✓ Noise barrier recommendations are outlined in Section 5.1 and shall be revised when grading information is available. The height of the barriers shall be selected subject to the approval of the Municipality.
* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.
+ With assumed window to floor area ratios of 60% for living rooms/dining rooms and bedrooms. When detailed floor plans and building elevations are available, an acoustical consultant should review the drawings to refine the window glazing constructions based on actual window to floor area ratios, and to verify exterior wall construction.

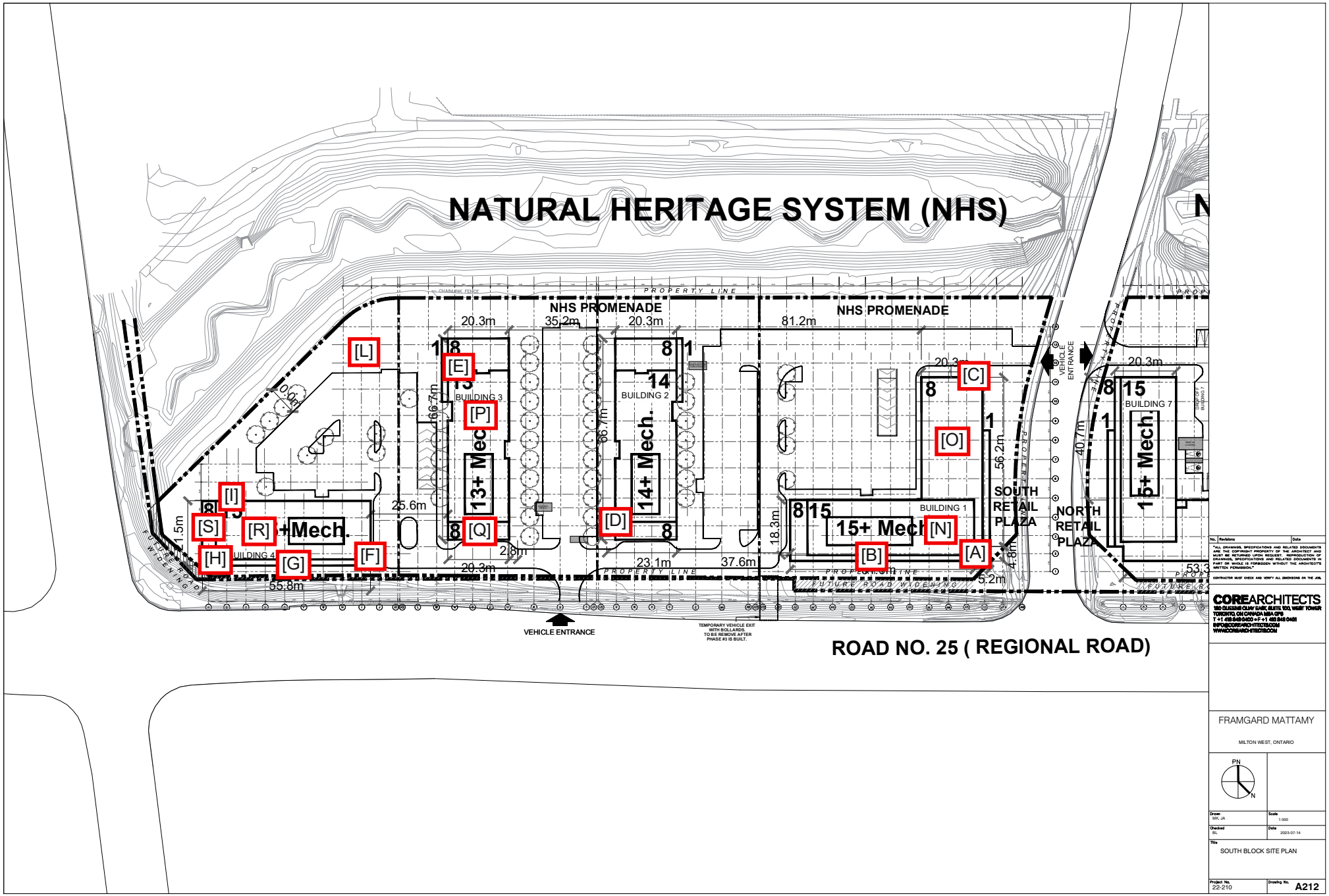
8.1 Implementation

To ensure that the noise control recommendations outlined above are fully implemented, 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 noise control measures have been properly incorporated.

2. Prior to assumption of the subdivision, the Municipality's building inspector or a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario should certify that the noise control measures have been properly, installed and constructed.

Figure 1 - Key Plan



FRAMGARD MATTAMY

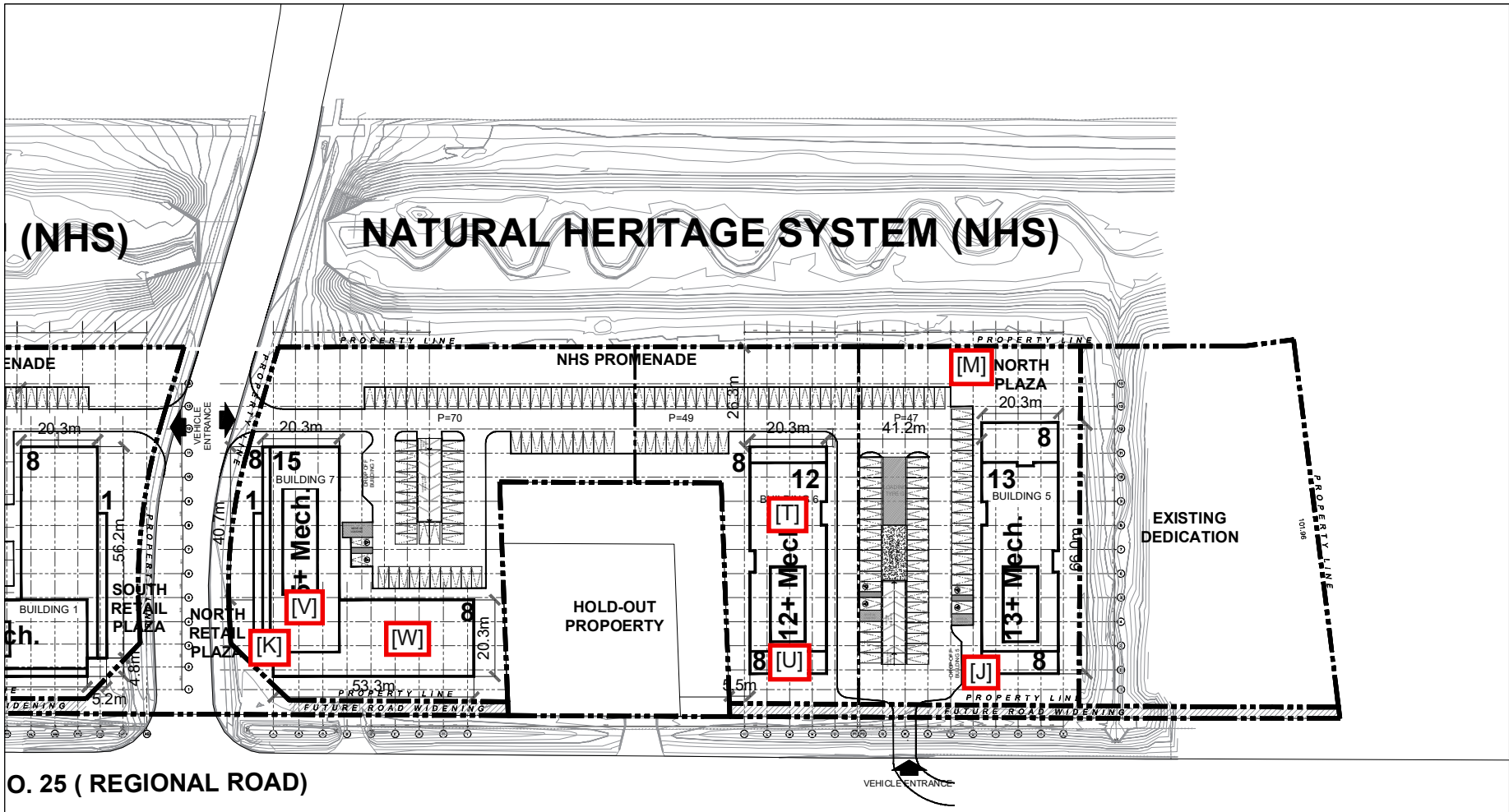
MILTON WEST, ONTARIO

SOUTH BLOCK SITE PLAN

Project No. 22-210

Drawing No. A212

Figure 2a - Proposed Site Plan Showing Prediction Locations, South Block



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MILTON WEST, ONTARIO

NORTH BLOCK SITE PLAN

Project No. 22-210

Drawing No. A200

Figure 2b - Proposed Site Plan Showing Prediction Locations, North Block

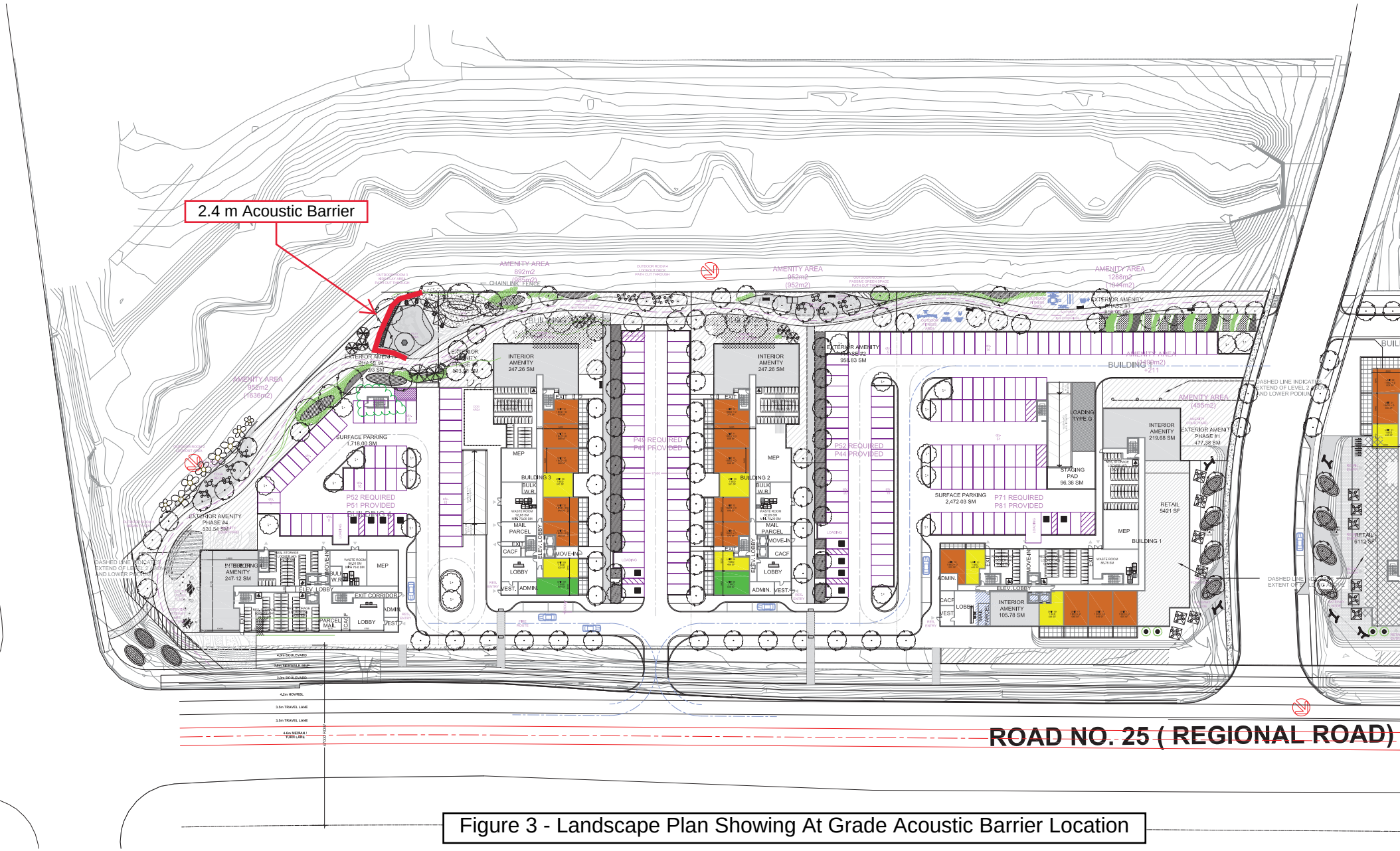


Figure 3 - Landscape Plan Showing At Grade Acoustic Barrier Location

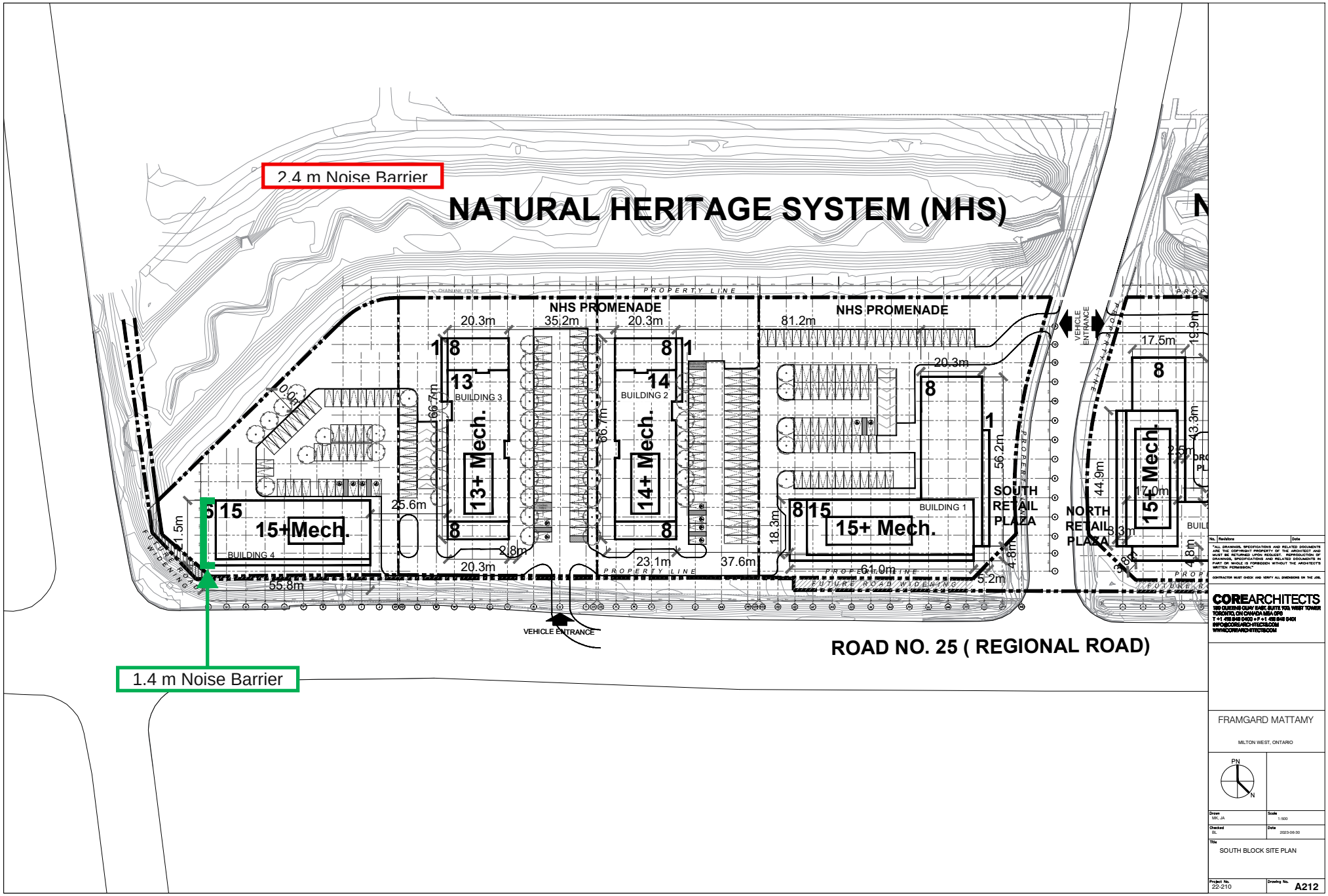


Figure 4 - Proposed Site Plan Showing Preliminary Terrace Acoustic Barrier Locations

APPENDIX A

Road Traffic Information

Victor Garcia

From: Loro, Darren <Darren.Loro@halton.ca>
Sent: January 19, 2023 3:39 PM
To: Victor Garcia
Cc: Lazarevic, Velimir; Krusto, Matt
Subject: RE: 6096 Regional Road 25 Noise Study Scope

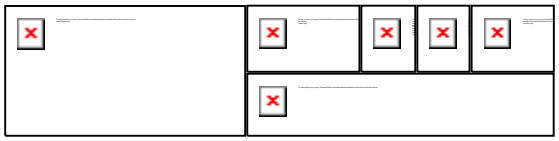
Hi Victor,

Thank you for circulating your proposed Terms of Reference for the 6096 Regional Road 25 Noise Study. Please see Transportation Planning's comments below in blue.

Let us know if you have any questions or want to discuss further!

Cheers,
Darren

Darren Loro, C.E.T.
Project Manager I – Transportation Planning Coordination
Infrastructure Planning & Policy
Public Works
Halton Region
905-825-6000, ext. 2694 | 1-866-442-5866



From: Victor Garcia <vgarcia@hgcengineering.com>
Sent: January 16, 2023 12:31 PM
To: Krusto, Matt <Matt.Krusto@halton.ca>; Lazarevic, Velimir <Velimir.Lazarevic@halton.ca>
Subject: 6096 Regional Road 25 Noise Study Scope

Good afternoon,

We have been asked to reach out to you to pass along our scope for the noise feasibility study for a proposed development located at 6096 Regional Road in Milton, Ontario for your approval.

Please see below:

To complete the noise feasibility study, we propose the following course of action:

1. A site visit will be performed to identify all significant noise sources, make observations of the acoustical features of the site and note any beneficial shielding by nearby buildings, as well as the relationship of the roadways to the proposed development. We will also note any commercial (for example, the existing area) and industries in the area and make observations to determine typical determine their activities and hours of operation. Any such facilities, with noise sources that may present a concern will be noted and flagged for further detailed studies, if required. Acceptable.

2. Road traffic will be obtained from the municipality or Region. The data will be extrapolated to year 2033 in accordance with Ministry of Environment, Conservation and Parks (MECP). We have older data in our files (from 2018) which will be verified to be valid. Per our correspondence dated January 5, 2023, we advised that the previous 2031 horizon year analysis inputs that were provided for Britannia Road and Regional Road 25 could be applied to this study. However, the previous parameters were established in January 2015 and thus are outdated compared to Halton Region's current typical noise analysis inputs. The following updated parameters should be applied for the 2031 horizon year analysis:

   Britannia Road West
   AADT: 51,000 veh/day
   Trucks: 3% medium/3% heavy
   Lanes: 6

   Regional Road 25
   AADT: 51,000 veh/day
   Trucks: 3% medium/3% heavy
   Lanes: 6

3. In accordance with MECP standard assessment procedures, the future traffic volumes will be used ('ultimate' values, or ten-year future projections as appropriate), to estimate future traffic noise levels anticipated for the mature state of the development. MECP computer software will be used. Acceptable, as long as the analysis conforms to Halton Region's Noise Abatement Policy and Noise Abatement Guidelines.

4. The predicted noise levels will be compared to the guidelines of the MECP, Region and the Municipality. Acceptable, as long as the analysis conforms to Halton Region's Noise Abatement Policy and Noise Abatement Guidelines.

5. If excesses of the noise guidelines are found, recommendations for conceptual control measures will be provided. These may include general recommendations relating to building facade and glazing components, mechanical ventilation or air conditioning and noise berms/barriers. For typical window-to-floor areas (which depend on the internal layout), some preliminary alternatives for glazing constructions that meet these requirements will be presented. We will also identify any outdoor areas for which additional shielding should be considered (local barriers, etc.), and typical wording for warning clauses that should be registered on title of impacted suites. General noise warning clauses will also be provided as specified by the MECP and the Town. If detailed floor plans and building elevations are available, refined glazing STC can be provided. Acceptable. Please consider the following comments:
   - Every effort should be made where possible in planning the development layout so that future Outdoor Living Areas (OLAs) do not require physical mitigation measures from Regional Roads (i.e. acoustic barrier).
   - If an acoustic barrier is required to mitigate noise levels generated by a Regional road for OLAs to 55-60 dBA, a barrier height should be selected that would yield 57 dBA without exceeding the Region's maximum noise barrier height allowance of 3.5 metres or falling below the Region's minimum noise barrier height allowance of 2.4 metres. A target 57 dBA provides a good balance between noise barrier height and dBA mitigation.

- If an acoustic barrier is required to mitigate noise levels generated by a Regional road for OLAs, then easements adjacent to the barrier will need to be provided within private lots/blocks or municipal blocks to allow Regional staff access for maintenance purposes. A 1m easement would be required on the inside of the barrier (e.g. facing the residential development) and a 2m easement would be required on the outside of the barrier (facing the Regional road).
- The following Regional warning clause will need to be registered on title for all proposed residential units:
    - *"Purchasers/tenants are advised that this development and associated units are in close proximity to a Regional road. Halton Regional roads are classified as major arterial roadways and as such: Serve mainly inter-regional and regional travel demands; May serve an Intensification Corridor; Accommodate all truck traffic; Accommodate higher order transit services and high occupancy vehicle lanes; Connect Urban Areas in different municipalities; Carry high volumes of traffic; Distribute traffic to and from Provincial Freeways and Highways; Accommodate active transportation. Truck traffic is permitted on all Regional roads, and is one of the functions of the Regional road network. Therefore, sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as sound levels exceed the sound level limits of the Municipality and the Ministry of Environment, Conservation and Parks."*
- Ground floor patios adjacent to Regional road active transportation infrastructure are not considered by the Region to be OLAs eligible for noise mitigation. Further, these ground floor patios would have to be visually defined so that the perception of the patio size is clear.
- As a future condition of approval, the applicant's architect must provide Halton Region with a signed letter confirming that all recommended noise mitigation measures have been implemented.
- Additional Regional warning clauses may be provided upon review of the Noise Study and upon review of more detailed architectural site drawings.

6. A report summarising the measurements, predictions, calculations and recommendations will be prepared. Acceptable. Please append a figure to the report illustrating all recommended noise mitigation measures for the proposed development.

Regards,

Victor Garcia, P.Eng
Associate

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Victor Garcia

From: Nathan H. Yau <yau@bagroup.com>
Sent: January 27, 2023 4:43 PM
To: Victor Garcia
Cc: Deanna Green; Anthony Sotomayor
Subject: RE: [EXTERNAL] RE: Framgard: Noise Study

Hi Victor,

AADT and Heavy Vehicle percentage along Etheridge is provided below for three sections of the road (see the green heading of the table below).
Volumes are based on future conditions with the complete site buildout.
Let me know if you have any questions.

ETHERIDGE ROAD AADT (Future Total Traffic Volumes)

Location	AM Peak Hour		PM Peak Hour		Daily	
	Volume	HV%	Volume	HV%	AADT	A
Just WEST of RR25 / Etheridge Rd Intersection	850	2.04%	738	1.86%	7710	
Just EAST of Etheridge Rd / Site Dwy Intersection	739	0.96%	907	1.00%	9145	
Just WEST of Etheridge Rd / Site Dwy Intersection	384	1.95%	487	1.94%	4815	

$$Peak\ Hour\ Traffic = AVERAGE\,(AM, PM) = 9\% \times AADT$$

Thanks,
Nathan

From: Anthony Sotomayor <Anthony.Sotomayor@mattamycorp.com>
Sent: January 27, 2023 4:03 PM
To: Victor Garcia <vgarcia@hgcengineering.com>; Deanna Green <Deanna.Green@bagroup.com>
Cc: Nathan H. Yau <yau@bagroup.com>
Subject: RE: [EXTERNAL] RE: Framgard: Noise Study

Hi Deanna,

Further to our meeting yesterday, would be able to provide Victor with the traffic data assuming traffic flows out of Etheridge for the North and South Parcel?

APPENDIX B

Sample STAMSON 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 26-07-2023 14:33:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: b1_n.te Time Period: Day/Night 16/8 hours

Description: North facade of Building 1

Road data, segment # 1: RR25 (day/night)

Car traffic volume : 45330/5037 veh/TimePeriod *
Medium truck volume : 1447/161 veh/TimePeriod *
Heavy truck volume : 1447/161 veh/TimePeriod *
Posted speed limit : 70 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): 51000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 2.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: RR25 (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 : 31.00 / 31.00 m
Receiver height : 43.50 / 43.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Etheridge (day/night)

Car traffic volume : 9163/1018 veh/TimePeriod
Medium truck volume : 56/6 veh/TimePeriod
Heavy truck volume : 93/10 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Etheridge (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  :  25.00 / 25.00  m
Receiver height           :  43.50 / 43.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: RR25 (day)
-------------------------------

Source height = 1.32 m

ROAD (0.00 + 68.84 + 0.00) = 68.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  75.00   0.00  -3.15  -3.01   0.00   0.00   0.00  68.84
-------------------------------------------------------------------------------

Segment Leq : 68.84 dBA

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

Source height = 1.00 m

ROAD (0.00 + 56.82 + 0.00) = 56.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  62.05   0.00  -2.22  -3.01   0.00   0.00   0.00  56.82
-------------------------------------------------------------------------------

Segment Leq : 56.82 dBA

Total Leq All Segments: 69.10 dBA

Results segment # 1: RR25 (night)
---------------------------------

Source height = 1.32 m

ROAD (0.00 + 62.31 + 0.00) = 62.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.48   0.00  -3.15  -3.01   0.00   0.00   0.00  62.31
-------------------------------------------------------------------------------

Segment Leq : 62.31 dBA
Results segment # 2: Etheridge (night)
--------------------------------------
```

Source height = 0.99 m

ROAD (0.00 + 50.23 + 0.00) = 50.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	55.46	0.00	-2.22	-3.01	0.00	0.00	0.00	50.23

Segment Leq : 50.23 dBA

Total Leq All Segments: 62.57 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.10 dBA
(NIGHT): 62.57 dBA