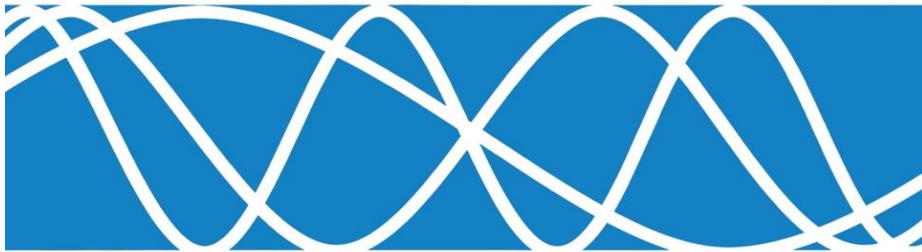


Noise and Vibration Feasibility Study

Proposed Residential Development, Arkell Subdivision, South of Arkell Road and East of Watson Road South, Puslinch, Ontario

June 1, 2026
HGC Project #: 02600117



Prepared for:

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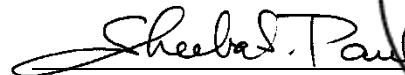
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1 INTRODUCTION AND SUMMARY

HGC Noise Vibration Acoustics was retained by Timberworx Custom Homes Inc. and Slood Construction Ltd. to conduct a noise and vibration feasibility study for a proposed residential development to be located south of Arkell Road and East of Watson Road South, in Puslinch, Ontario. The development concept includes 44 low-density dwellings. The study is required as part of the planning and approvals process by the municipality and the railway.

This report has been updated to respond to peer review comments, made by Valcoustics Canada, dated April 21, 2026, and are attached in Appendix G along with HGC's responses.

The primary source of noise in the area is rail traffic on the Guelph Junction Railway (GJR) to the south. Road traffic on Watson Road South and Arkell Road, located to the west and north, respectively, are secondary sources of noise. Rail traffic data for the GJR railway was obtained from GJR railway personnel. Road traffic data for Watson Road South was obtained from the Town of Puslinch, and the road traffic data for Arkell Road was obtained by County of Wellington. The data was used to predict future traffic sound levels at various locations at the development. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP) and the railway.

The sound level predictions indicate that with suitable noise control measures integrated into the design of the residential buildings, it is feasible to achieve the MECP guideline sound levels for transportation noise. Central air conditioning systems and upgraded window glazing assemblies are required for the future dwelling on the lot closest to the railway line. The provision for the future installation of air conditioning at the occupant's discretion is required for dwellings with exposure to roadway/railway. Physical mitigation in the form of acoustic barrier is required for the southern dwelling closest to the railway line. The first row of dwellings nearest the railway requires a brick veneer or masonry equivalent construction for the façade facing the railway line. When



final lotting and grading plans are available for the proposed development, window glazing requirements and acoustic barrier heights should be refined.

Ground-borne vibration levels from rail pass-bys were measured on grade at the site at the closest lot to the railway line and were found to exceed CN/GJR limits for some of the train pass-bys. A few measurements were completed at 15 m, 30 m and 45 m from the railway right of way. It is recommended that the future dwelling on Lot 1 have a minimum distance of 55 m from the railway right-of-way and further mitigation is not recommended. When architectural drawings are available, they should be reviewed to confirm the exterior wall construction and actual building envelope of the residential units which form the basis for this report. In any event, warning clauses are required in the property and tenancy agreements of the dwelling units to inform the future owners and tenants of the noise excesses and proximity to the railway line.

2 SITE DESCRIPTION AND NOISE SOURCES

Figure 1 is a key plan showing the location of the proposed development. The development is south of Arkell Road and east of Watson Road South in Puslinch, Ontario. Figure 2 is a proposed concept plan dated January 2026. The proposed development consists of 44 lots of low-density dwellings and associated at-grade roadways.

Site visits were made by HGC personnel in March 2026, to make observations of the acoustical environment and to perform ground-borne vibration measurements. During the site visit, it was observed that the rail pass-bys are the primary noise source and road traffic on Watson Road South and Arkell Road are secondary sources of noise.

Lands to the east and northwest are existing residential lands. To the north, south and west of the subject site, are agricultural lands. There are a few small commercial facilities to the west of the subject site including a small engine repair shop, a bicycle store, and a pet boarding service identified on Figure 1. No sounds were audible at these facilities during the time of the site visit.



Additionally, there are residential uses closer to these facilities than the subject site, thus, there are no significant sources of stationary noise within 500 m of the subject site.

3 TRAFFIC NOISE ASSESSMENT

3.1 Road and Rail Traffic Noise Criteria

Guidelines for acceptable levels of road and rail traffic noise impacting residential developments are given 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 1 below. The values in Table 1 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 and considered in both the rail traffic and Stationary Noise assessments.

Table 1: Road Traffic Noise Criteria

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

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

The guidelines in the MECP publication allow the sound level in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels

exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. Note that not all OLA's necessarily require protection, if there are other protected outdoor areas accessible to future residents.

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 nighttime sound levels at the façade exceed 60 dBA or daytime sound levels at the façade exceed 65 dBA. Forced air ventilation with ducts sized to accommodate the future installation of air conditioning by the occupant 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.

Building components such as walls, windows and doors must be designed to achieve the indoor sound level criteria when the nighttime sound level at the façade is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise; and when the nighttime sound level at the façade is greater than 55 dBA or the daytime sound level at the façade is greater than 60 dBA due to rail traffic noise.

MECP guidelines recommend brick veneer or a masonry equivalent construction 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. GJR/CN typically requires brick veneer or a masonry equivalent construction 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 GJR/CN requirements for a new development adjacent to a spur line, which is provided in Appendix A.



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

3.2 Traffic Noise Assessment

3.2.1 Road Traffic Data

Road traffic volume data for Watson Road South was obtained from the Town of Puslinch in the form of Annual Average Daily Traffic (AADT) volumes for the year 2025 and is included in Appendix B. A traffic study, prepared by Crozier Consulting Engineers and dated February 2026, was reviewed to obtain the commercial vehicle percentages on Watson Road South, and is included in Appendix B. A speed limit of 50 km/h was applied for the roadway along with a day/night traffic volume split of 90/10.

Road traffic data for Arkell Road was provided by the County of Wellington in the form of AADT volumes for the year 2025, and is included in Appendix B. A commercial vehicle percentage of 3.7% further split into 1.2% for medium trucks and 2.5% for heavy truck was calculated from the data and used for the analysis. A speed limit of 80 km/h was applied for the roadway along with a day/night traffic volume split of 90/10.

Traffic volumes were conservatively assumed to grow at a rate of 2.5% per year for ten years (to 2036). Table 2 summarises the road traffic volume data used in this study.

Table 2: Projected Road Traffic Data to 2036

Roadway	AADT	Day / Night Split [%]	Trucks Percentage (%)		Speed Limit [km/h]
			Medium	Heavy	
Arkell Road	5 933	90 / 10	1.2	2.5	80
Watson Road South	2 755	90 / 10	1.0	1.0	50

3.2.2 Rail Traffic Data

Updated rail traffic volumes for the GJR rail line located to the south was provided by Les Petroczi from the City of Guelph and are provided in Appendix C.

The GJR railway line is used for freight and way freight operations and is classified as a spur line. The maximum train speed of 40 kph (25 mph) for freight and way freight trains was used in the analysis. In conformance with GJR assessment requirements, these maximum speeds, number of cars and maximum 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 2036 using a 2.5% per year growth rate as per the guidelines. Table 3 summarises the rail traffic data used in the assessment.

Table 3: Rail Traffic Data Projected to 2036

Rail Line	Train Type	Number of Trains Day/Night	Number of Locomotives	Number of Cars	Maximum Speed [km/h]
GJR	Freight	5.2 / 2.6	2	24	40

3.2.3 Road and Rail Traffic Noise Predictions

To assess the levels of road and rail 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. Sample STAMSON output is included in Appendix D.

Since building envelopes were not provided on the concept site plan, a 6 m front yard setback was used in the analysis. Sound levels were predicted at a height of 4.5 m for 2nd storey windows, assuming each lot has 2-storey dwellings. Prediction locations were chosen around the residential site, as shown in Figure 2, to obtain a good representation of the future sound levels at various dwellings. The results of these predictions are summarized in Table 4. The

acoustic requirements may be subject to modifications if the site plan is changed significantly.

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

Prediction Location	Description	Daytime in OLA LEQ(16 hour) Road/Rail/Total	Daytime at Façade LEQ(16 hour) Road/Rail/Total	Nighttime at Façade LEQ(8 hour) Road/Rail/Total
[A]	Southernmost dwelling with exposure to Watson Road South and the Railway	<55 / 64 / 64	<55 / 63 / 63	<50 / 63 / 63
[B]	Southern dwelling with exposure to the railway	<55 / 59 / 59	<55 / 58 / 58	<50 / 58 / 58
[C]	Fourth row dwelling with exposure to the railway	<55 / 55 / 55	<55 / 55 / 55	<50 / 55 / 55
[D]	Dwellings adjacent to Arkell Road	57 / <55 / 57	57 / <55 / 57	51 / <50 / 51
[E]	Second row of dwellings closest to Arkell Road	<55 / <55 / <55	<55 / <55 / <55	<50 / <50 / <50

3.3 Traffic Noise Recommendations

The predictions indicate that the future road and rail traffic sound levels will exceed MECP guidelines in the proposed development. Recommendations to address these excesses are discussed below.

3.3.1 Building Façade Constructions

Future sound levels in the proposed development will exceed 55 dBA at night and 60 dBA during the daytime due to rail traffic noise. MECP guidelines recommend that the windows, walls and doors be designed so that the indoor sound levels comply with MECP noise criteria.

Calculations were performed to determine the building envelope requirements to maintain indoor sound levels within MECP guidelines. The calculation methods were developed by the National Research Council (NRC). They are based on the predicted future sound levels at the building facades, the anticipated area ratios



of the facade components (walls, windows and doors) to the floor area of the adjacent room.

Exterior Wall Constructions

CN/GJR guidelines recommend brick exterior walls from foundation to rafters as a minimum construction for any dwellings that are in the first row of dwellings with exposure to their rail lines. This applies to the southeast and/or southwest façades of the dwellings located closest to the railway line to the south portion of the proposed development as indicated in Figure 3. Additionally, the by-law includes a holding provision that all residential buildings with exposure to the railway be provided with brick or masonry equivalent construction. A precast wall construction can be considered a masonry equivalent construction. This applies to the southeast and southwest façades of the residential buildings at the southern end of the development.

Acoustical Requirements for Glazing for Traffic Noise Sources

Since future sound levels at some façades of the proposed dwellings are predicted to exceed criteria, sound attenuating building constructions (windows and walls) need to be specified.

Detailed floor plans and building elevations for the proposed dwellings were not yet available. Window to floor area ratios of 50% (30% fixed, 20% operable) for living/dining rooms and bedrooms were assumed. The minimum STC results are shown in Table 4 below assuming sound entering through windows and walls.



Table 4: Preliminary Glazing Requirements

Prediction Location	Description	^{1,2,3} Minimum STC Requirements for Glazing
[A]	Lot 1 – Southernmost dwelling with exposure to the railway	*STC-39
[B]	Lot 2 – Southern dwelling with exposure to the railway	STC-32
	Remaining dwellings	OBC

Note:

¹ Assumed window to floor area ratios of 50% for living/dining rooms and bedrooms; and assumed 100% wall to floor area ratio.

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 When detailed floor plans and building elevations are available, the drawings should be reviewed to confirm exterior façade constructions and refine window glazing requirements based on actual window to floor area ratio.

* Sound entering through windows and brick veneer or a masonry equivalent construction facades

OBC – Ontario Building Code

Note that these ratings are a minimum for the entire assembly and test data should be provided to verify. If more glazing is incorporated, higher STC requirements may apply.

Once detailed floor plans and building elevations are finalized for Lots 1 – 6, 44, acoustical requirements for the building façades could be optimized as part of the detailed design of the dwellings.

Further Work

When final setbacks and building elevations are available for the proposed development, the glazing requirements should be refined and exterior wall constructions verified. If window to floor area ratios exceed those used above, the window glazing requirements may be higher.

3.3.2 Indoor Living Areas

Air Conditioning

The predicted daytime and nighttime sound levels outside the façades of the dwelling closest to the railway (prediction location [A]) will be greater than 60 dBA at night and/or greater than 65 dBA during the daytime hours. To address these excesses, the MECP guidelines recommend that this dwelling 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. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-216 and NPC-300, as applicable. The guidelines also recommend warning clauses for all units with ventilation requirements.

Provision for Adding Central Air Conditioning

The predicted future sound levels outside the façade of dwellings with exposure to the GJR railway (prediction locations [B] to [D]) will be between 56 and 65 dBA during the daytime hours and/or between 51 and 60 dBA during the nighttime. To address this excess, the MECP guidelines recommend that these dwellings be equipped with the provision for the future installation of air conditioning at the occupant's discretion.

Remaining Dwellings

The predicted future sound levels outside at the facade of the proposed residential dwellings/buildings (prediction location [E]) will be less than 55 dBA during the day and less than 50 dBA during the night. There are no specific ventilation requirements for these proposed dwellings.

Ventilation requirements for the proposed development are shown in Figure 4.



3.3.3 Outdoor Living Areas

The predicted sound levels in the rear yard of the southernmost dwelling unit (Lot 1) with exposure to the railway (prediction location [A]) will be up to 64 dBA, 9 dBA in excess of the MECP limit of 55 dBA. An acoustic barrier is required for the rear yard of this dwelling.

The predicted sound levels in the remaining rear yards of the proposed dwelling units with exposure to the roadways and railway will be up to 59 dBA (prediction locations [B] and [D]), 4 dBA in excess of the MECP limit of 55 dBA. The predicted sound level is within the allowable 5 dBA discretionary range of the MECP's limit of 55 dBA, provided that a warning clause be included in the property and tenancy agreements.

For the rear yard associated with prediction location [E], the predicted sound level is expected to be 60 dBA if the OLA is 15 m from the centreline of the roadway. If the OLA is located 3 m from the building façade, as is required by NPC-300, the predicted sound level will be less than 55 dBA and physical mitigation is not required.

The barrier heights required to meet 55 to 59 dBA for the rear yards are summarized in Table 5 below and the location of the required barriers are shown in Figure 4. According to MECP guidelines, a minor (4 dB) excess of the criteria may be addressed by including a warning clause in sale and lease agreements for the development.

Table 5: Summary of Barrier Heights Required to Meet Various Desired Sound Levels

Prediction Location	Barrier Height (m) to Achieve Desired Sound Level				
	55 dBA	56 dBA	57 dBA	58 dBA	59 dBA
AOLA	4.5	4.1	3.8	3.3	2.7

When final dwelling setbacks are determined and detailed grading is available, the acoustic barrier heights should be refined.

4 VIBRATION ASSESSMENT

4.1 Criteria for Ground-borne Vibration from Rail Traffic

The Federation of Canadian Municipalities (FCM) and Railway Association of Canada (RAC) "Guidelines for New Development in Proximity to Railway Operations", dated May 2013 require measurements of ground-borne vibration when residential dwelling units are to be located within 75 metres from a railway corridor. The GJR generally follows the standard of CN for noise and vibration.

Vibration is typically measured in terms of oscillatory velocity or acceleration. The limits for acceptable ground-borne vibration are an RMS velocity of 0.14 mm/s (17 dB re 1 mm/s) between frequencies of 4 and 200 Hz.

CN limits for acceptable ground-borne vibration are also presented as a curve of maximum allowable vibratory acceleration levels, in units of decibels relative to the acceleration due to gravity (dB re 1g), versus one-third octave band frequency. The criteria have been overlaid on the graphs of measured vibration for easy reference (Appendix E).

4.2 Rail Vibration Assessment

Vibration measurements were conducted using a Svantek SV977 Sound and Vibration Meter outfitted with a Wilcoxon Research type 793V velocity transducer correctly field calibrated before and after the measurements between March 10, 2026, to March 20, 2026.

Measurements were performed at 15 m (M1) and 30 m (M2) from the railway right-of-way between March 10, 2026, and March 13, 2026, and 45 m (M3) from railway right-of-way between March 16, 2026, and March 20, 2026, representing the location of the possible nearest residential dwelling façades. The measurement locations, M1, M2, and M3, are indicated in Figure 2. The results of the measurements are presented in Appendix E. Table 5 shows the



maximum RMS vibration velocity measurements during each of the train pass-bys.

The results of the measurements are presented in Appendix E which shows the date and time of the vibration measurements, and the maximum RMS velocity in units of mm/s recorded at each location. Several train pass-bys were measured during the measurement periods. Table 6 shows the maximum vibration level measurements during the pass-bys at each vibration location.

Table 6: Maximum RMS Vibration Measurements of Freight Train Pass-bys

Train Pass-by	Measured Vibration Level (mm/s)			Criteria (mm/s)
	M1	M2	M3	
1	0.31	0.19	--	0.14
2	0.36	0.21	--	
3	0.26	0.15	--	
4	0.30	0.16	--	
5	0.41	0.23	--	
6	0.48	0.25	--	
7	--	--	0.15	
8	--	--	0.16	
9	--	--	0.15	
10	--	--	0.17	
11	--	--	0.13	
12	--	--	0.18	

The maximum RMS vibration levels are up to 0.48 mm/s at M1, 0.25 mm/s at M2, and 0.18 mm/s at M3. On average, the maximum RMS vibration levels at M3 were 0.13 mm/s with a median of 0.12 mm/s.

The detailed plots of the RMS velocity over time and the frequency spectrum of RMS acceleration for the six highest intrusions at Location M1, M2, and M3 are presented in Appendix E. The CN RMS velocity criteria and ISO RMS acceleration curves are overlaid on the figures. Examining the graphs show a couple of interesting points. The duration when the vibration exceeds the 0.14 mm/s

criteria is relatively short, ranging between 4 and 15 seconds at M2, and between 1 and 5 seconds at M3. In all cases at M2 and M3, the excesses over the vibration criteria the trains included in the table above occurred at frequencies in the 20 to 31.5 Hz one-third octave bands.

Since the dwelling setbacks have not yet been determined, we recommend that the closest façades be situated at a minimum distance of 55 m from the railway right-of-way.

5 WARNING CLAUSES

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

A suggested wording for future dwellings with sound level excesses of the MECP criteria but do not require physical mitigation measures is given below.

Type A:

Purchasers/tenants are advised that sound levels due to increasing road traffic and rail 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.

A suggested wording for future dwellings for which physical mitigation has been provided is given below.

Type B:

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 on occasions 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.

Suitable wording for future dwellings requiring the provision for the future installation of air conditioning at the occupant's discretion is given below.

Type C:

This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments 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.

A 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.

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

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 GJR:

Warning: Guelph Junction Railway or its assigns or successors in interest has or have a rights-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). GJR 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.

6 SUMMARY AND RECOMMENDATIONS

The following list and Table 7 summarize the recommendations made in this report. The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

1. For the dwellings with exposure to the railway, upgraded building and glazing constructions are required to ensure adequate indoor sound levels from traffic noise, as outlined in Section 3.3.1.
2. Ventilation requirements in the form of the provision for the future installation of air conditioning at the occupant's discretion are recommended for dwellings in the proposed development. Details are included in Section 3.3.2 and summary table below.
3. Acoustic barrier requirements are required for dwellings with OLAs with exposure to the roadway and/or railway. See section 3.3.3 for detailed requirements
4. Acoustic barrier requirements are required for dwellings with OLAs with exposure to the roadway and/or railway. See section 3.3.3 for detailed requirements
5. Extensive measurements and analysis of ground-borne vibration from train movements illustrate the vibration criteria of GJR will be achieved within occupied residential spaces within the development, when dwellings are greater than 55 m away from the railway right-of-way. When building setbacks are determined, the drawings should be reviewed to confirm the requirements.
6. Warning clauses are required for dwellings in the proposed development with noise and/or vibration excesses and/or within 300 m from the railway line.



Table 7: Summary of Noise Control Requirements and Noise Warning Clauses

Prediction Location	Lot Numbers	Acoustic Barrier	Ventilation Requirement	Type of Warning Clause	Façades with Brick Veneer or Equivalent Masonry Construction Required	Required Minimum STC for Glazing
[A]	Lot 1	✓	A/C	B, D, GJR	Southwest and Southeast	STC-39
[B]	Lots 2 and 3	--	Provision for A/C	A, C, GJR	Lot 2: Southwest and Southeast Lot 3: Southeast	STC-32
[C]	Lot 4	--	Provision for A/C	A, C, GJR	Southeast	OBC
[D]	Lot 22	--	Provision for A/C	A, C	--	OBC
[E]	Lots 5 to 21, and Lots 23 to 44	--	--	A	Lot 5: Southeast Lot 6: Southeast Lot 44: Southwest	OBC

7 IMPLEMENTATION

To ensure that the noise control recommendations outlined above are properly implemented, it is recommended that:

1. When siting, lotting information is available, a detailed noise study should be performed to refine the acoustic requirements for the site specifically for barriers, exterior wall construction and glazing requirements.
2. Prior to an application for a building permit, a Professional Engineer qualified to provide acoustical engineering services in the Province of Ontario or the Municipality's building inspector shall review the unit plans (floor plans and building elevations) for future dwellings closest to the noise sources and the grading plan, to ensure that the windows and building constructions, and berms/barriers are adequately designed to ensure acceptable indoor and outdoor noise levels.
3. 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.



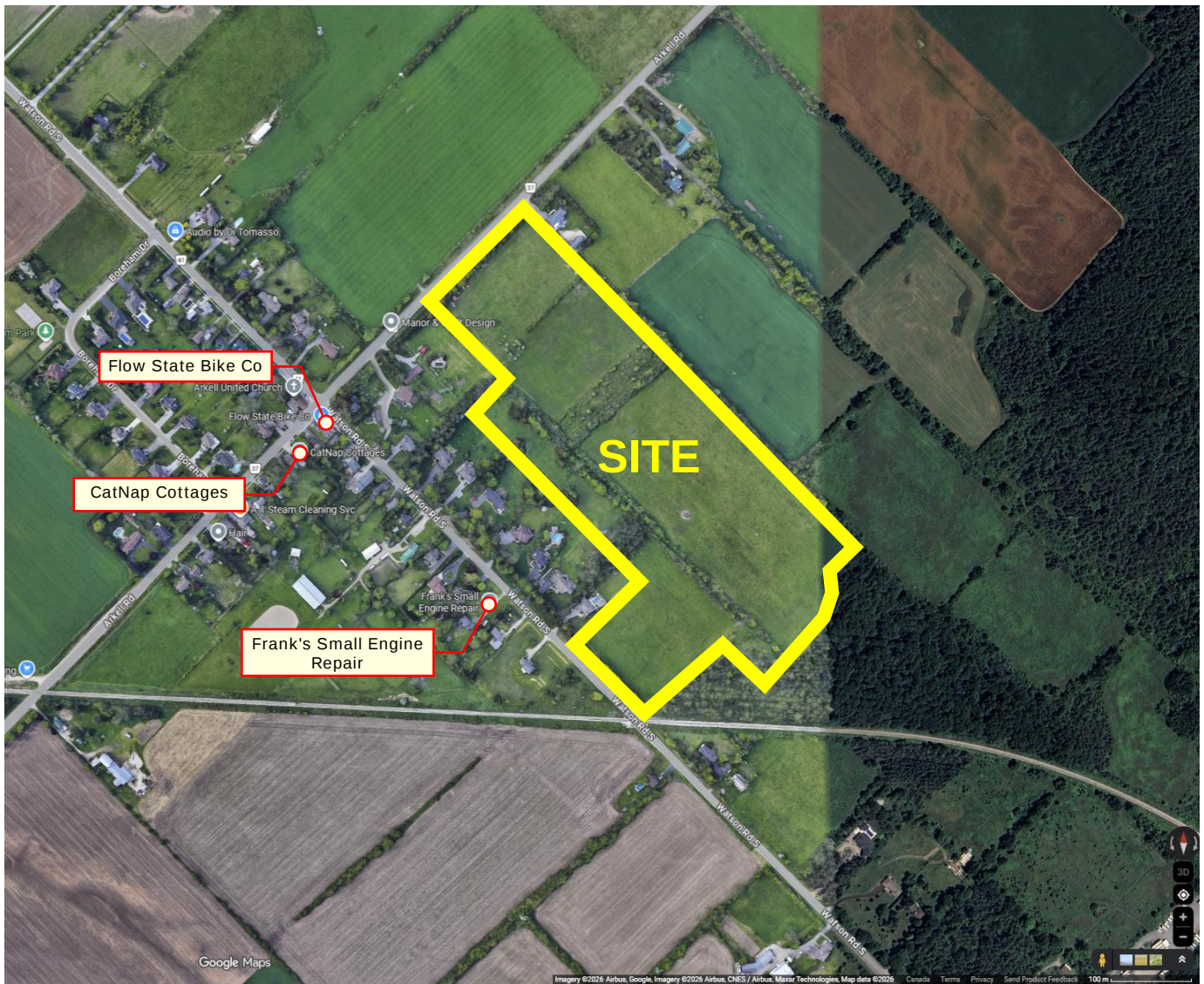


Figure 1: Key Plan

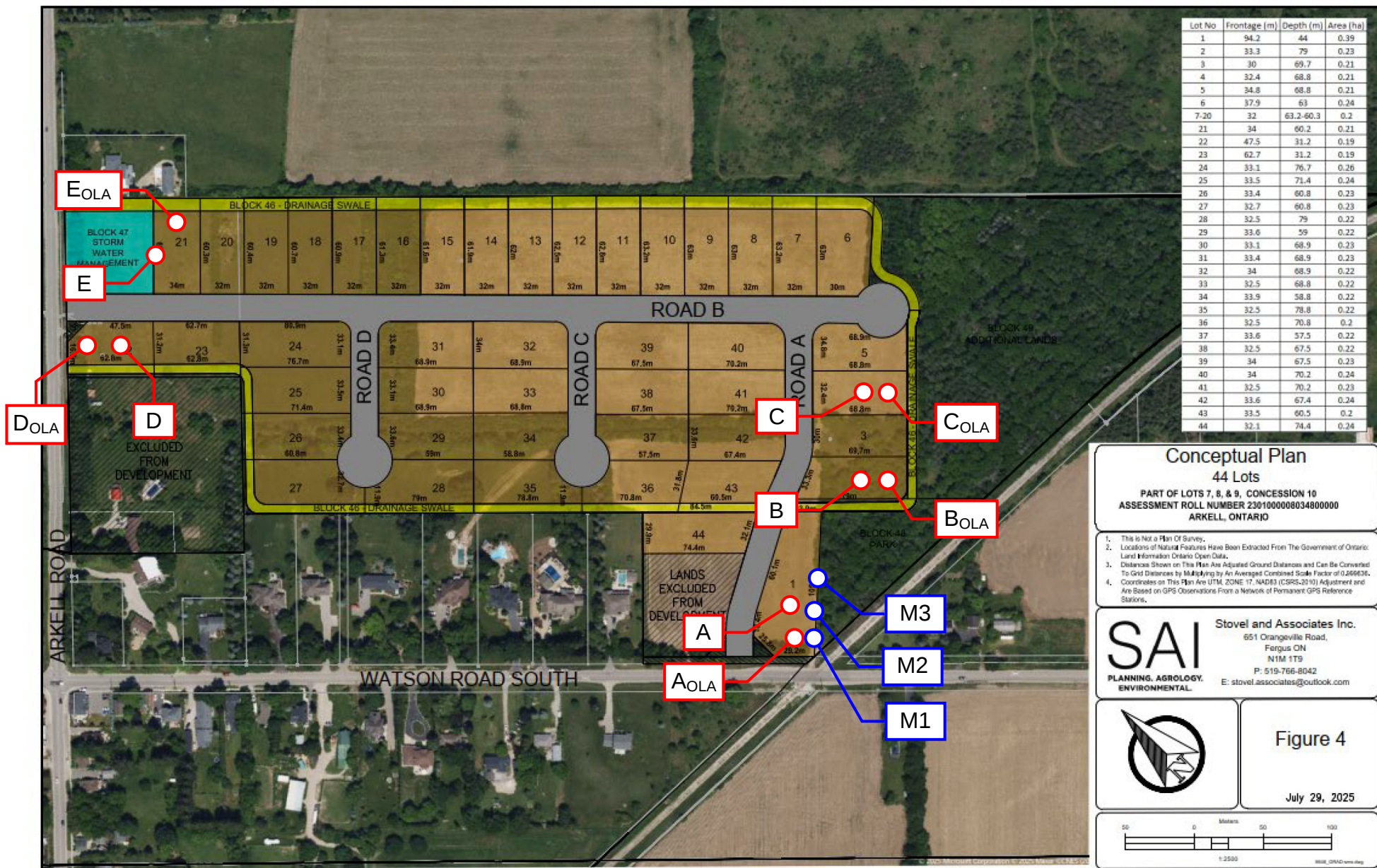


Figure 2: Proposed Concept Plan Showing Prediction Locations

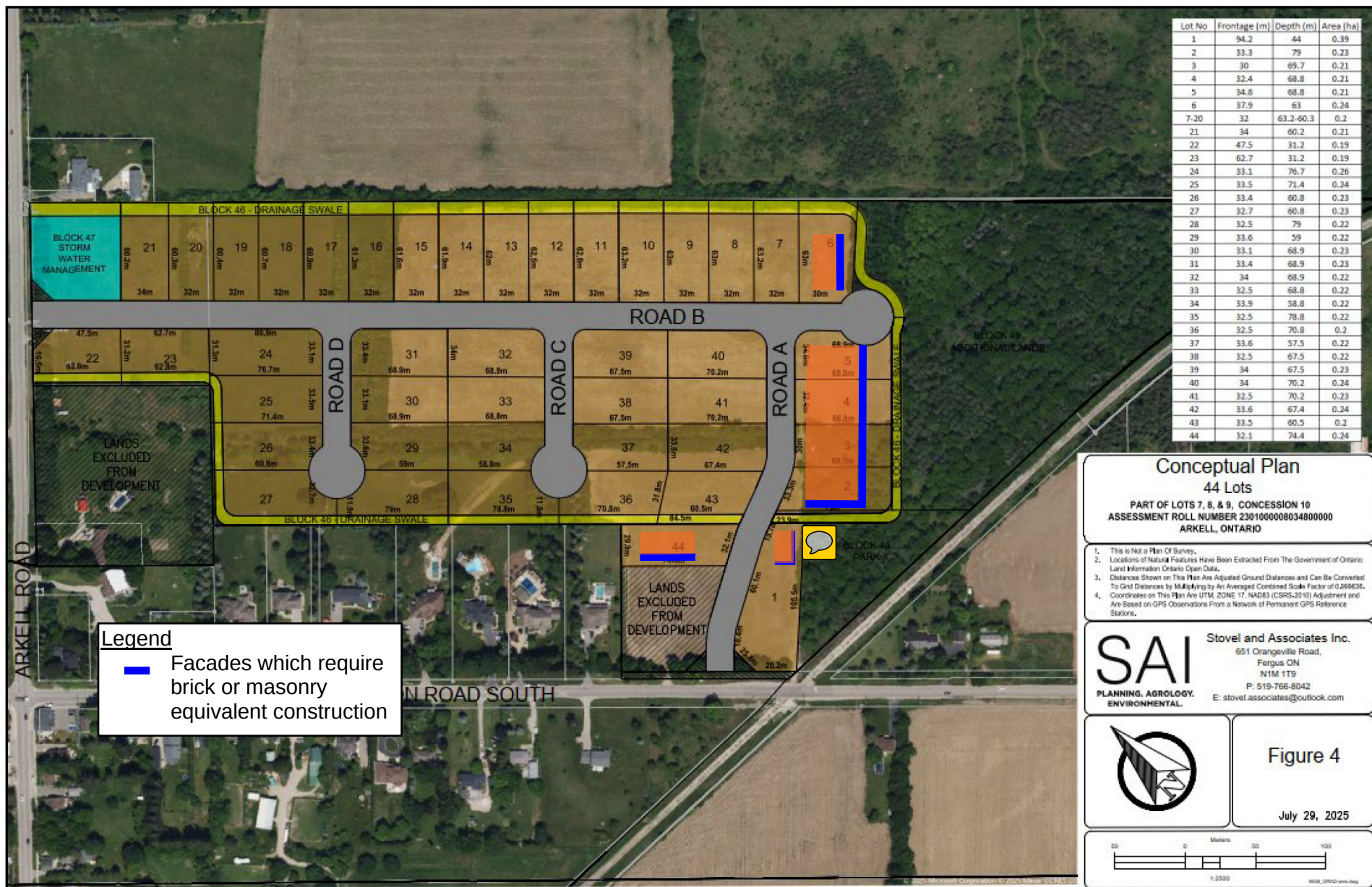


Figure 3: Proposed Concept Plan Showing Ventilation and Acoustic Barrier Requirements

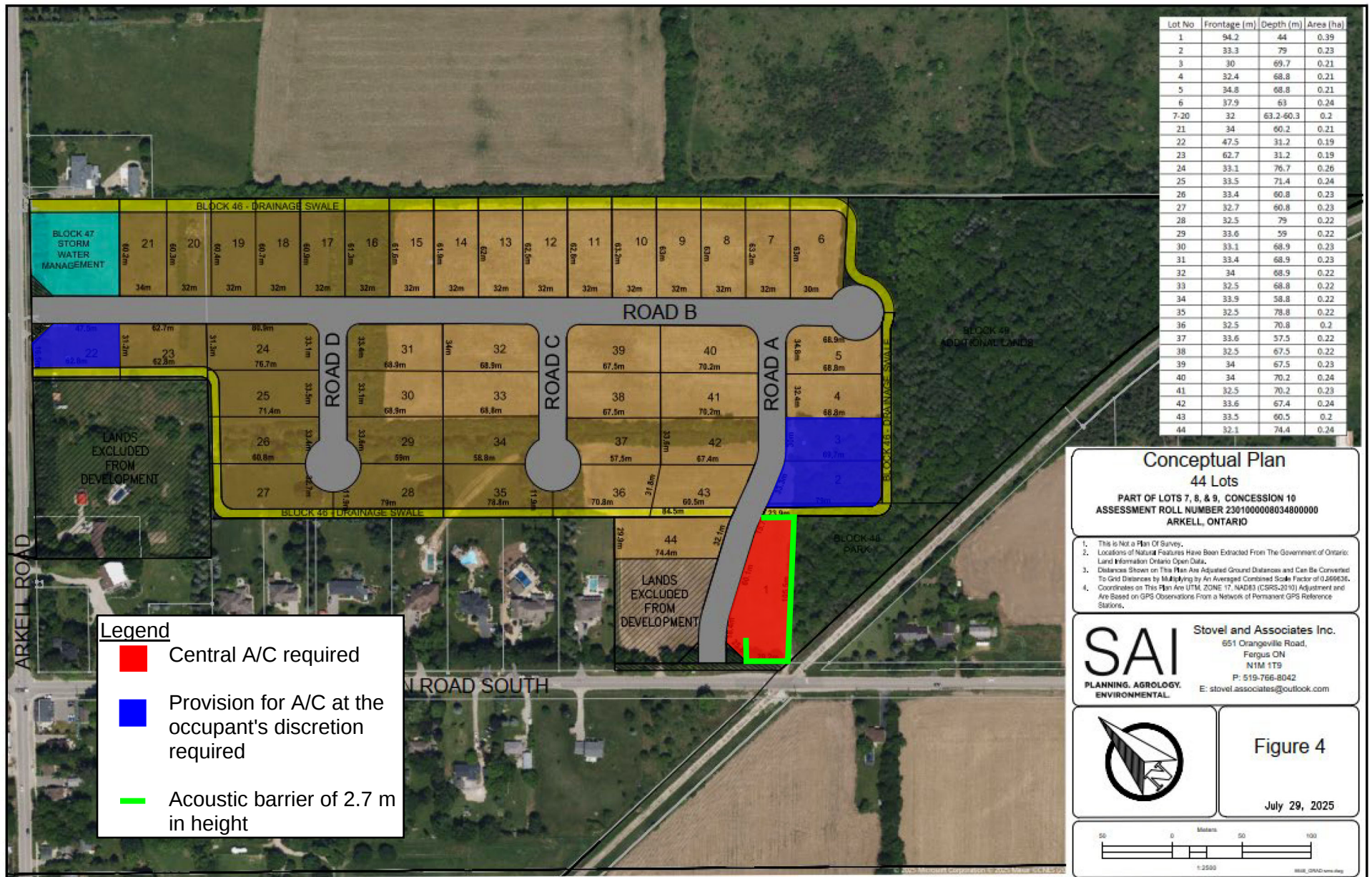


Figure 4: Proposed Concept Plan Showing Ventilation and Acoustic Barrier Requirements

Appendix A

GJR Spur Line Requirements



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Canadian
National
Railway
Properties Inc.

Propriétés
ferroviaires du
Canadien
National Inc.



277 Front Street West
Floor 8
Toronto, Ontario
M5V 2X7

Telephone: (416) 217-6961
Facsimile: (416) 217-6743

277, rue Front ouest
8^e étage
Toronto (Ontario)
M5V 2X7

Téléphone: (416) 217-6961
Télécopieur: (416) 217-6743

SPUR LINE REQUIREMENTS

- A. Safety setback of dwellings from the railway rights-of-way to be a minimum of 15 metres.
- B. The Owner shall install and maintain a chain link fence of minimum 1.83 metre height along the mutual property line.
- C. 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: Canadian National Railway Company or its assigns or successors in interest has or have a rights-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CNR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way."
- D. 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 the satisfaction of the Railway.

April 1996

Appendix B

Road Traffic Data



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RE: Road Traffic Data Request - Arkell Rd and Watson Rd S

From Mike Fowler <mfwler@puslinch.ca>
Date Thu 2026-03-26 1:39 PM
To Elise Jaklic <ejaklic@hgcacoustics.com>

Good afternoon,

Arkell road is under the authority of The County of Wellington, please contact their Engineering department for this information.

Thank you.



Mike Fowler
Director of Public Works, Parks and Facilities
Township of Puslinch
7404 Wellington Rd 34, Puslinch ON N0B 2J0
519-763-1226 ext. 220 Fax 519-736-5846 www.puslinch.ca

My hours may not match your working hours. If you received this email outside of regular business hours, I do not expect an immediate response.

From: Elise Jaklic <ejaklic@hgcacoustics.com>
Sent: March 26, 2026 1:32 PM
To: Mike Fowler <mfwler@puslinch.ca>
Subject: Re: Road Traffic Data Request - Arkell Rd and Watson Rd S

Good afternoon Mike,

I hope you are well. This afternoon, we requested road traffic data (AADT and commercial vehicle percentages) for Arkell Rd and Watson Rd S. I received a response from Monika with data for Watson Rd S, and they advised that data for Arkell Rd was not available.

Could you please confirm whether Arkell Rd data does not exist, or if it is simply unavailable at the moment?

Please let me know! I appreciate your help.

Regards,

Elise

Elise Jaklic, BEng
Project Consultant
HGC NOISE VIBRATION ACOUSTICS
t: 905-826-4044 x271 e: ejaklic@hgcacoustics.com

From: Planning <planning@puslinch.ca>
Sent: March 26, 2026 1:20 PM
To: Elise Jaklic <ejaklic@hgcacoustics.com>
Subject: RE: Road Traffic Data Request - Arkell Rd and Watson Rd S

Hello Elise,
I spoke with our Roads Director who advised that the average daily traffic count on Watson Rd S is 2152.
We do not have any commercial vehicle data as this is technically a no truck route.

He was not able to provide me any data for Arkell Rd.
If you need to follow up with him, please email Mike Fowler at mfowler@puslinch.ca

Thank you,



PUSLINCH
EST. 1880

Monika Farncombe

Planning and Corporate Services Coordinator

Township of Puslinch

7404 Wellington Rd 34, Puslinch ON N0B 2J0

519-763-1226 ext. 207 Fax 519-736-5846 www.puslinch.ca

My hours may not match your working hours. If you received this email outside of regular business hours, I do not expect an immediate response.

From: Elise Jaklic <ejaklic@hgcacoustics.com>
Sent: March 26, 2026 1:07 PM
To: Planning <planning@puslinch.ca>
Subject: Road Traffic Data Request - Arkell Rd and Watson Rd S

Good afternoon,

We are conducting a noise feasibility study for a site located south of Arkell Road and East of Watson Road South, in Puslinch, ON. A google maps link is provided below for reference:

[Google Maps](#)

We are specifically seeking the Annual Average Daily Traffic (AADT) data (or, alternatively, turning movement counts), along with commercial vehicle percentages for Arkell Road and Watson Rd S in this area.

Could you please direct me to the appropriate contact who can provide the traffic data required for this study?

Thank you,
Elise

Elise Jaklic, BEng
Project Consultant

HGC NOISE VIBRATION ACOUSTICS

2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7

t: 905-826-4044 x271 e: ejaklic@hgcacoustics.com

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RE: Road Traffic Data Request - Watson Rd S & Arkell Rd

From Kayla Martin <kaylam@wellington.ca>
Date Thu 2026-03-26 2:02 PM
To Elise Jaklic <ejaklic@hgcacoustics.com>

Hi Elise,

Apologies for not getting back to you about this sooner. Below is a quick chart of the traffic count data we have. I've also provided a map of where the count stations are located. Let me know if you need anything else!

Counting Station ID	SPRING					SUMMER					FALL				
	Total of Passenger Car	Total Small Truck	Total Truck/Busses	Total Tractor Trailer	Total	Total of Passenger Car	Total Small Truck	Total Truck/Busses	Total Tractor Trailer	Total	Total of Passenger Car	Total Small Truck	Total Truck/Busses	Total Tractor Trailer	Total
3702 (Count year = 2025)	4306	45	18	104	4473	4144	18	8	99	4269	4355	38	18	111	4522
3704 (Count year = 2024)	5566	48	57	217	5888	5221	37	40	187	5485	5439	55	42	226	5762



Kayla Martin
Engineering Technologist
County of Wellington
74 Woolwich Street, Guelph, ON N1H 3T9
T: 519.837.2600 x 2261 | E: kaylam@wellington.ca

From: Elise Jaklic <ejaklic@hgcacoustics.com>
Sent: Wednesday, March 11, 2026 9:17 AM
To: Kayla Martin <kaylam@wellington.ca>
Subject: Road Traffic Data Request - Watson Rd S & Arkell Rd

CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you know the contents to be safe.

Good morning Kayla,

We are preparing a noise study for a site near the intersection of Arkell Road and Watson Road South. A google maps link is provided for reference.

[Google Maps](#)

Could you please provide road traffic information, specifically AADT and commercial vehicle percentages for both roadways?

Let me know, thanks!

Elise

Elise Jaklic, BEng

Project Consultant

HGC NOISE VIBRATION ACOUSTICS

2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7

t: 905-826-4044 x271 e: ejaklic@hgcacoustics.com

Visit our website – www.hgcacoustics.com Follow Us – [LinkedIn](#) | [X](#) | [YouTube](#)

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Appendix C

Rail Traffic Data



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Re: Rail Traffic Request - Watson and Arkell

From Elise Jaklic <ejaklic@hgcacoustics.com>

Date Thu 2026-03-12 3:15 PM

To Les Petroczi <Les.Petroczi@guelph.ca>

Hi Les,

Thank you for providing this!

Have a great weekend 😊

Elise

Elise Jaklic, BEng

Project Consultant

HGC NOISE VIBRATION ACOUSTICS

t: 905-826-4044 x271 **e:** ejaklic@hgcacoustics.com

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From: Les Petroczi <Les.Petroczi@guelph.ca>

Sent: March 12, 2026 3:04 PM

To: Elise Jaklic <ejaklic@hgcacoustics.com>

Subject: Re: Rail Traffic Request - Watson and Arkell

Please see below

Les Petroczi

General Manager

Guelph Junction Railway

City of Guelph

519-822-1260 extension 2825

Mobile 519-766-7121

les.petroczi@guelph.ca

From: Elise Jaklic <ejaklic@hgcacoustics.com>

Sent: Thursday, March 12, 2026 2:40 PM

To: Les Petroczi <Les.Petroczi@guelph.ca>

Subject: Re: Rail Traffic Request - Watson and Arkell

[EXTERNAL EMAIL] This email originates outside the City of Guelph. Do not click links or attachments unless you recognize the sender and know the content is safe.

Hi Les,

Thank you for getting back, we are looking for the following information:

- Number of trains per day/night
- 4 day 2 night
- Max number of train cars
- max 24
- Max number of locomotives
- two each train
- Speed
- 15-25MPH
- Welded rail (yes or no)
- no rail is bolted
- Electric or diesel
- diesel powering generators for traction units
- Whistle on/off
- whistle on

Thank you!

Elise

Elise Jaklic, BEng

Project Consultant

HGC NOISE VIBRATION ACOUSTICS

t: 905-826-4044 x271 e: ejaklic@hgcacoustics.com

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From: Les Petroczi <Les.Petroczi@guelph.ca>

Sent: March 12, 2026 2:26 PM

To: Elise Jaklic <ejaklic@hgcacoustics.com>

Subject: RE: Rail Traffic Request - Watson and Arkell

Hi Elise

You will not be permitted to utilize the Alice/Morris data.

New tests will need to be completed.

Are you looking for vehicle traffic data or the amount of trains, train times car volumes with train speeds.

Thank you

Les Petroczi

General Manager

Guelph Junction Railway

City of Guelph

519-822-1260 extension 2825

Mobile 519-766-7121

les.petroczi@guelph.ca

From: Elise Jaklic <ejaklic@hgcacoustics.com>
Sent: Tuesday, March 10, 2026 5:06 PM
To: Les Petroczi <Les.Petroczi@guelph.ca>
Subject: Rail Traffic Request - Watson and Arkell

[EXTERNAL EMAIL] This email originates outside the City of Guelph. Do not click links or attachments unless you recognize the sender and know the content is safe.

Good afternoon,

We are preparing a noise feasibility study for a development located near the intersection of Watson Road South and Arkell Road in Puslinch, Ontario. A google link is included below for your reference:

[Google Maps](#)

We currently having the attached data for a site located to the west (Alice Street and Morris Street, Guelph, ON). Can you please confirm if the data is valid at this location? If not, can you please provide updated traffic data?

Thank you!

Best,
Elise

Elise Jaklic, BEng
Project Consultant

HGC NOISE VIBRATION ACOUSTICS

2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7

t: 905-826-4044 x271 e: ejaklic@hgcacoustics.com

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Appendix D

Sample STAMSON 5.04 Output



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STAMSON 5.0 NORMAL REPORT Date: 07-04-2026 14:08:51
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours
 Description: Prediction Location A

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

Train Type	! Trains ! (Left)	! Trains ! (Right)	! Speed !(km/h)	!# loc !/Train	!# Cars !/Train	! Eng ! type	!Cont !weld
* 1. Freight	! 2.6/1.3	! 2.6/1.3	! 40.0	! 2.0	! 24.0	!Diesel	! No

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

Train type: No Name	! Unadj. Trains ! Left	! Trains ! Right	! Annual % ! Increase	! Years of ! Growth
1. Freight	! 2.0/1.0	! 2.0/1.0	! 2.50	! 10.00

Data for Segment # 1: GJR (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 : 40.00 / 40.00 m
 Receiver height : 4.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Whistle Angle : 0 deg Track 1
 Reference angle : 0.00

Results segment # 1: GJR (day)

LOCOMOTIVE (0.00 + 52.03 + 0.00) = 52.03 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.50	59.56	-6.37	-1.17	0.00	0.00	0.00	52.03

WHEEL (0.00 + 46.15 + 0.00) = 46.15 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	54.32	-6.82	-1.35	0.00	0.00	0.00	46.15

LEFT WHISTLE (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-84	0	0.50	69.79	-6.37	-4.25	0.00	0.00	0.00	59.17

RIGHT WHISTLE (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	84	0.50	69.79	-6.37	-4.25	0.00	0.00	0.00	59.17

Segment Leq : 62.68 dBA

Total Leq All Segments: 62.68 dBA

Results segment # 1: GJR (night)

LOCOMOTIVE (0.00 + 52.03 + 0.00) = 52.03 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.50	59.56	-6.37	-1.17	0.00	0.00	0.00	52.03

WHEEL (0.00 + 46.15 + 0.00) = 46.15 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	54.32	-6.82	-1.35	0.00	0.00	0.00	46.15

LEFT WHISTLE (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-84	0	0.50	69.79	-6.37	-4.25	0.00	0.00	0.00	59.17

RIGHT WHISTLE (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	84	0.50	69.79	-6.37	-4.25	0.00	0.00	0.00	59.17

Segment Leq : 62.68 dBA

Total Leq All Segments: 62.68 dBA

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

Car traffic volume : 1837/918 veh/TimePeriod
Medium truck volume : 0/0 veh/TimePeriod

Heavy truck volume : 0/0 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: watson (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 : 46.00 / 45.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: watson (day)

Source height = 0.50 m

ROAD (0.00 + 43.56 + 0.00) = 43.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	52.70	0.00	-7.79	-1.35	0.00	0.00	0.00	43.56

Segment Leq : 43.56 dBA

Total Leq All Segments: 43.56 dBA

Results segment # 1: watson (night)

Source height = 0.50 m

ROAD (0.00 + 43.71 + 0.00) = 43.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	52.70	0.00	-7.63	-1.35	0.00	0.00	0.00	43.71

Segment Leq : 43.71 dBA

Total Leq All Segments: 43.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.73
(NIGHT): 62.73

▲

Appendix E

Detailed Plots of Acceleration Spectra



NOISE



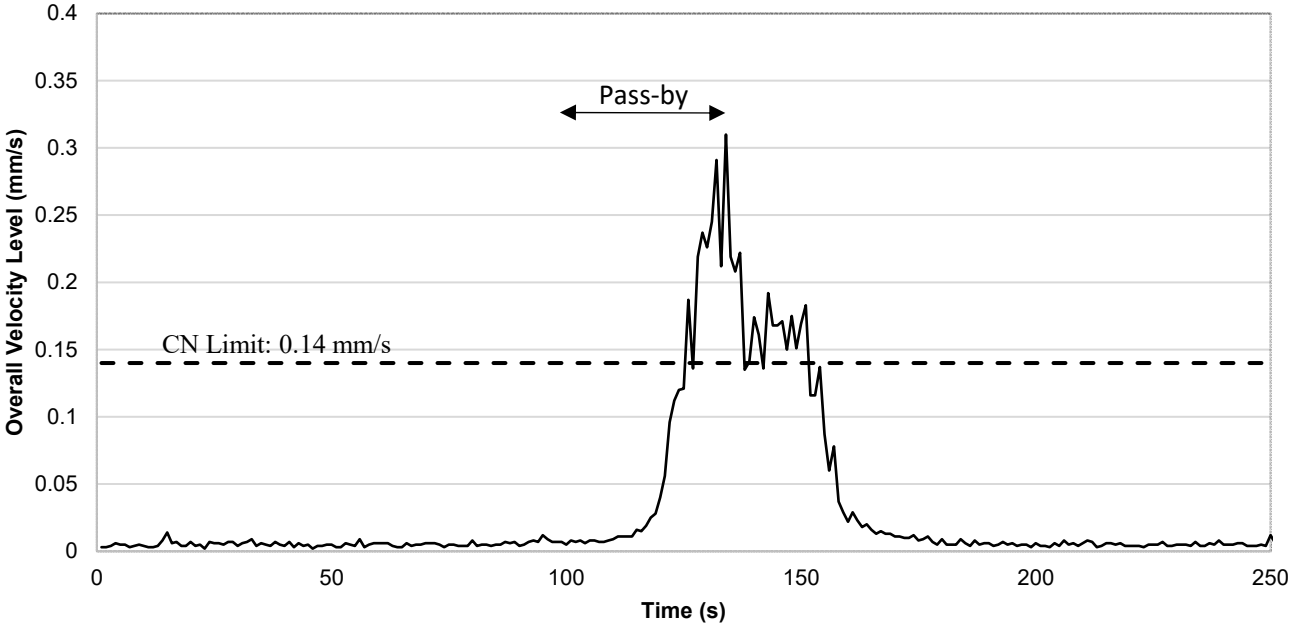
VIBRATION



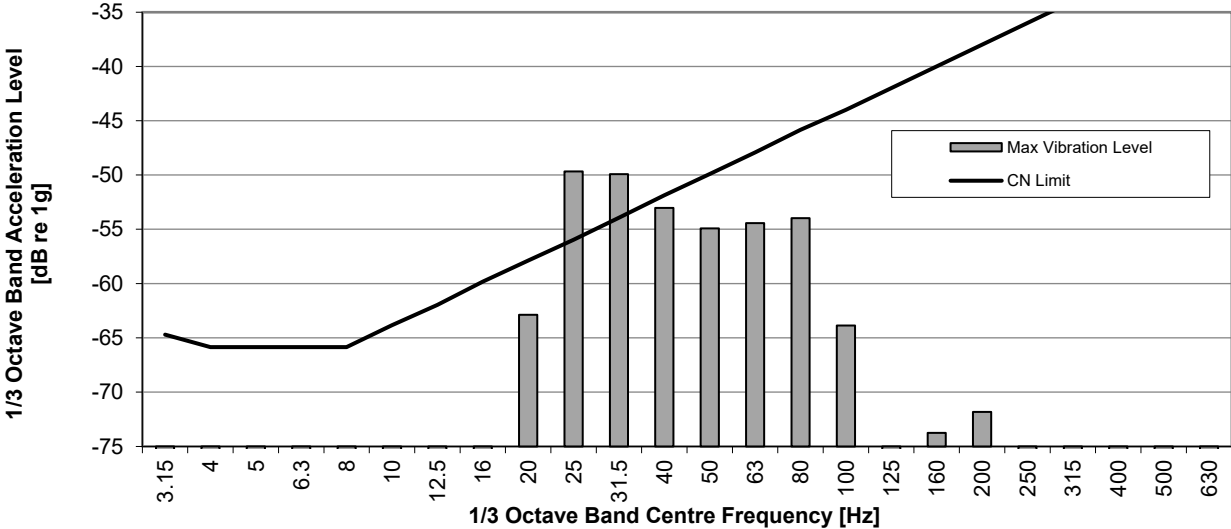
ACOUSTICS

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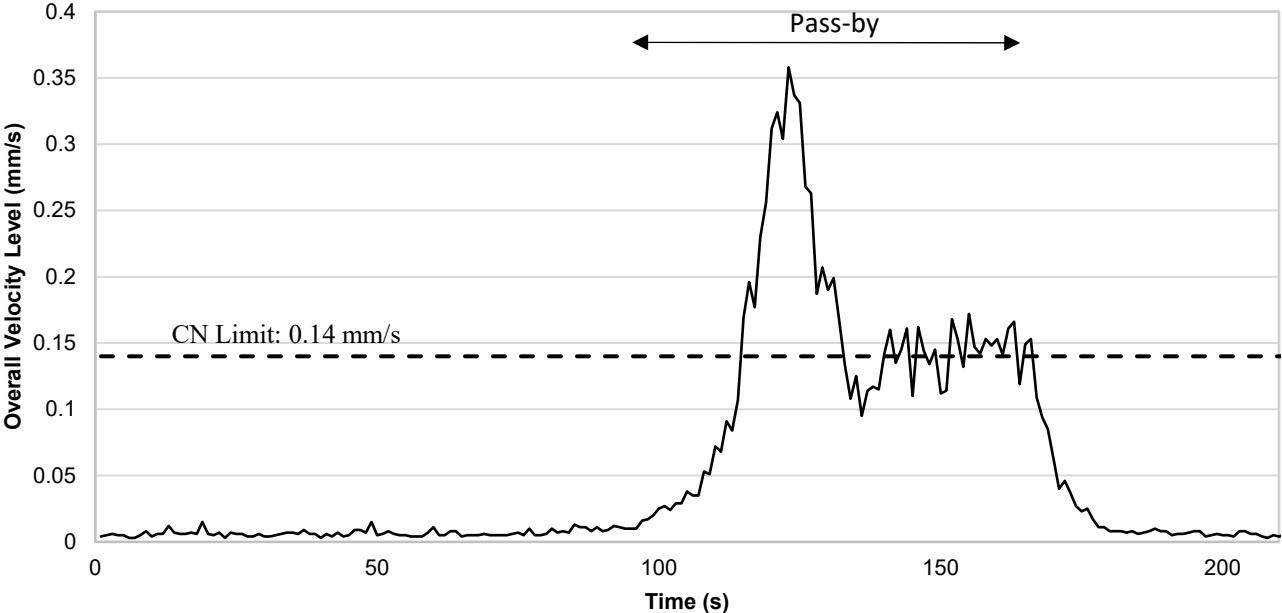
Pass-by 1 at 15 m from ROW at M1
Measured Vibratory Velocity Level



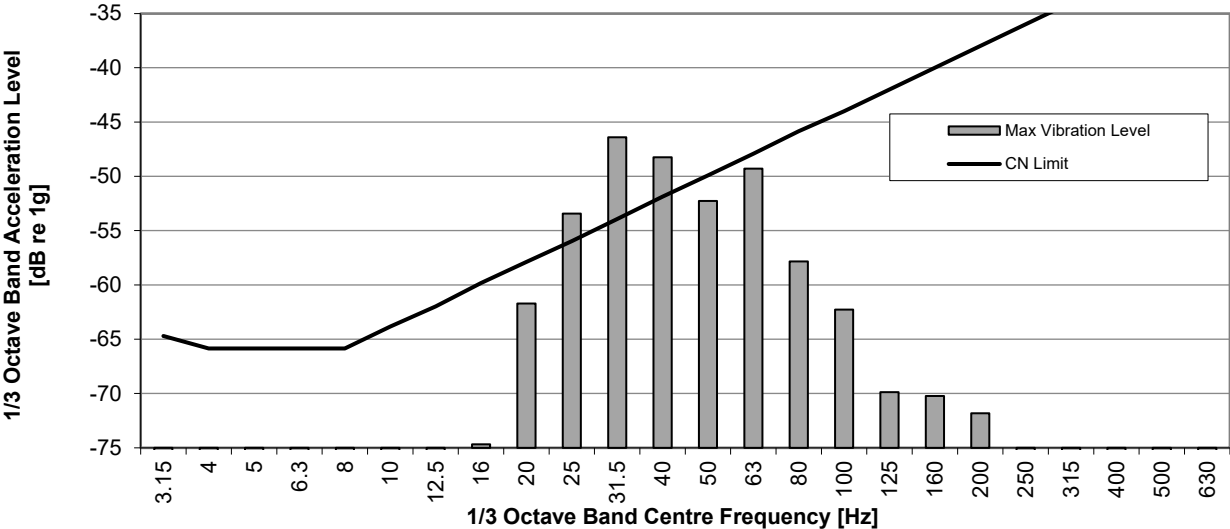
Pass-by 1 at M1
Acceleration Spectrum @ Peak Level (1 sec. Duration)



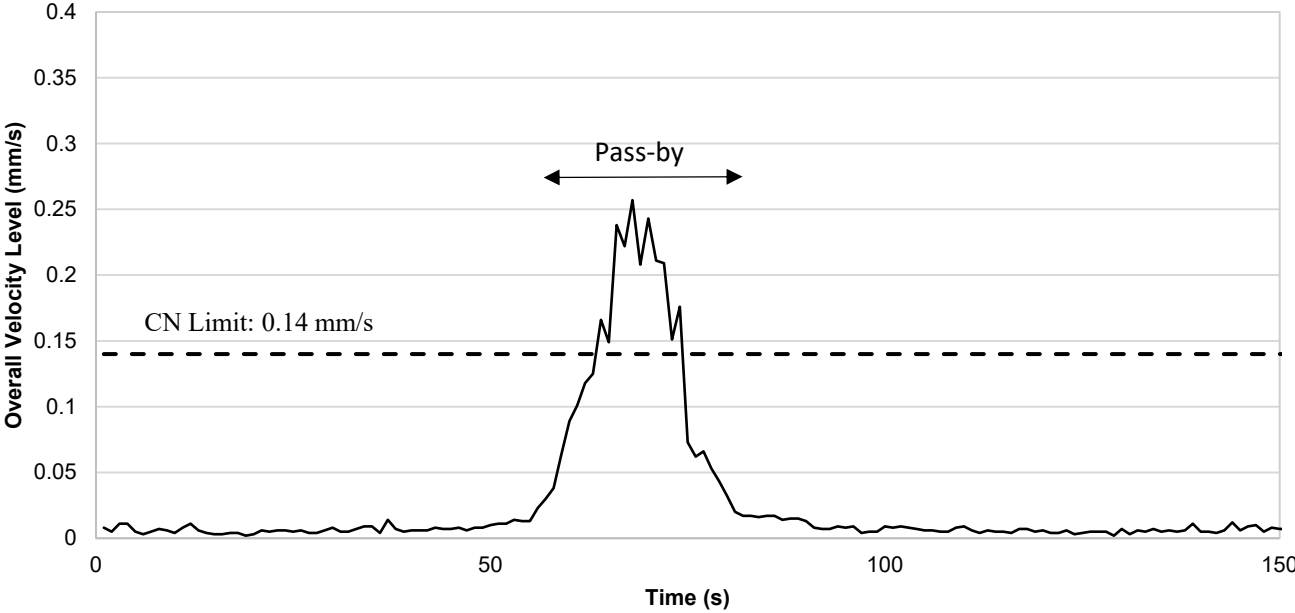
Pass-by 2 at 15 m from ROW at M1
Measured Vibratory Velocity Level



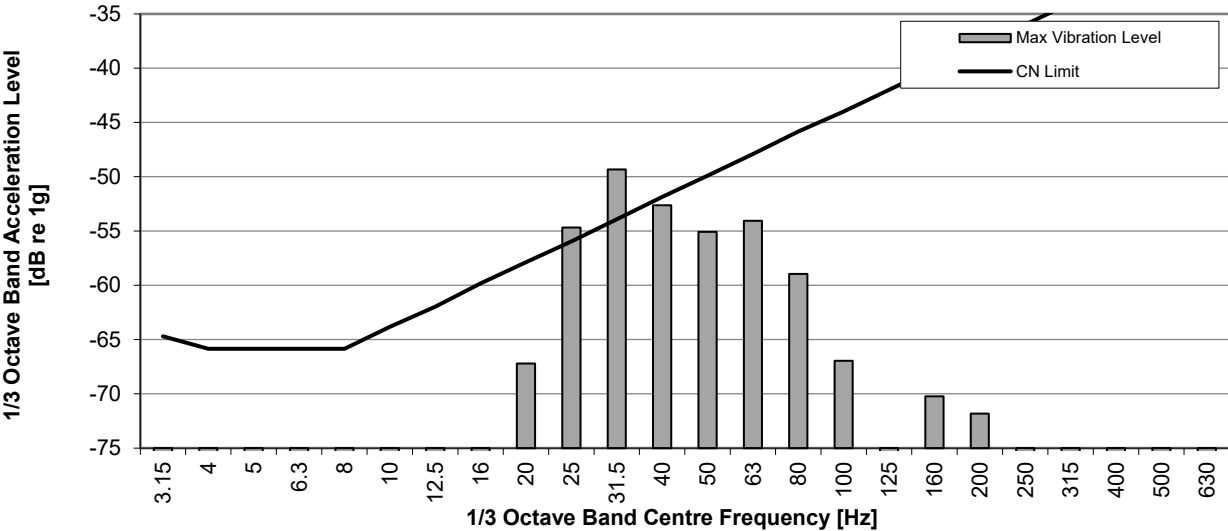
Pass-by 2 at M1
Acceleration Spectrum @ Peak Level (1 sec. Duration)



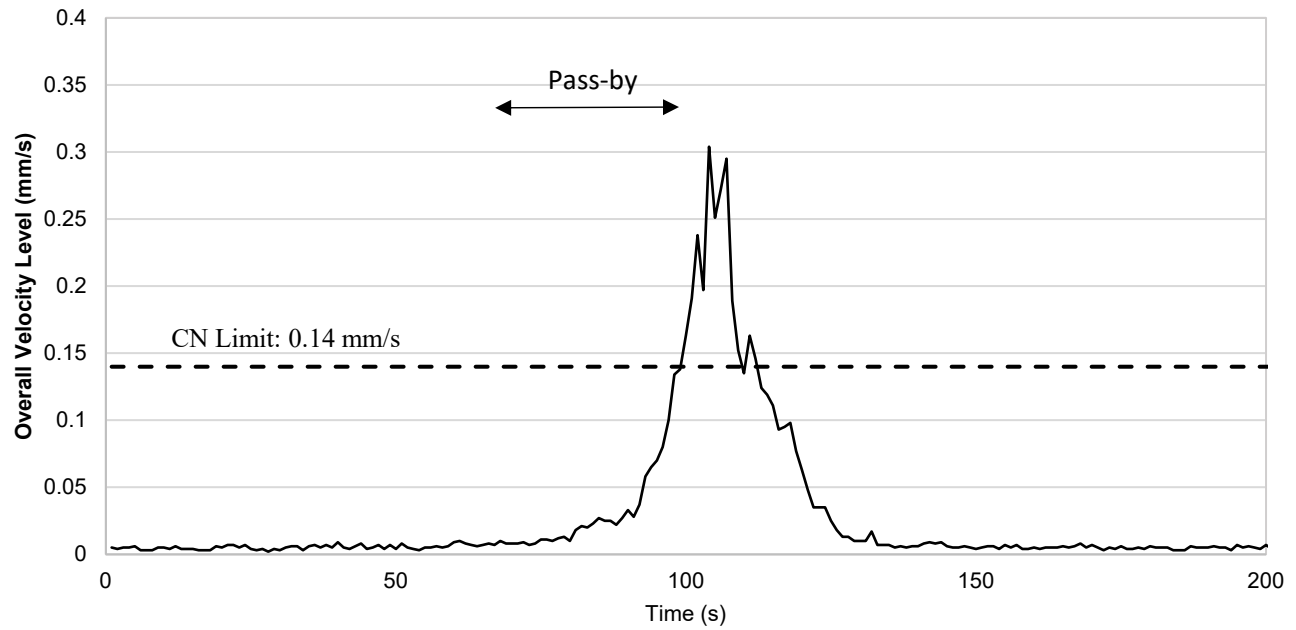
Pass-by 3 at 15 m from ROW at M1
Measured Vibratory Velocity Level



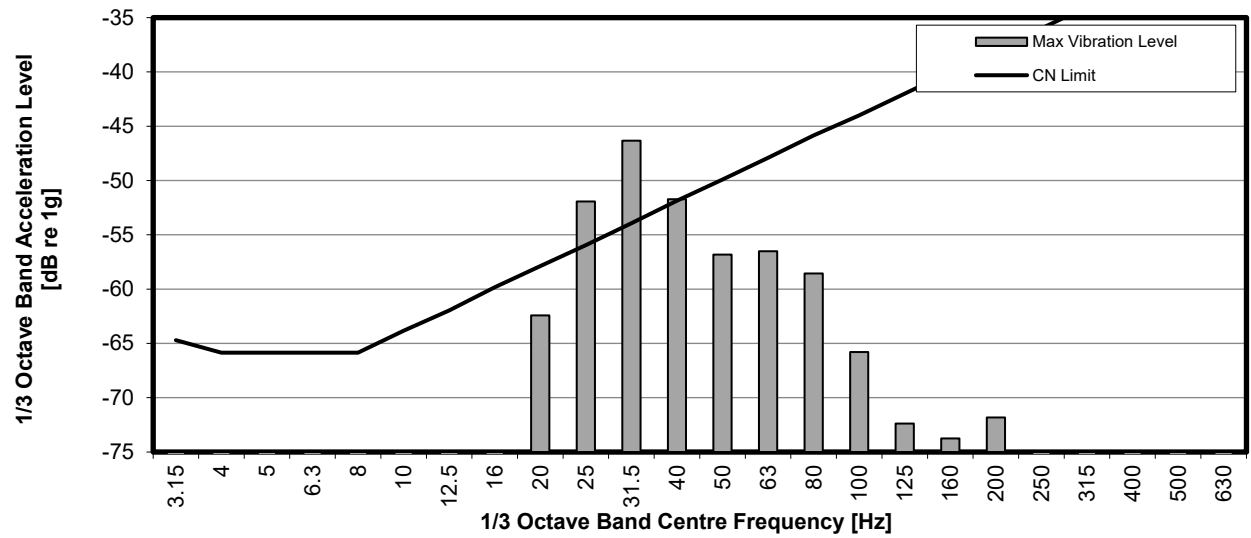
Pass-by 3 at M1
Acceleration Spectrum @ Peak Level (1 sec. Duration)



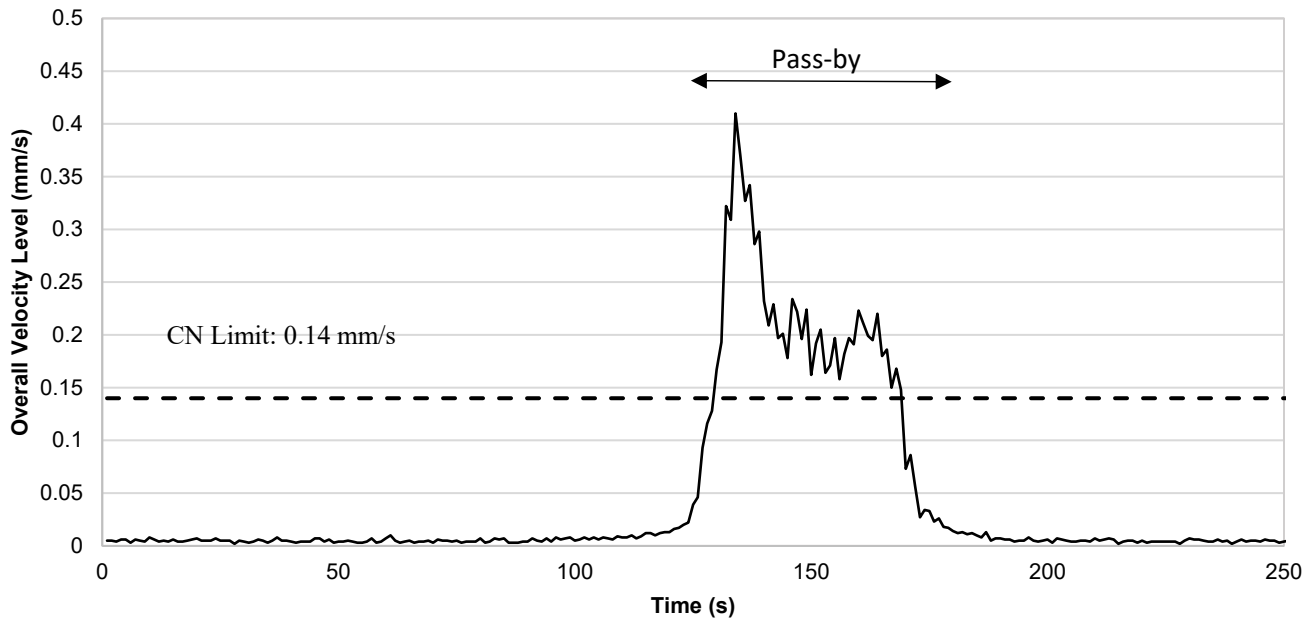
**Pass-by 4 at 15 m from ROW at M1
Measured Vibratory Velocity Level**



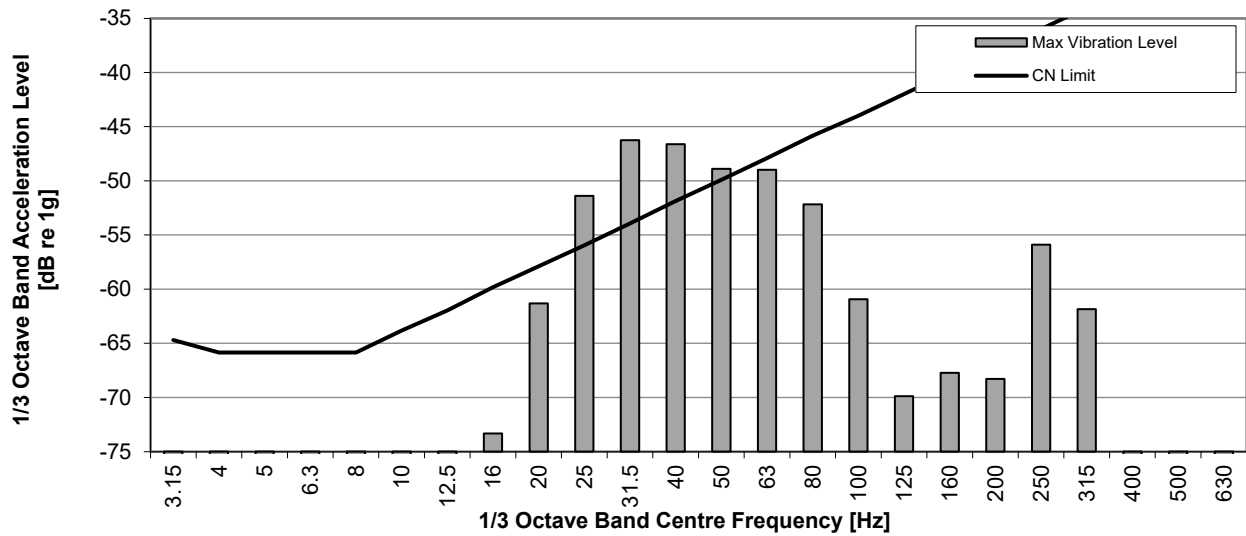
**Pass-by 4 at M1
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



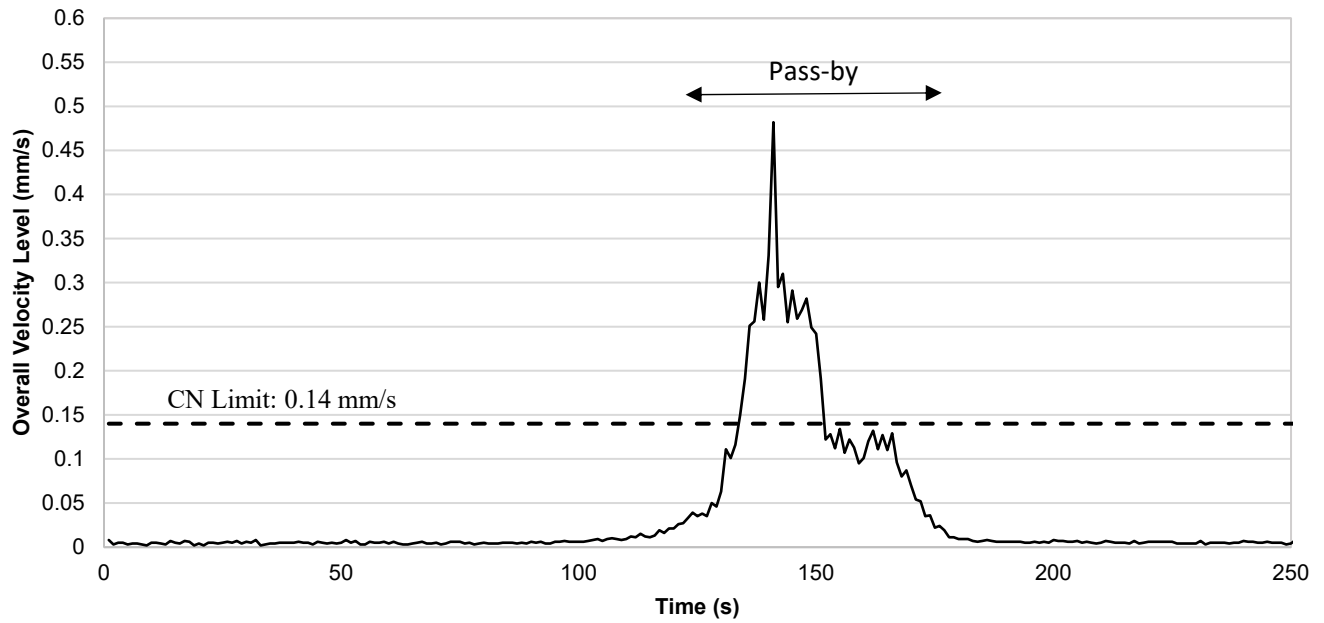
**Pass-by 5 at 15 m from ROW at M1
Measured Vibratory Velocity Level**



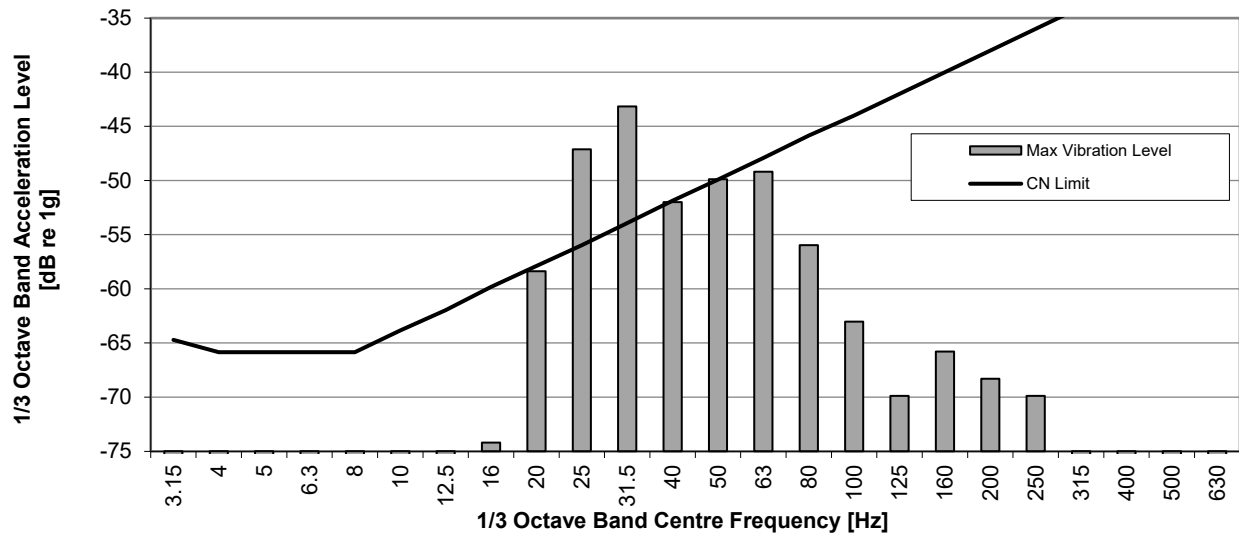
**Pass-by 5 at M1
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



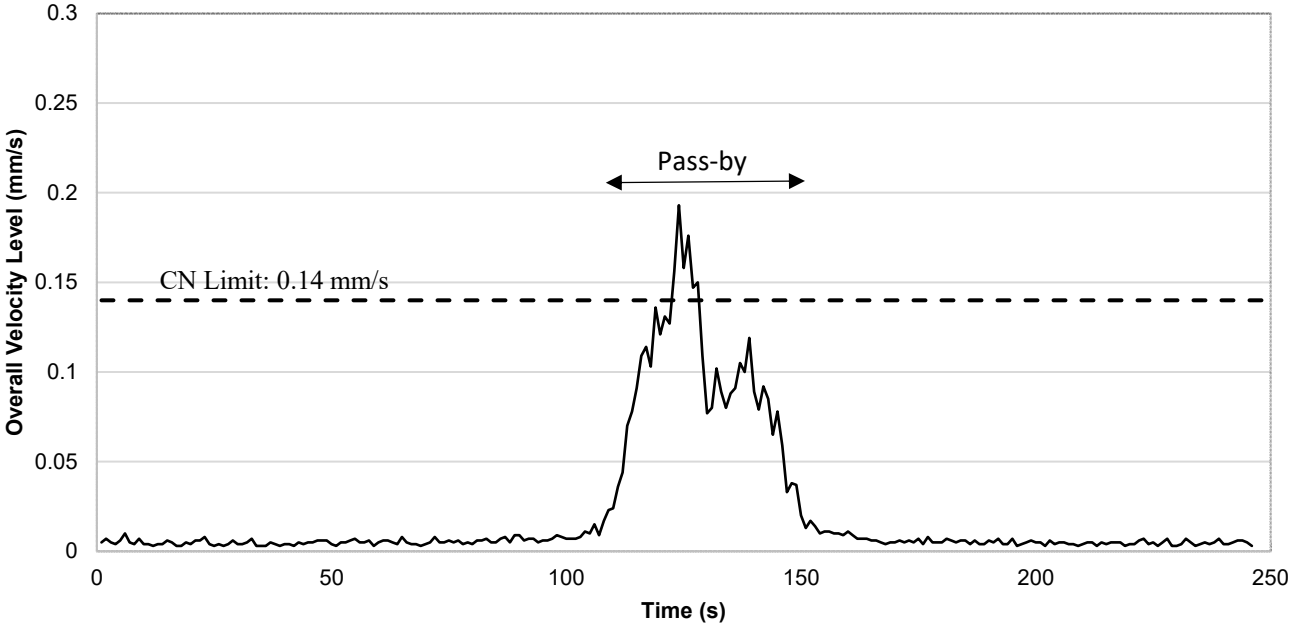
**Pass-by 6 at 15 m from ROW at M1
Measured Vibratory Velocity Level**



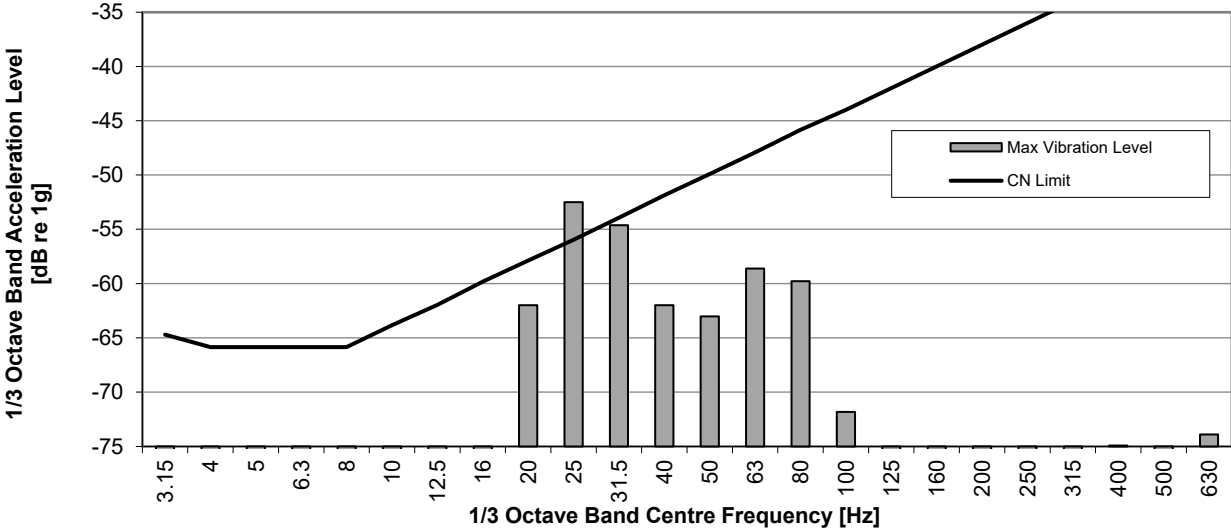
**Pass-by 6 at M1
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



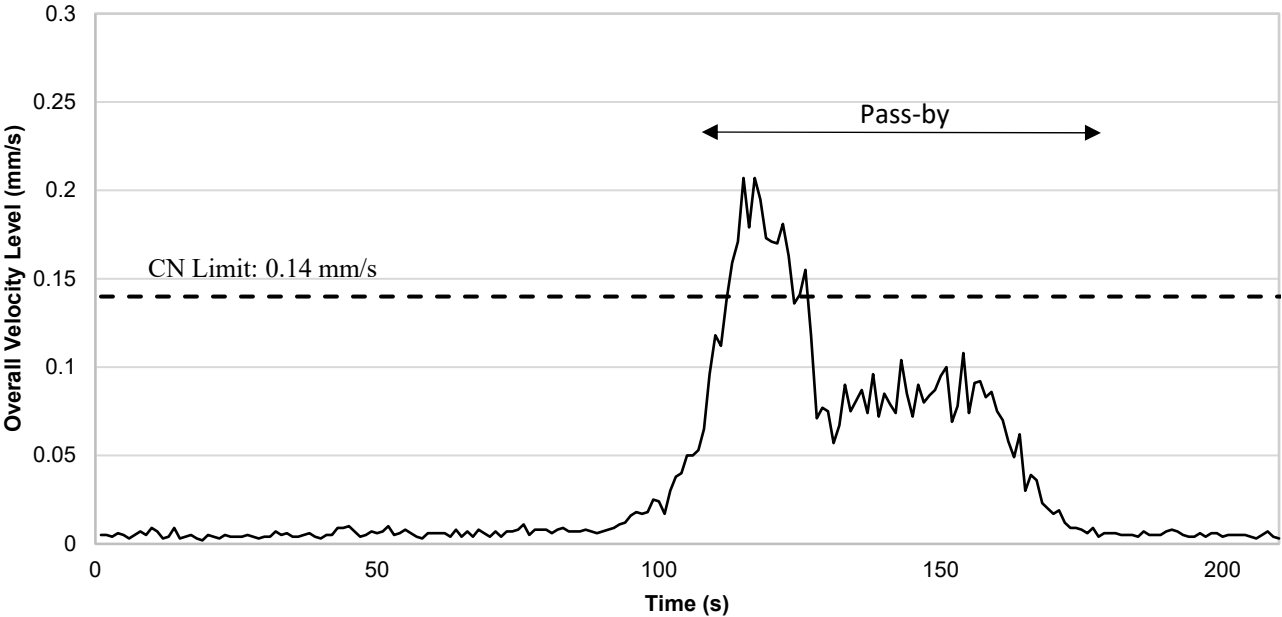
Pass-by 1 at 30 m from ROW at M2
Measured Vibratory Velocity Level



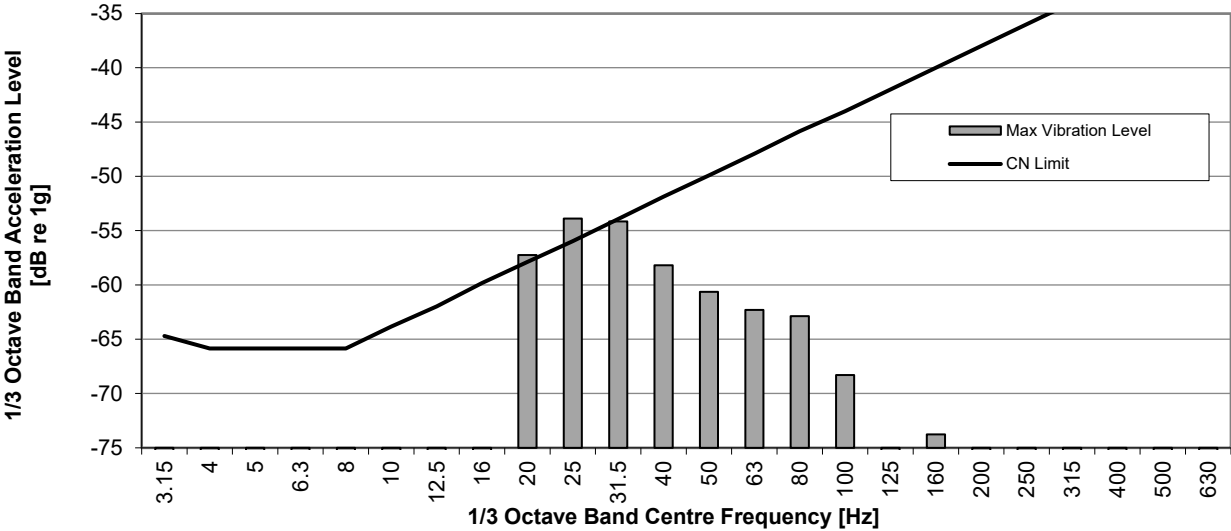
Pass-by 1 at M2
Acceleration Spectrum @ Peak Level (1 sec. Duration)



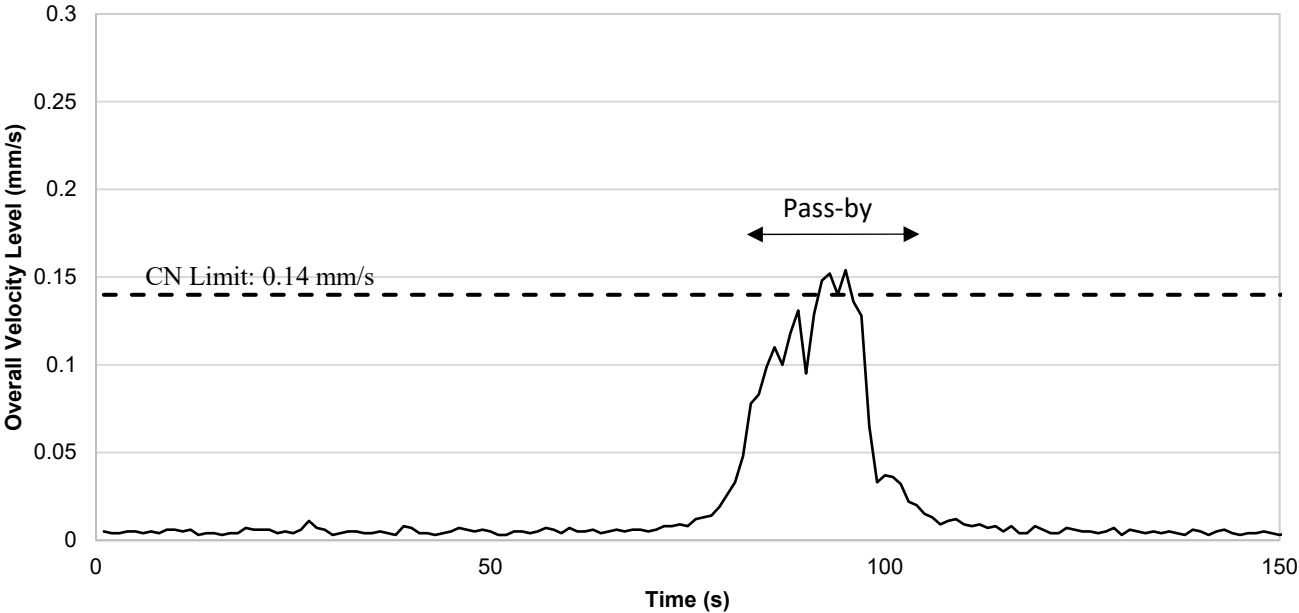
Pass-by 2 at 30 m from ROW at M2
Measured Vibratory Velocity Level



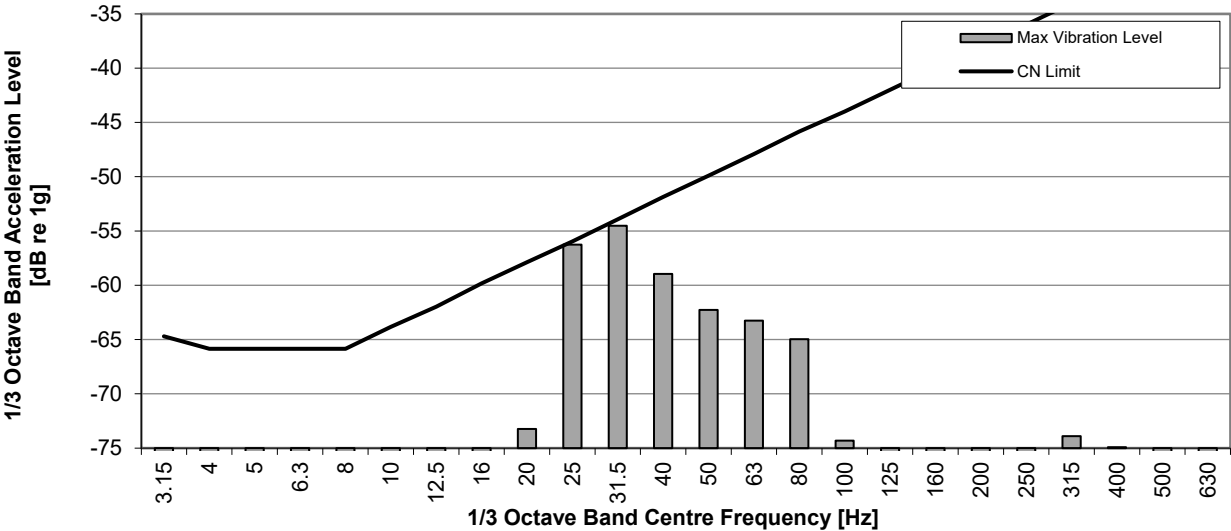
Pass-by 2 at M2
Acceleration Spectrum @ Peak Level (1 sec. Duration)



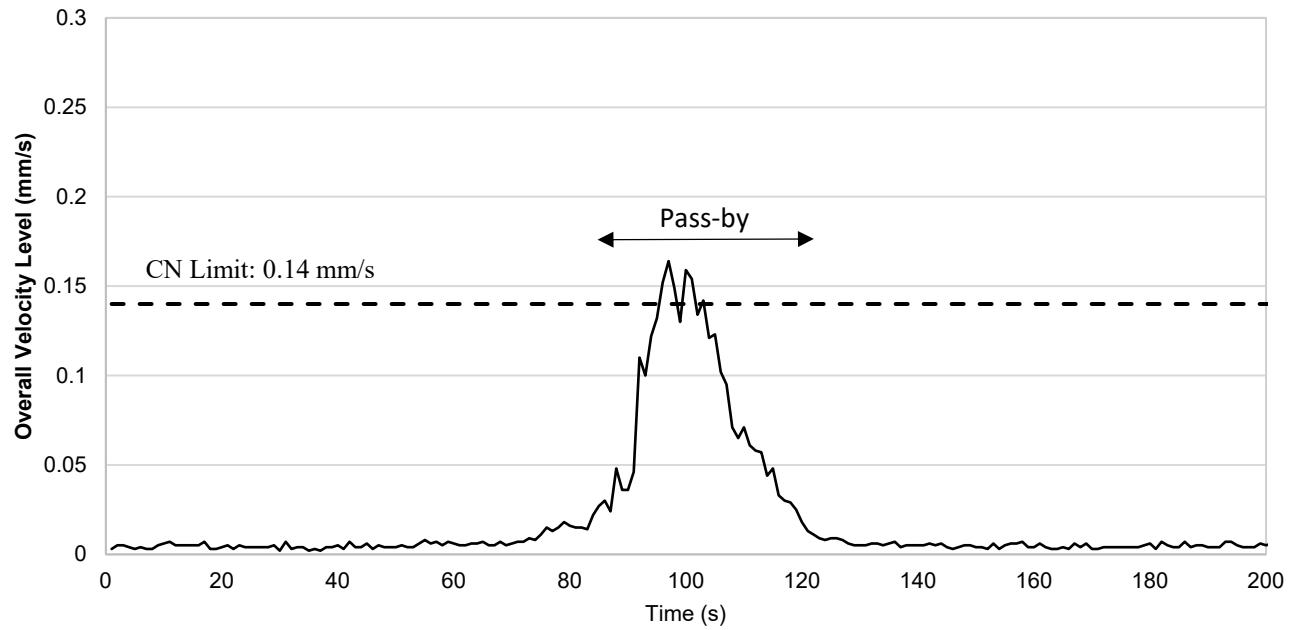
Pass-by 3 at 30 m from ROW at M2
Measured Vibratory Velocity Level



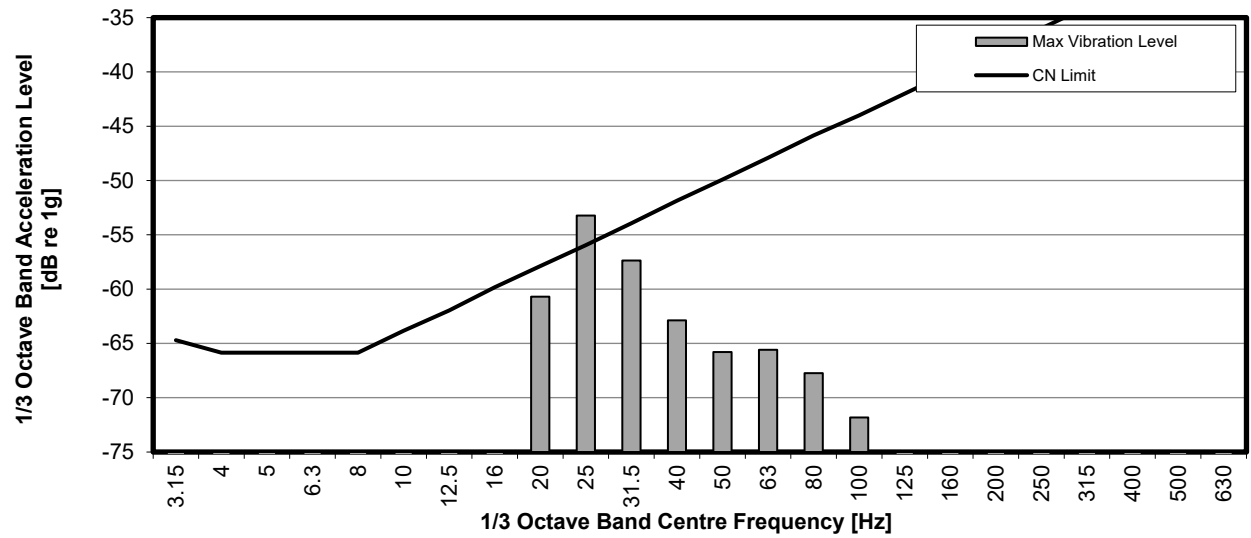
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Acceleration Spectrum @ Peak Level (1 sec. Duration)



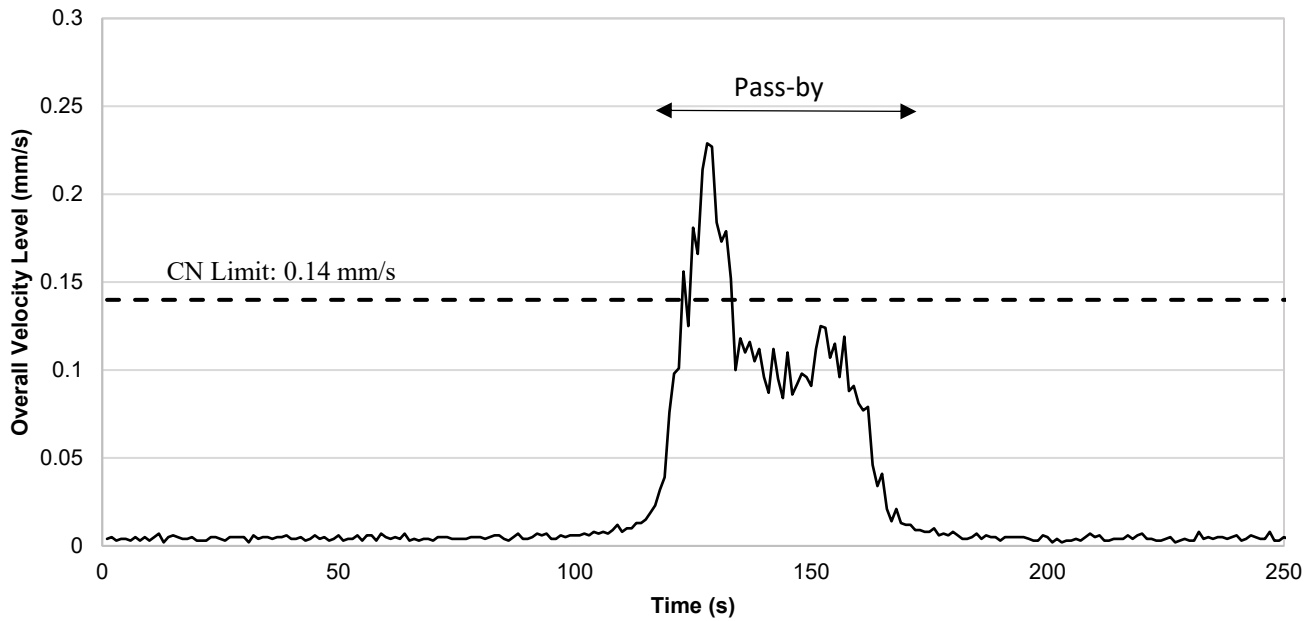
Pass-by 4 at 30 m from ROW at M2
Measured Vibratory Velocity Level



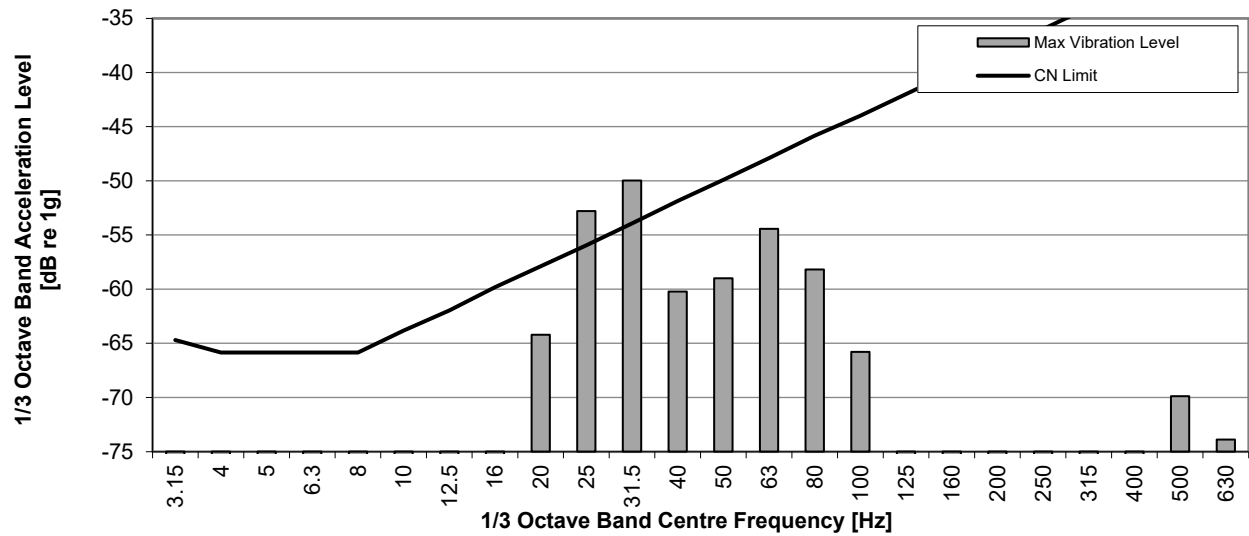
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Acceleration Spectrum @ Peak Level (1 sec. Duration)



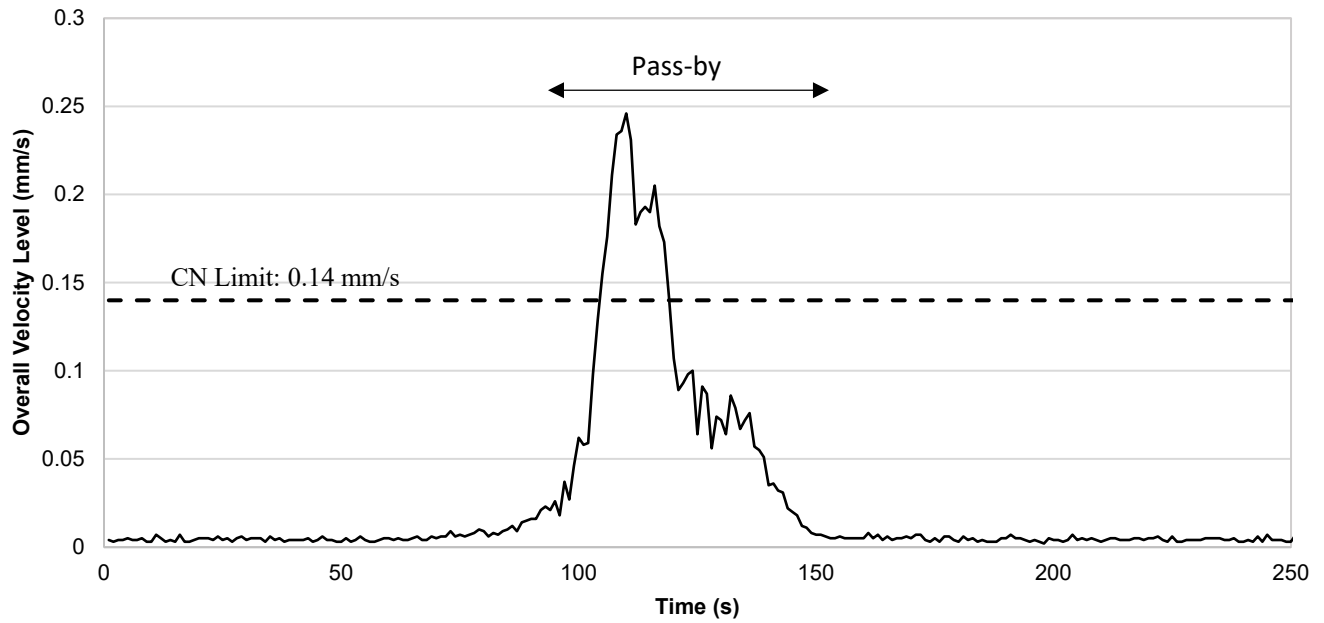
**Pass-by 5 at 30 m from ROW at M2
Measured Vibratory Velocity Level**



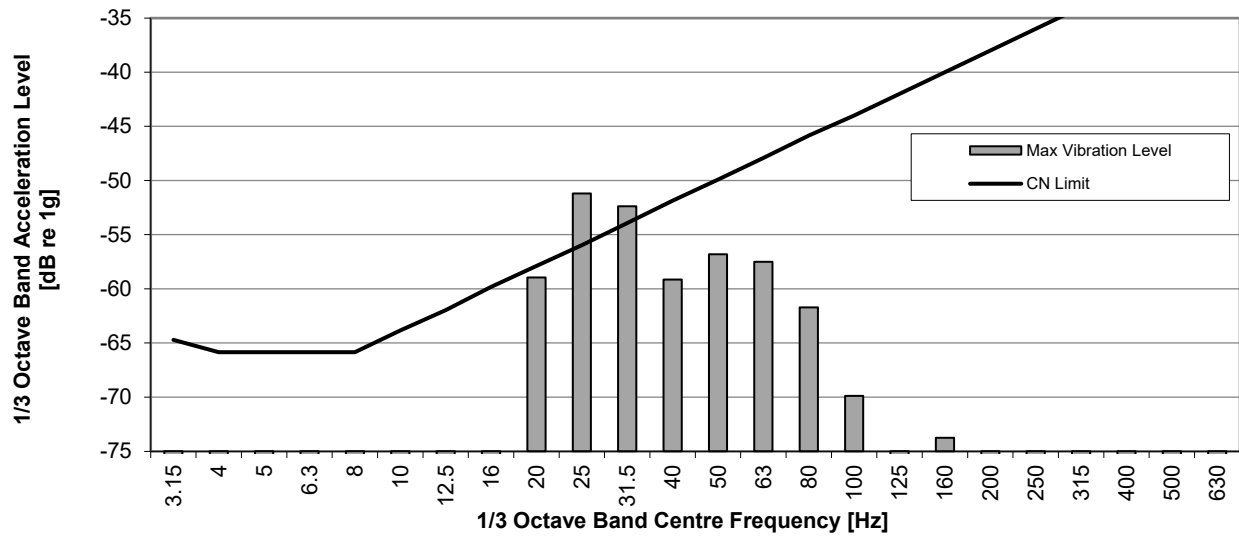
**Pass-by 5 at M2
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



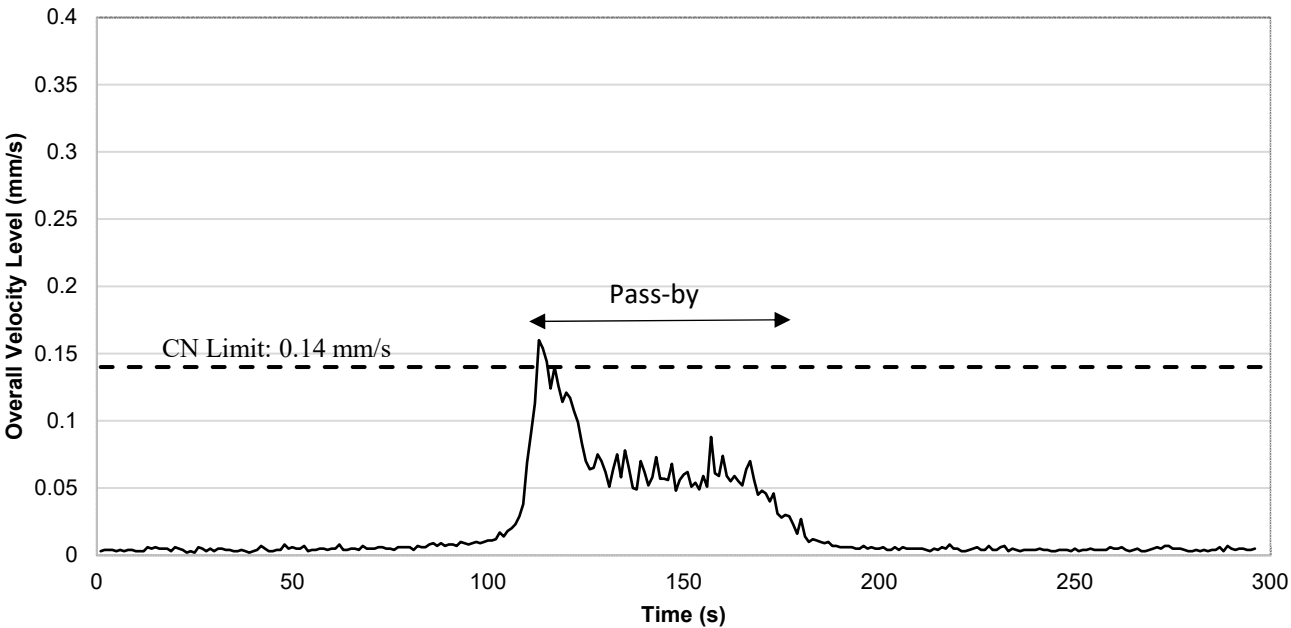
Pass-by 6 at 30 m from ROW at M2
Measured Vibratory Velocity Level



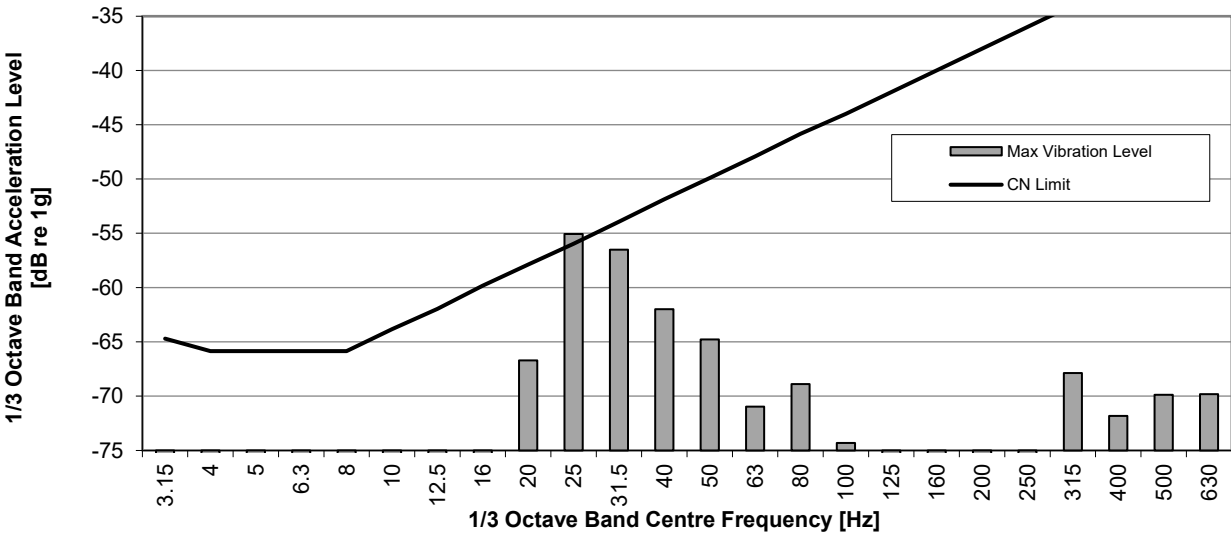
Pass-by 6 at M2
Acceleration Spectrum @ Peak Level (1 sec. Duration)



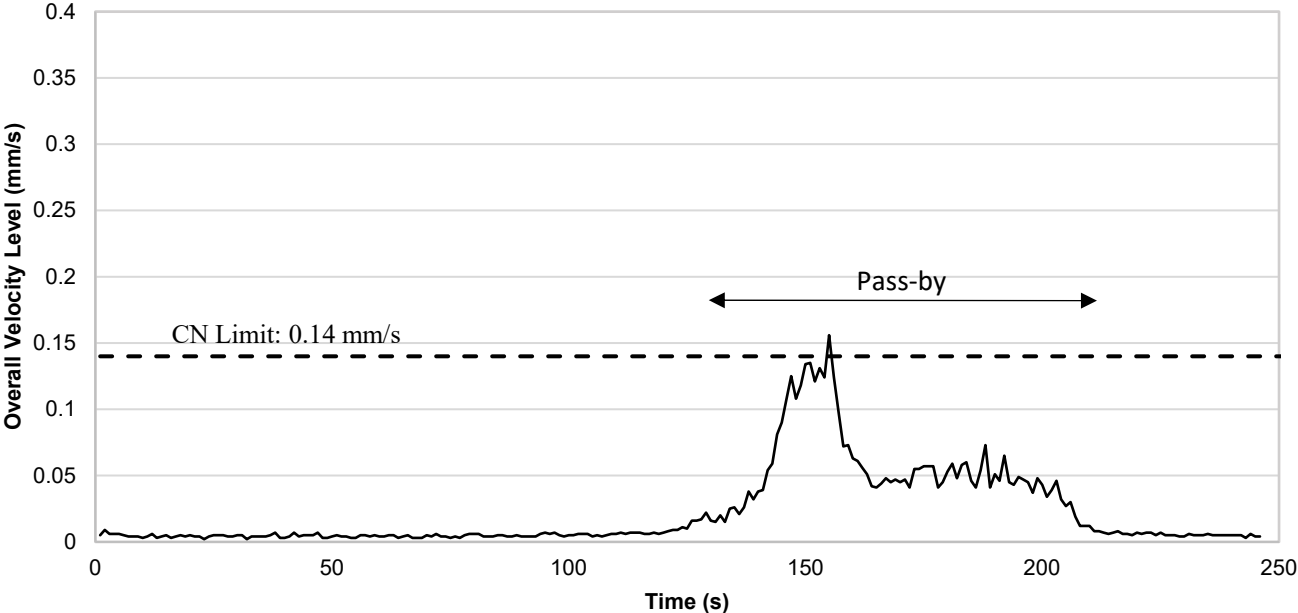
Pass-by 1 at 45 m from ROW at M3
Measured Vibratory Velocity Level



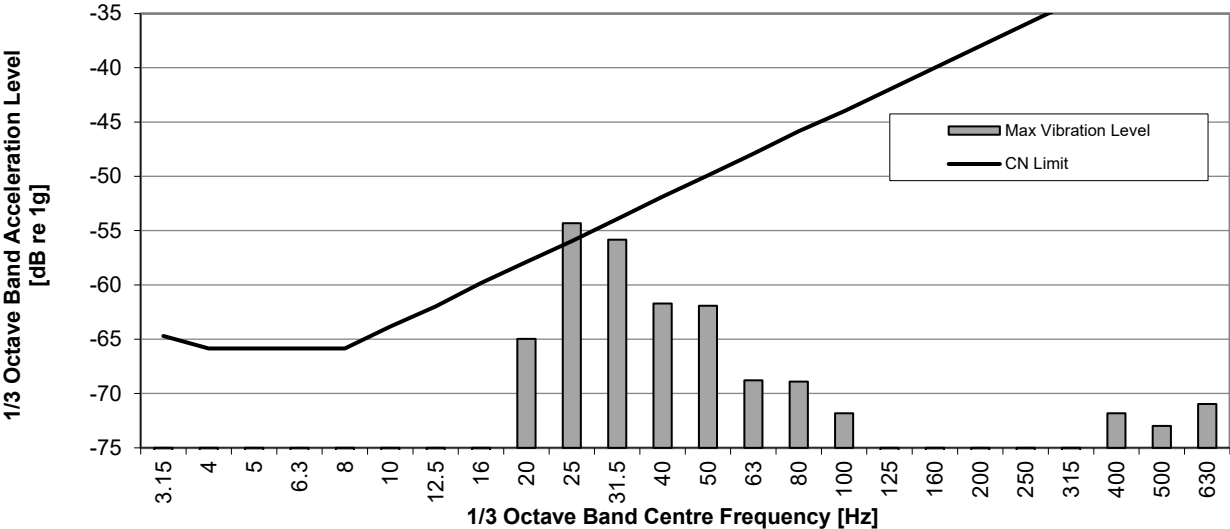
Pass-by 1 at M3
Acceleration Spectrum @ Peak Level (1 sec. Duration)



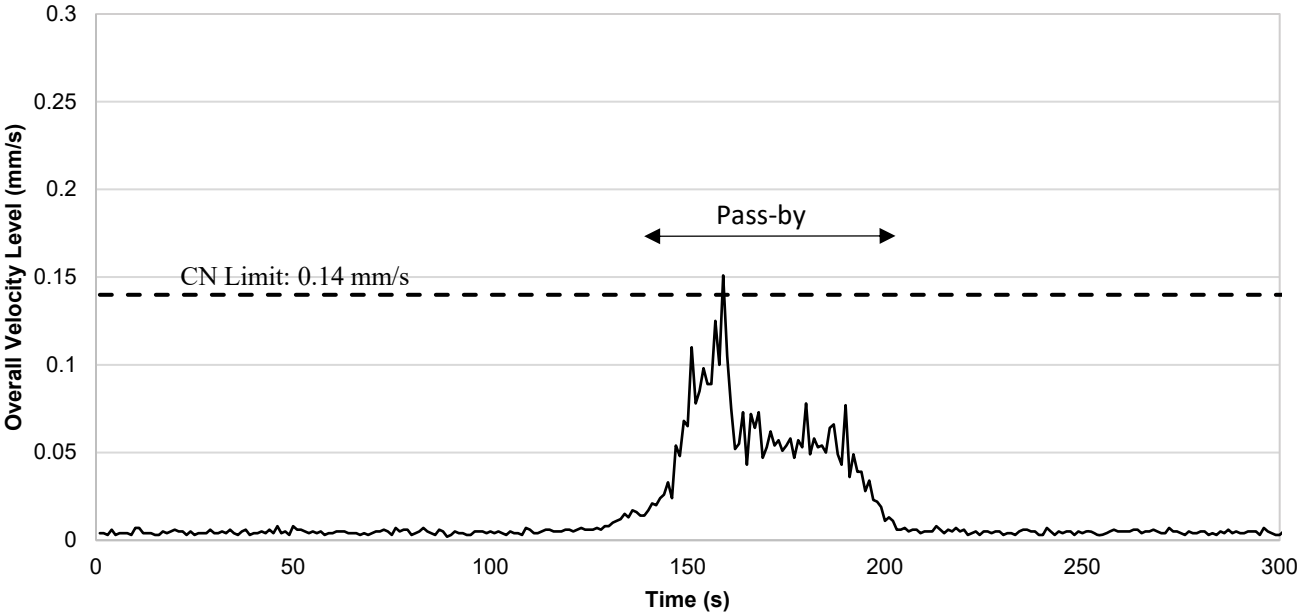
Pass-by 2 at 45 m from ROW at M3
Measured Vibratory Velocity Level



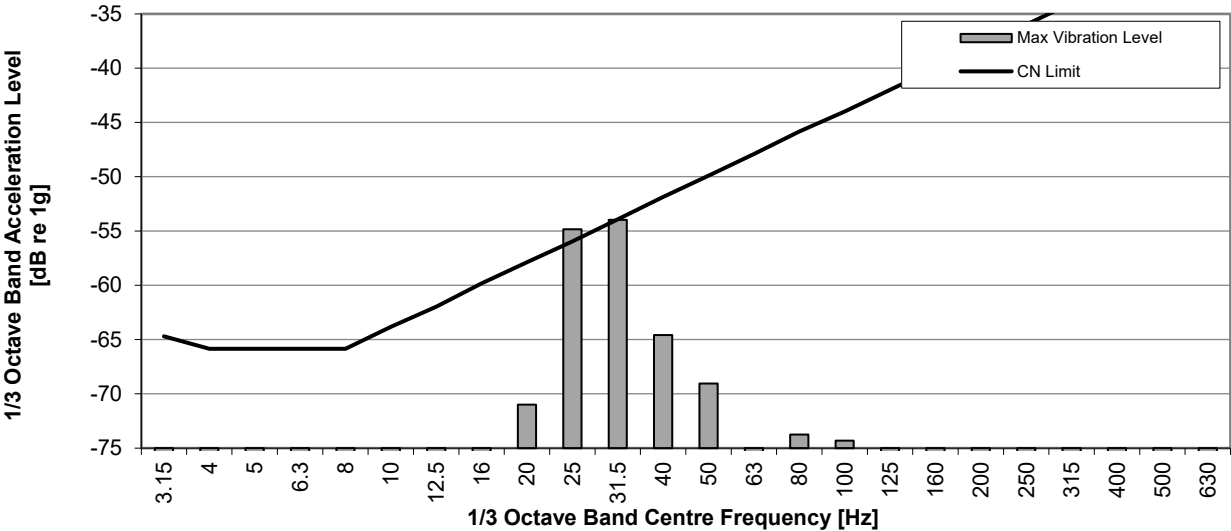
Pass-by 2 at M3
Acceleration Spectrum @ Peak Level (1 sec. Duration)



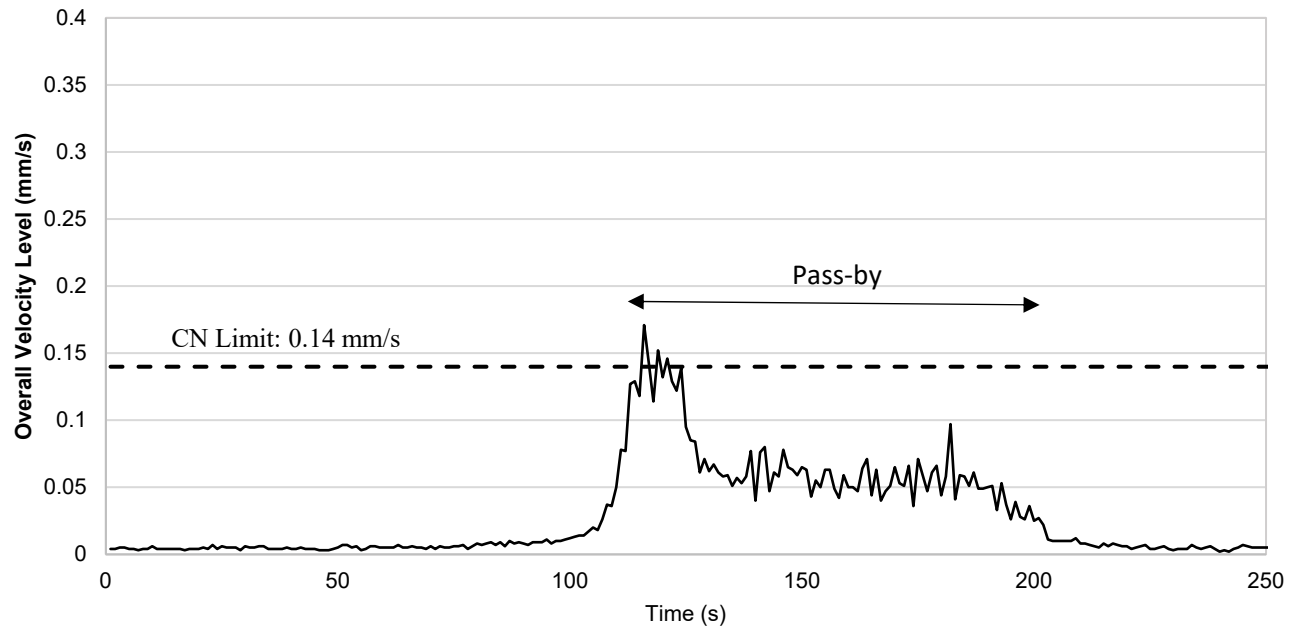
Pass-by 3 at 45 m from ROW at M3
Measured Vibratory Velocity Level



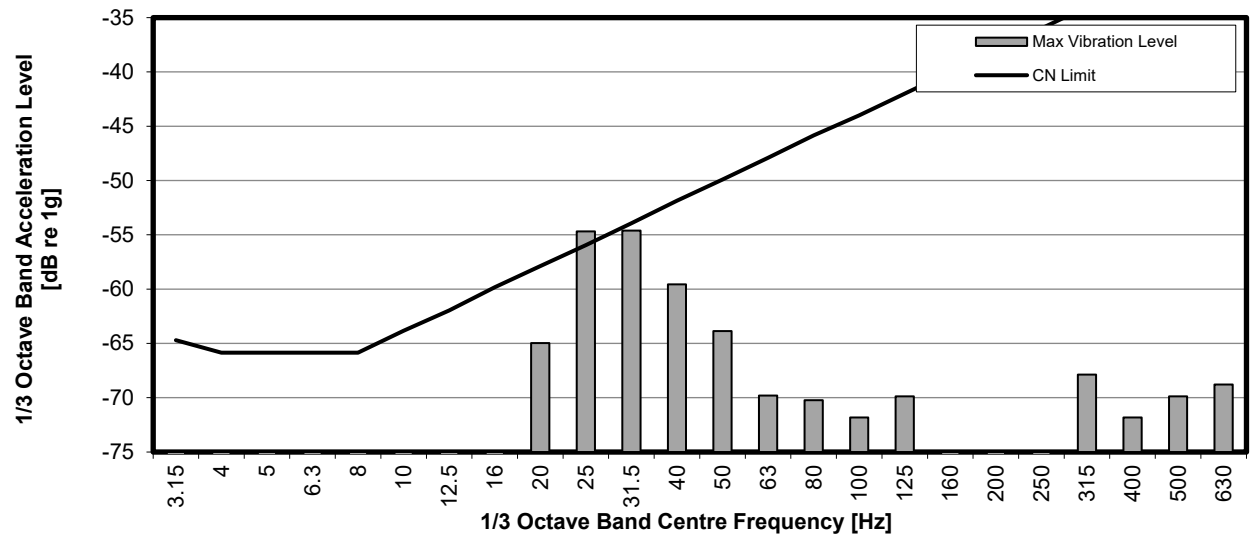
Pass-by 3 at M3
Acceleration Spectrum @ Peak Level (1 sec. Duration)



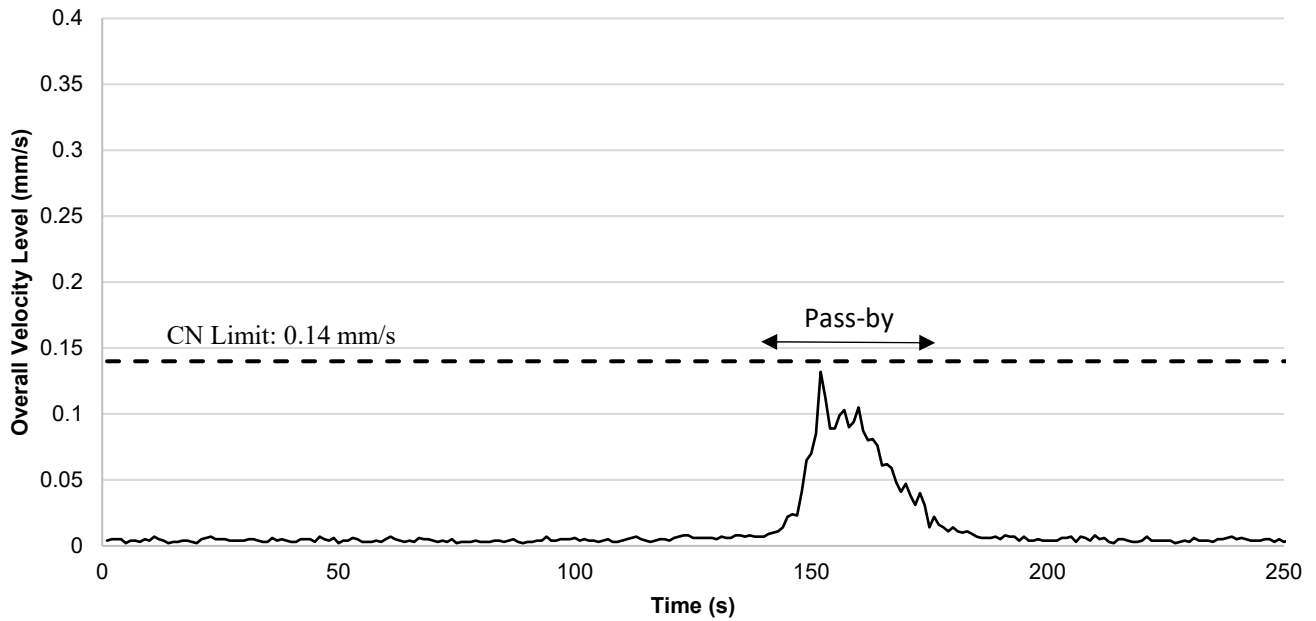
**Pass-by 4 at 45 m from ROW at M3
Measured Vibratory Velocity Level**



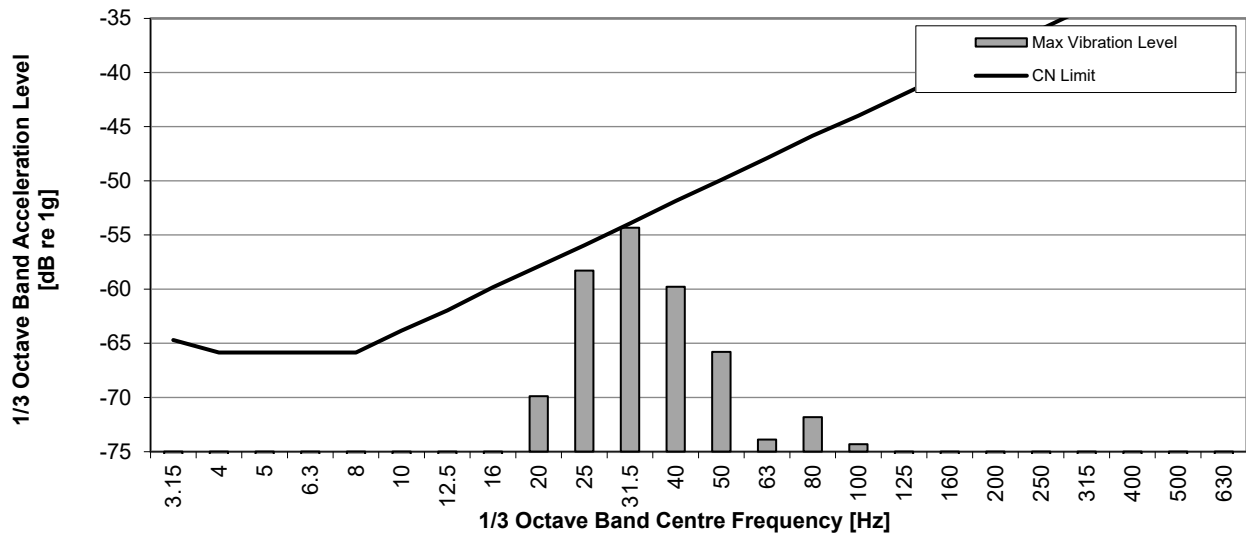
**Pass-by 4 at M3
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



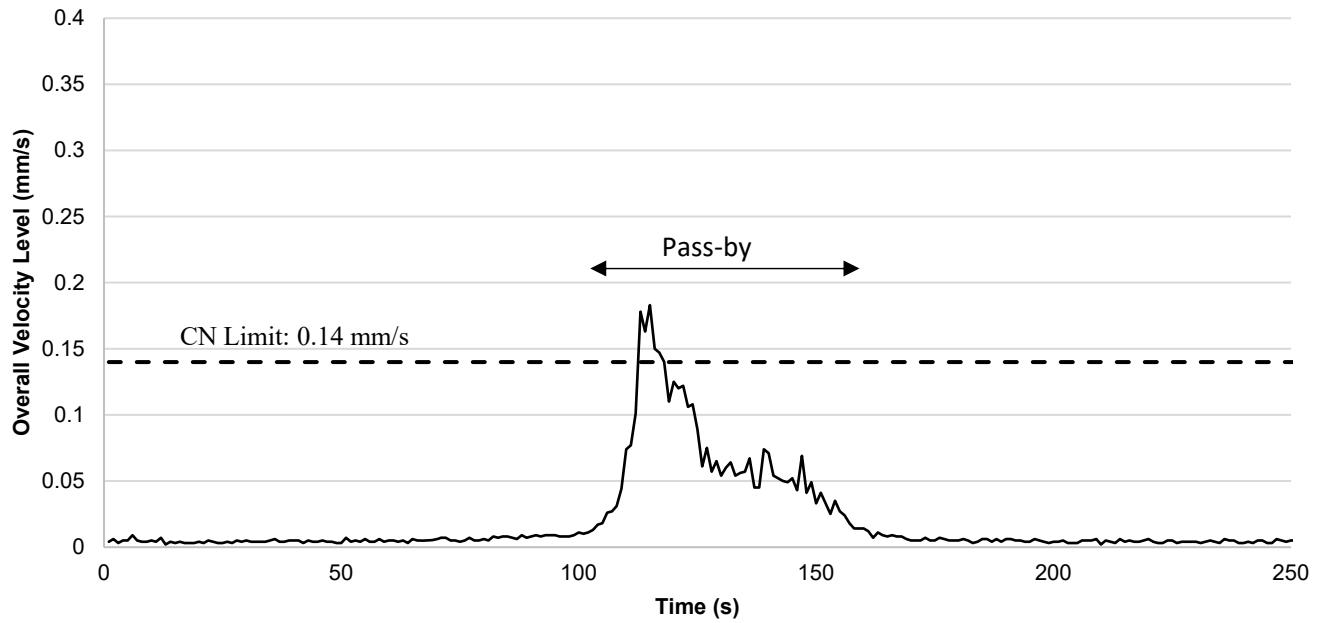
**Pass-by 5 at 45 m from ROW at M3
Measured Vibratory Velocity Level**



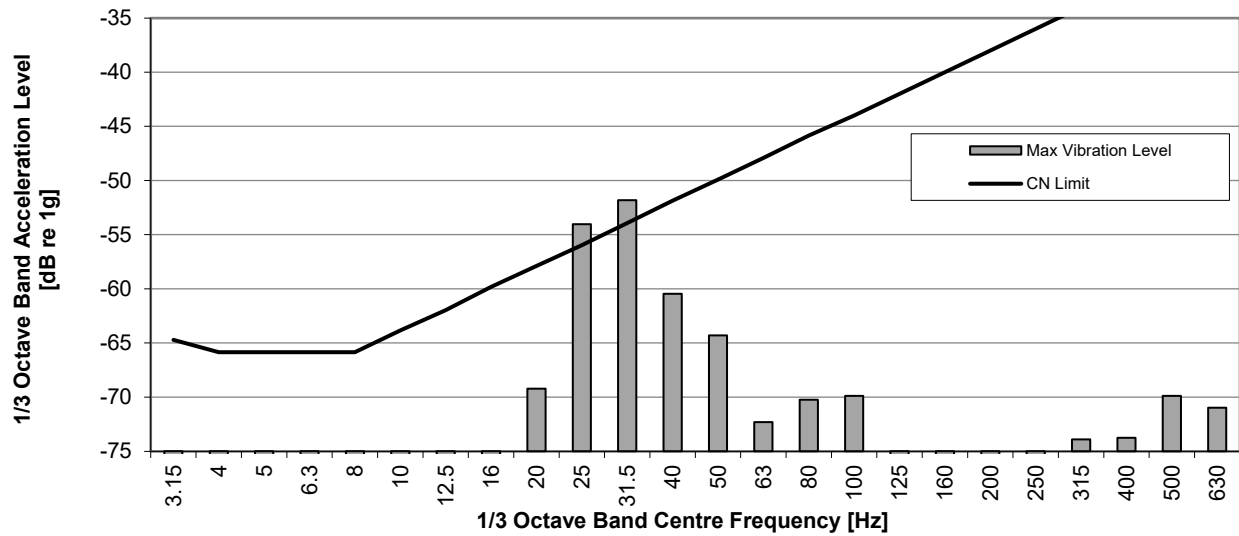
**Pass-by 5 at M3
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



**Pass-by 6 at 45 m from ROW at M3
Measured Vibratory Velocity Level**



**Pass-by 6 at M3
Acceleration Spectrum @ Peak Level (1 sec. Duration)**



APPENDIX F

Supporting Drawings



NOISE

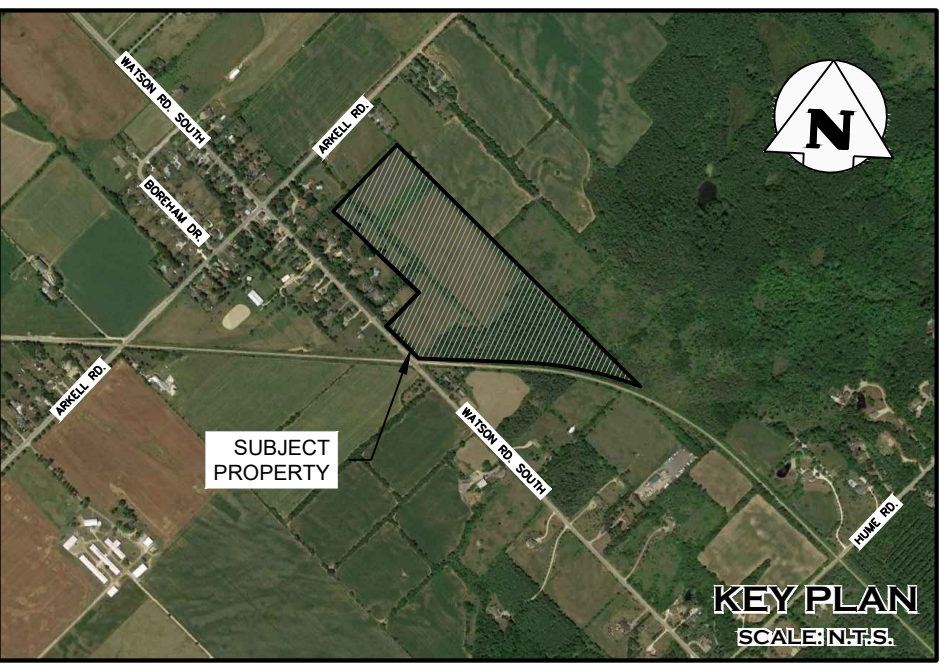
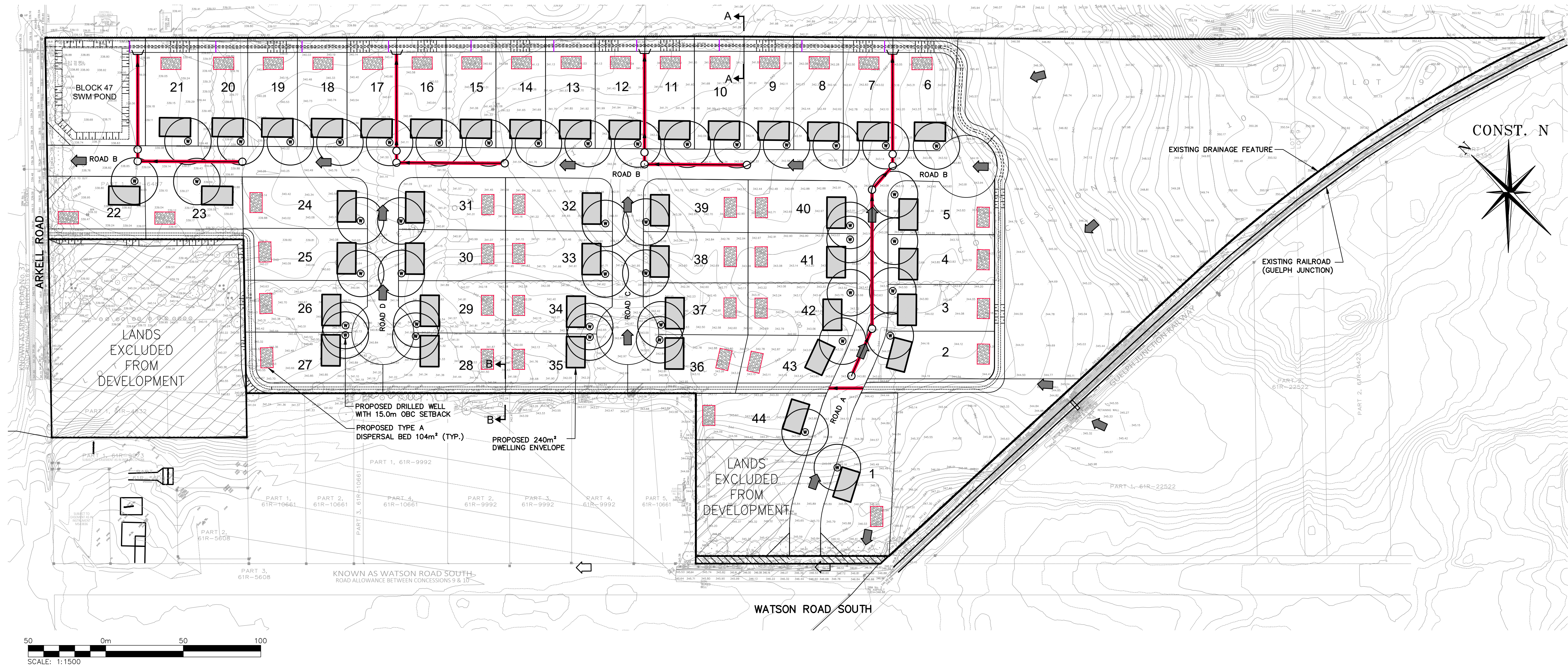


VIBRATION



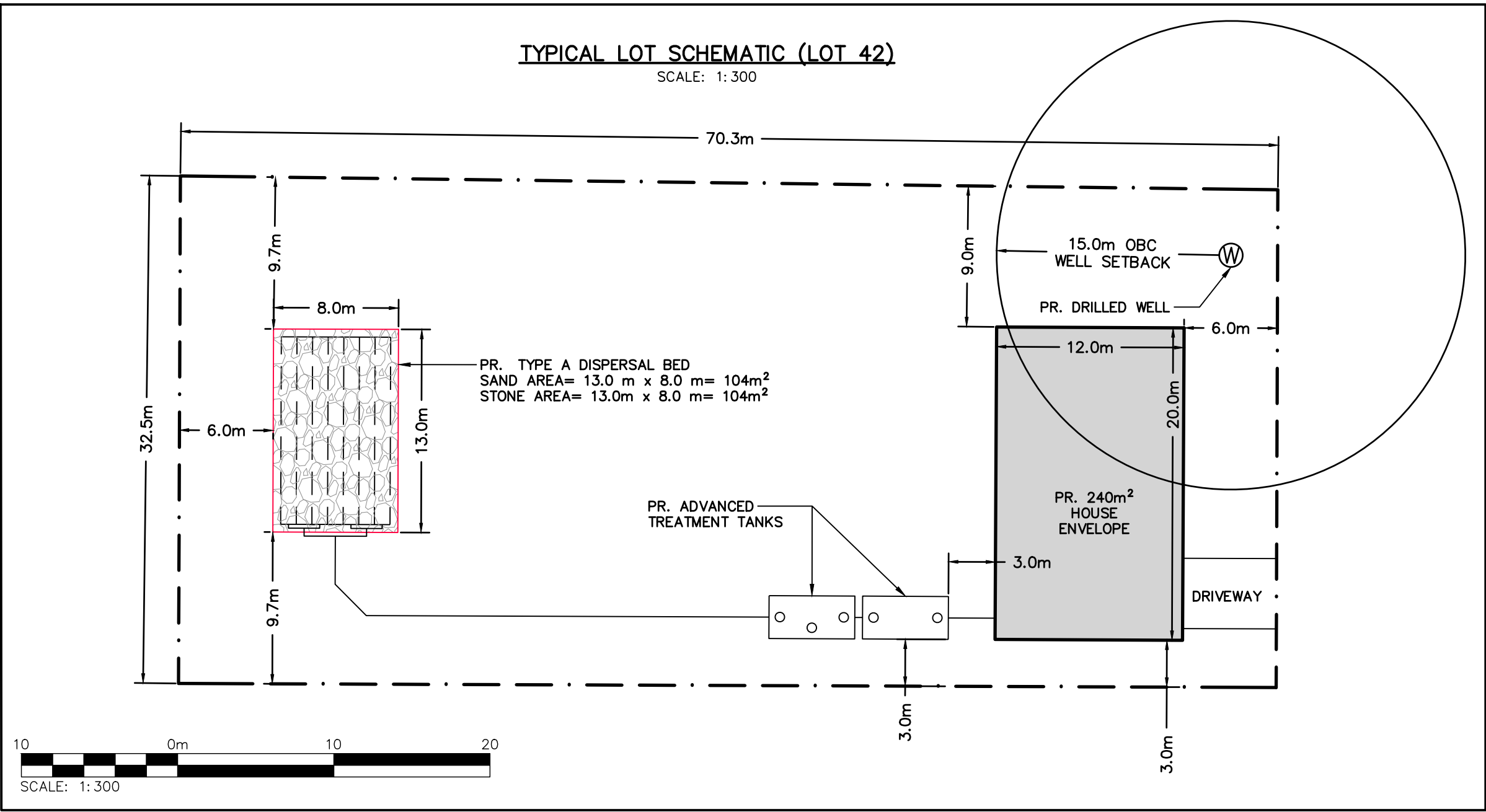
ACOUSTICS

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LEGEND	
	PROPERTY LINE
	EXISTING CONTOUR (0.5m)
	EXISTING CONTOUR (1.0m)
	LOT NUMBER
	EXISTING GRADE
	PROPOSED GRADE
	PROPOSED GRADE (TO MATCH EXISTING)
	PROPOSED SLOPE (3:1 MAX.)
	PROPOSED LOT-LINE
	CONCEPTUAL 240 m ² BUILDING ENVELOPE
	PROPOSED TYPE A DISPERSAL BED 104 m ²
	CONCEPTUAL PROPOSED DRILLED WELL LOCATION C/W 15.0m OBC SETBACK

ONSITE SEWAGE SYSTEM DESIGN TYPICAL LOT NOTES	
PROPOSED 6 BEDROOM, 240 m ² HOME WITH SIXTY-TWO (62) FIXTURE UNITS	BASE FLOW (6 BEDROOMS)= 2,500 L/DAY ADDITIONAL FLOOR AREA (40 m ²)= 400 L/DAY ADDITIONAL FIXTURE UNITS (42)= 2,075 L/DAY Q TOTAL (2,500+2,075)= 4,575 L/DAY
SOIL PERCOLATION RATE	T = 15 min/cm (ESTIMATED BY C.F. CROZIER)
PROPOSED TREATMENT UNIT	WATERLOO BIOFILTER AD-BA50
TYPE A DISPERSAL BED STONE AREA	MINIMUM SIZE=Q/50=4,575/50 = 91.5m ² PROVIDED 13m x 8m = 104m ²
TYPE A DISPERSAL BED SAND AREA	MINIMUM SIZE=QT/850= 4,575*15/850 = 80.7m ² PROVIDED 13m x 8m = 104m ²



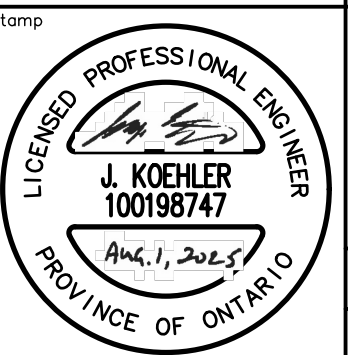
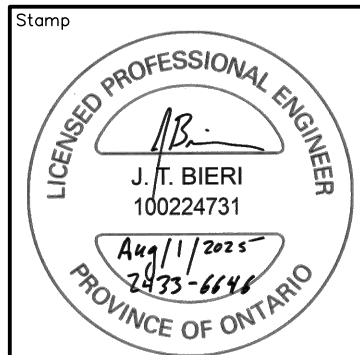
1	ISSUED FOR 2nd DRAFT PLAN SUBMISSION	2025/AUG/01
0	ISSUED FOR PRE-CONSULTATION	2023/AUG/31
No.	ISSUE / REVISION	YYYY/MM/DD

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DESIGN ELEMENTS ARE BASED ON DRAFT SITE PLAN BY STOVEL AND ASSOCIATES INC.
PROJECT No. XXX
DRAWING No. XXX
DATE RECEIVED 2025/JUL/29

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ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

Project
**WATSON ROAD SOUTH
TOWN OF PUSLINCH**

Drawing
ONSITE SEWAGE SERVICING SCHEMATIC



Drawn	J.G.	Design	J.G.	Project No.	2433-6646
Check	J.G.	Check	J.G.	Scale	1:1500
				Dwg.	C102

APPENDIX G Peer Review dated April 21, 2026 and HGC's Responses



NOISE



VIBRATION



ACOUSTICS

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June 1, 2026

**Attn: Rob Stovel
Timberworx Custom Homes Inc.
#201 – 1 Queen Street North,
Kitchener, ON N2H 2G7**

Via Email: stovel.associates@outlook.com

**RE : Responses to Peer Review Comments for Arkell Subdivision, South of Arkell
Road and East of Watson Road South, Puslinch, ON
HGC Project #: 02600117**

Dear Rob,

As requested, please see HGC Noise Vibration Acoustics responses to the Peer Review comments from Valcoustics Canada Ltd. dated April 21, 2025. The comments are presented below, and our responses follow in *italics*.

- a. The study recommends the future dwelling on Lot 1 be at least 45 m from the railway right-of-way to reduce vibration levels. Even at this setback distance, the vibration levels are above the CNR/GJR limit. In addition, the proposed building envelope shown on the Onsite Sewage Servicing Schematic has the setback at less than 45 m. Vibration mitigation to meet the limit is needed.

We recommend an increased setback of 55 m from the railway right of way, to the future dwelling on Lot 1. Figure has been updated to reflect this change and shows the recommended building envelope location, and is attached.

The "conceptual 240 m² building envelope" indicated on the "Onsite Sewage Servicing Schematic" drawing (attached) is preliminary. These are conceptual building envelopes and are not exact. The dwellings are not selected yet and therefore there is an opportunity to reduce the building envelope and dwelling setback to required distances.

- b. The noise study indicates there are existing stationary sources (i.e., small engine repair shop, bicycle store and pet boarding service) in the area. These need to be identified on a Key Plan to confirm there are existing noise sensitive uses that are closer to these than the proposed residential development as stated in the noise report.

Figure 1, the Key Plan, has been updated.

- c. Road traffic information was obtained from the Town of Puslinch and the County of Wellington. The assumptions regarding the traffic information, such as no truck traffic on Watson Road South and the 2035 volumes, should be confirmed by Crozier who authored the Traffic Impact Study on behalf of the developer.

The Traffic Impact Study for the subject site, prepared by Crozier and dated February 2026, has been obtained and reviewed. The traffic study indicates that there is a 2.0% commercial vehicle traffic on both Arkell Road and Watson Road South. The analysis has been updated to include 1.0% medium trucks, and 1.0% heavy trucks for Watson Road South.

The previously adopted commercial vehicle percentage of 1.2% medium truck and 2.5% heavy truck for Arkell Road, based on information previously obtained from the County of Wellington, has been retained as a conservative assumption. Results are presented in the updated report.

The overall recommendations do not change.

- d. The future sound levels at Prediction Location D presented in Table 4 assumes the dwelling is located to the north of the OLA which maximizes the distance from Arkell Road. However, the Onsite Sewage Servicing Schematic shows the dwelling at the southern portion of the lot with the OLA to the north and fully exposed to Arkell Road. An updated assessment for this location is needed.

The "conceptual 240 m² building envelope" indicated on the "Onsite Sewage Servicing Schematic" drawing (attached) is preliminary. These are conceptual building envelopes and are not exact. The dwellings are not selected yet and the building envelope may change.

Figure 2 has been updated to reflect the more conservative location of the OLA adjacent to the roadway. If the OLA is 15 m from the centerline of the roadway, the predicted sound level will be 60 dBA.

As per NPC-300., the OLA should be assessed 3 m from the building façade. In this scenario, the predicted sound level will be less than 55 dBA and physical mitigation is not required.

- e. To calculate the exterior façade sound isolation requirements, the report states that a window to floor ratio of 50% was used. How was a corner room where there could be windows on two façades accounted for? What wall to floor ratio was used?

The note under Table 4 indicates a 100% wall to floor area ratio. The exterior wall of the dwelling at location [A] is required to be brick which will reduce the window requirements compared to a non-brick facade.

Predictions at Lot 1 have been recalculated to include two façades of exposure (prediction location [A]). Window-to-floor area ratios are assumed to be 50% (30% fixed and 20% operable). Minimum STC requirements are shown in Table 4.



Regardless, once detailed floor plans are available, the glazing requirements should be refined and the exterior wall construction verified to be brick.

- f. The noise mitigation summary provided as Table 7 should include the locations where brick veneer or equivalent masonry construction is required for the exterior walls. Review of the recommended locations shown on the first Figure 4 indicate that in addition to the southeast façade, the southwest façade should also be brick veneer or equivalent masonry construction.

The table is reprinted here with the extra column. Figure 3 is attached.

Table 7: Summary of Noise Control Requirements and Noise Warning Clauses

Prediction Location	Lot Numbers	Acoustic Barrier	Ventilation Requirement	Type of Warning Clause	Façades with Brick Veneer or Equivalent Masonry Construction Required	Required Minimum STC for Glazing
[A]	Lot 1	✓	A/C	B, D, GJR	Southwest and Southeast	STC-39
[B]	Lots 2 and 3	--	Provision for A/C	A, C, GJR	Lot 2: Southwest and Southeast Lot 3: Southeast	STC-32
[C]	Lot 4	--	Provision for A/C	A, C, GJR	Southeast	OBC
[D]	Lot 22	--	Provision for A/C	A, C	--	OBC
[E]	Lots 5 to 21, and Lots 23 to 44	--	--	A	Lot 5: Southeast Lot 6: Southeast Lot 44: Southwest	OBC

- g. The minimum window STC for Location A (Lot 1) in Table 7 is indicated as being 37. However, Table 4 recommends 35 for the same location. Clarification is needed.

The table is reproduced here with the change. Again, please note that these STC ratings are likely to be changed after a review of the detailed floor plans and building elevations.





Table 4: Preliminary Glazing Requirements

Prediction Location	Description	^{1,2,3} Minimum STC Requirements for Glazing
[A]	Lot 1 – Southernmost dwelling with exposure to the railway	*STC-39]
[B]	Lot 2 – Southern dwelling with exposure to the railway	STC-32
	Remaining dwellings	OBC

Note:

¹ Assumed window to floor area ratios of 50% for living/dining rooms and bedrooms; and assumed 100% wall to floor area ratio.

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.

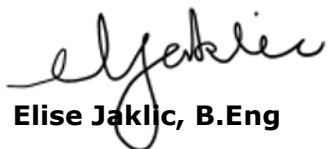
³ When detailed floor plans and building elevations are available, the drawings should be reviewed to confirm exterior façade constructions and refine window glazing requirements based on actual window to floor area ratio.

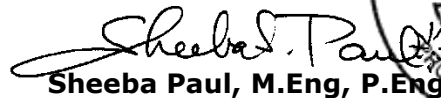
* Sound entering through windows and brick veneer or a masonry equivalent construction facades
OBC – Ontario Building Code

Due to the preliminary feasibility nature of the noise report, it is recommended that once the grading information including actual building envelopes are available, the acoustic requirements should be refined along with a review of the detailed floor plans and building elevations to refine the glazing constructions based on actual window to floor area ratios and verify the exterior wall to be brick for the required dwellings.

All other recommendations included in our previous report remain applicable. We trust the above is sufficient for your current purposes. If we can be of further assistance, please let us know.

**Best Regards,
Howe Gastmeier Chapnik Limited**


Elise Jaklic, B.Eng


Sheeba Paul, M.Eng, P.Eng



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NOISE



VIBRATION



ACOUSTICS

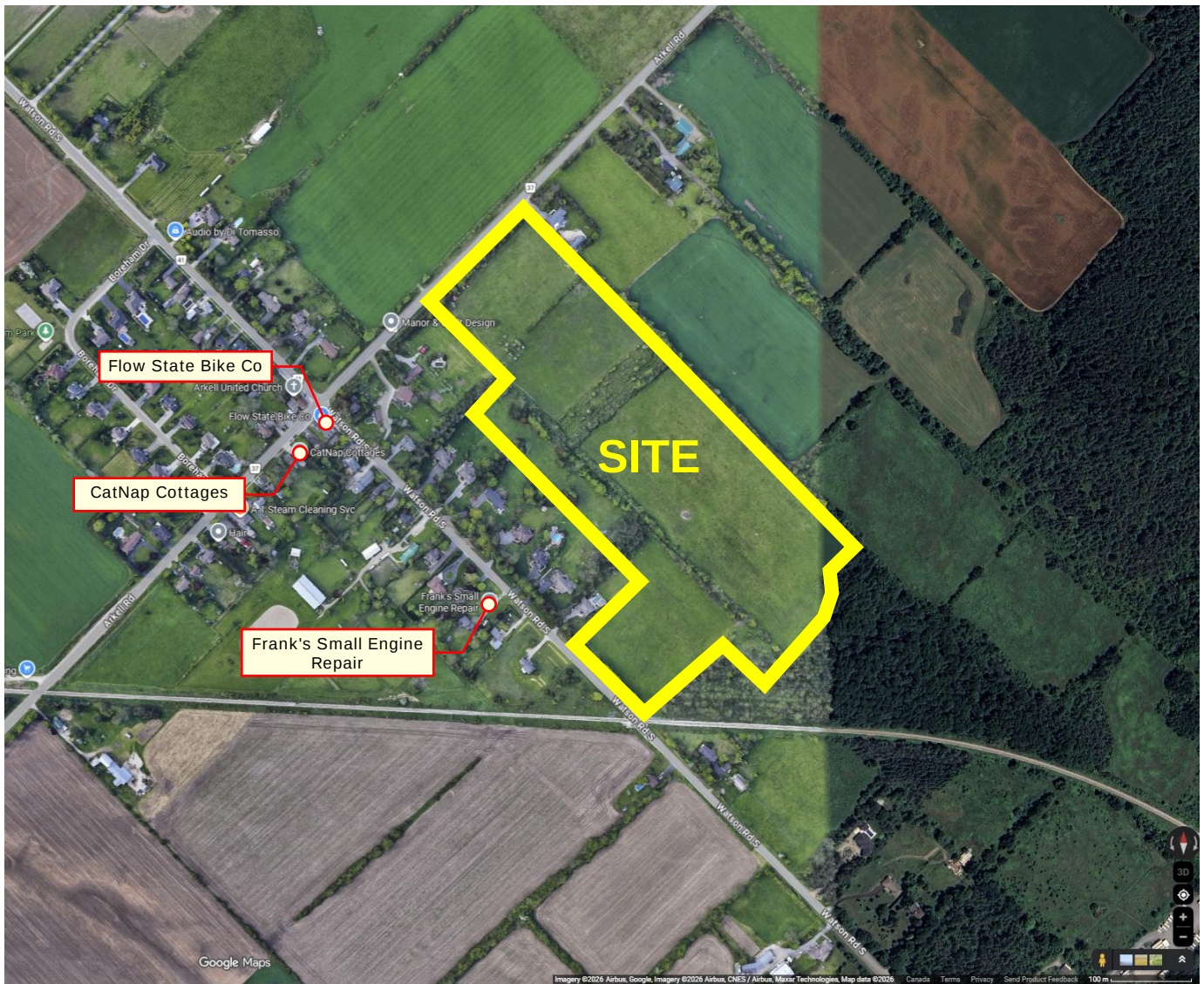


Figure 1: Key Plan

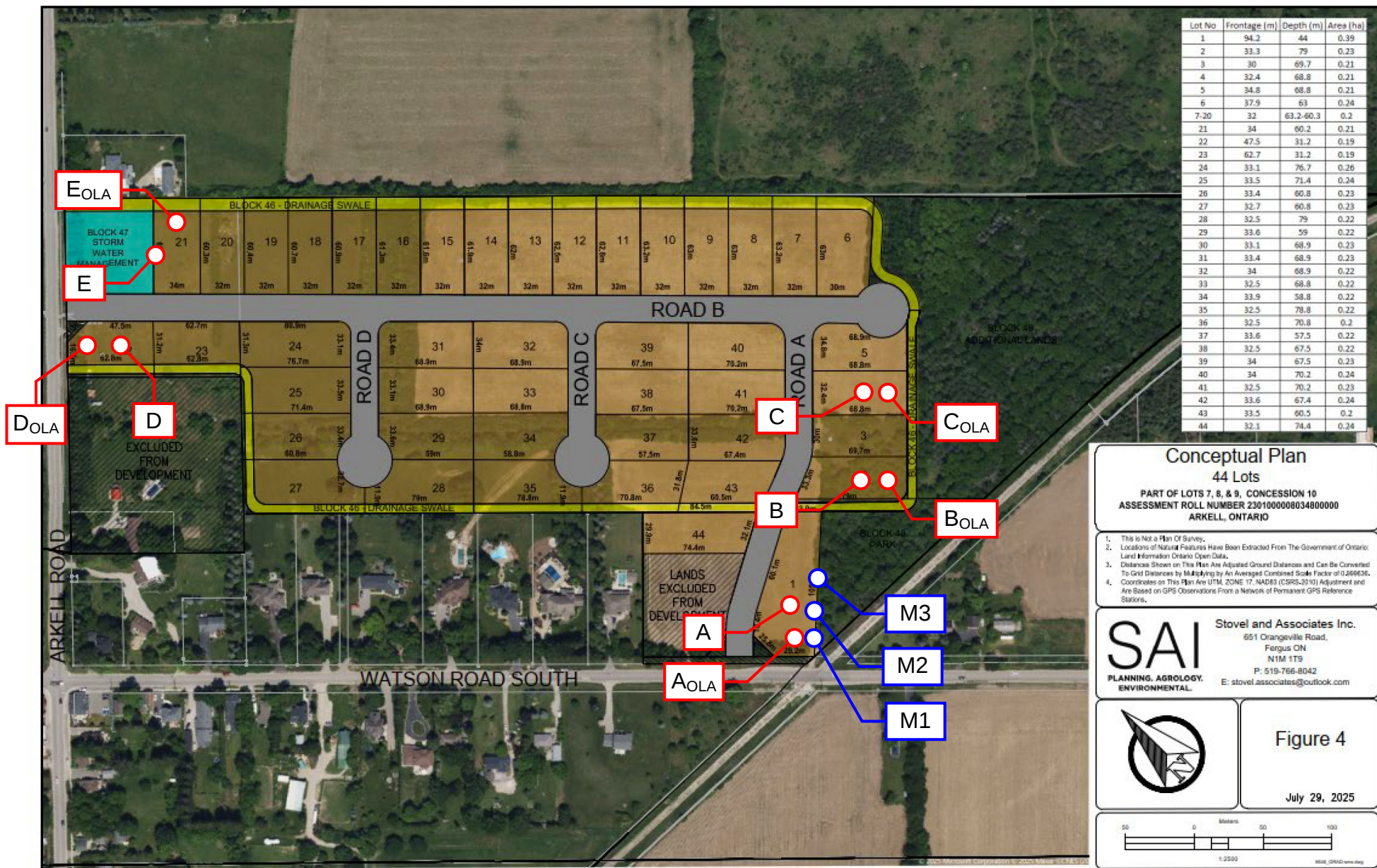


Figure 2: Proposed Concept Plan Showing Prediction Locations

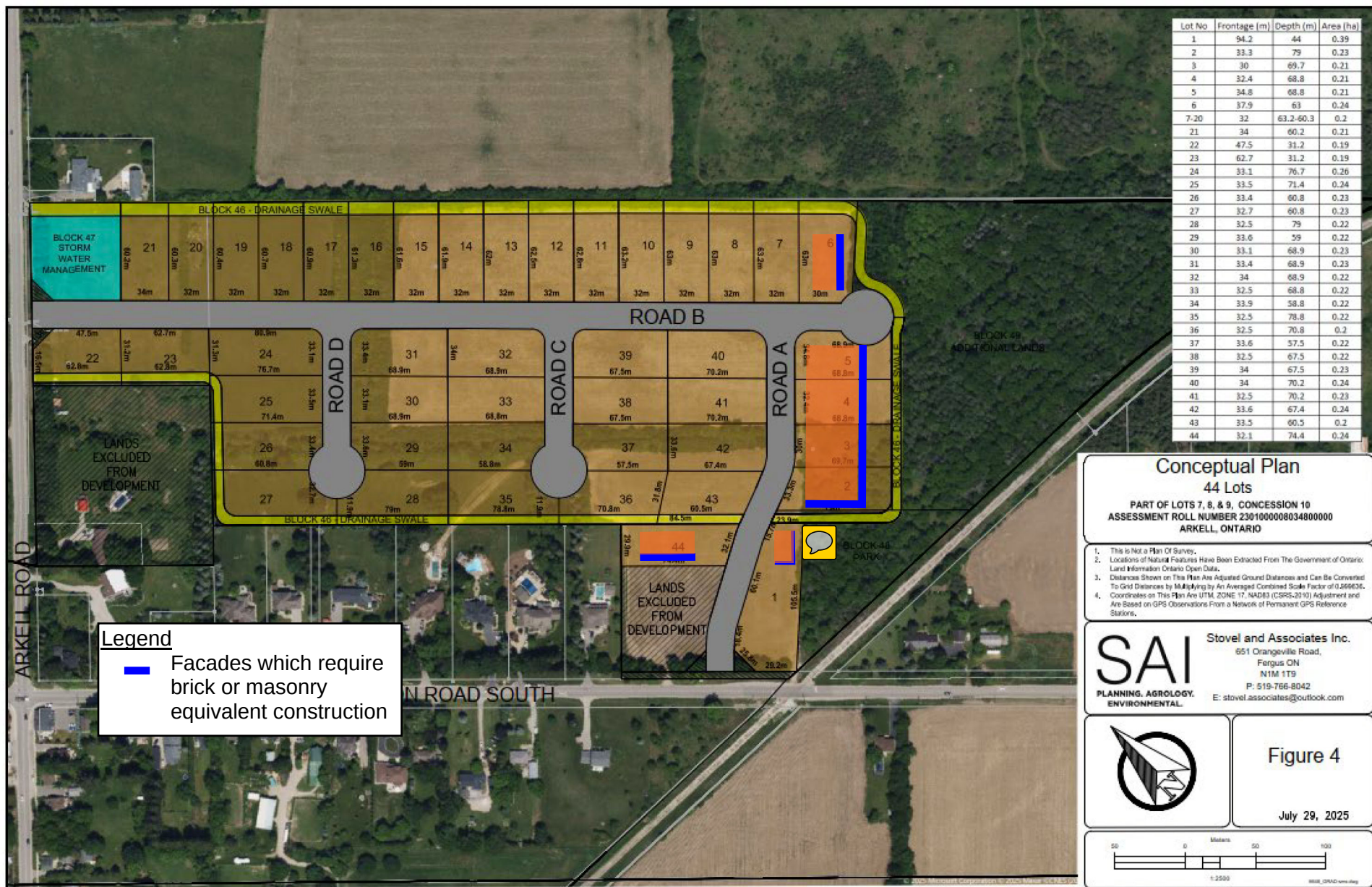
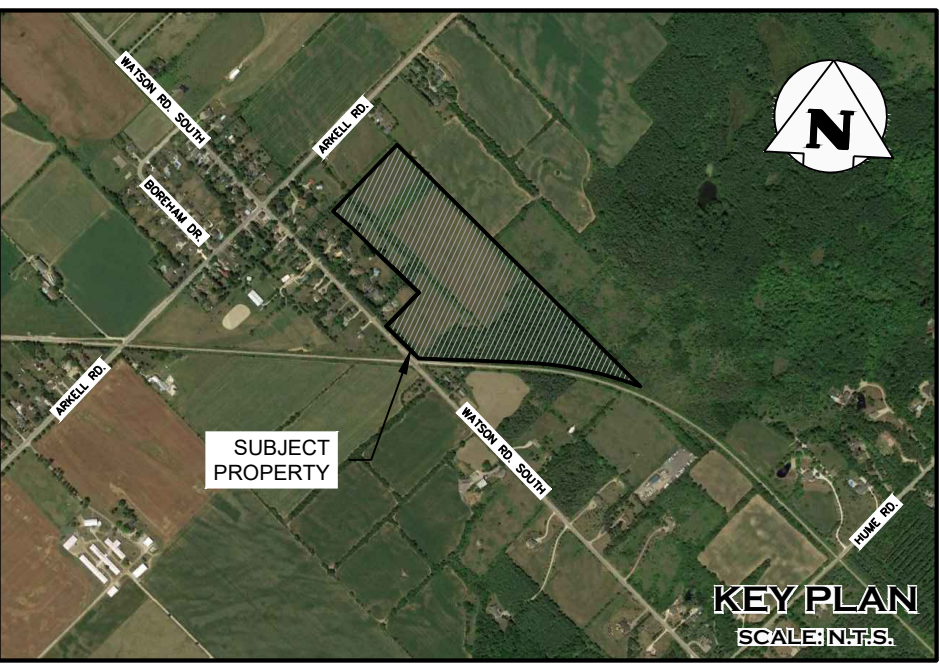
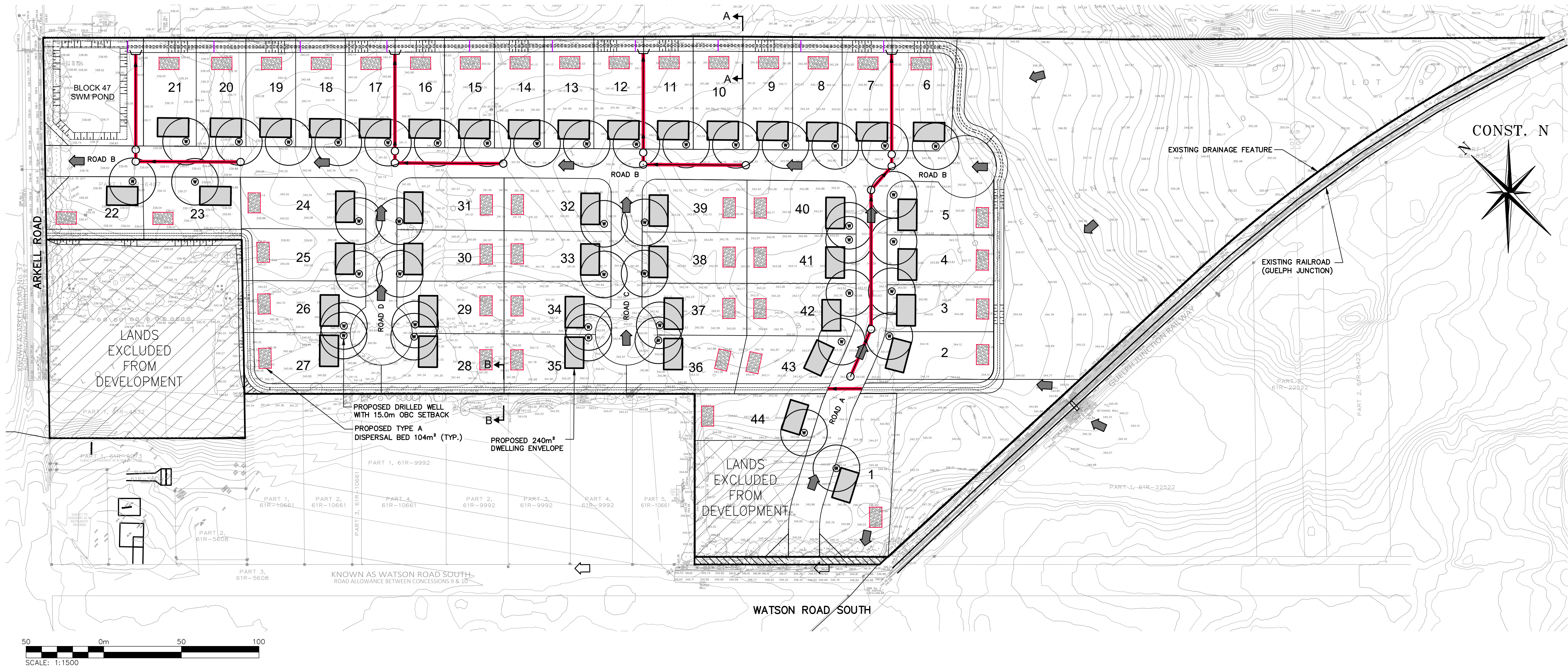
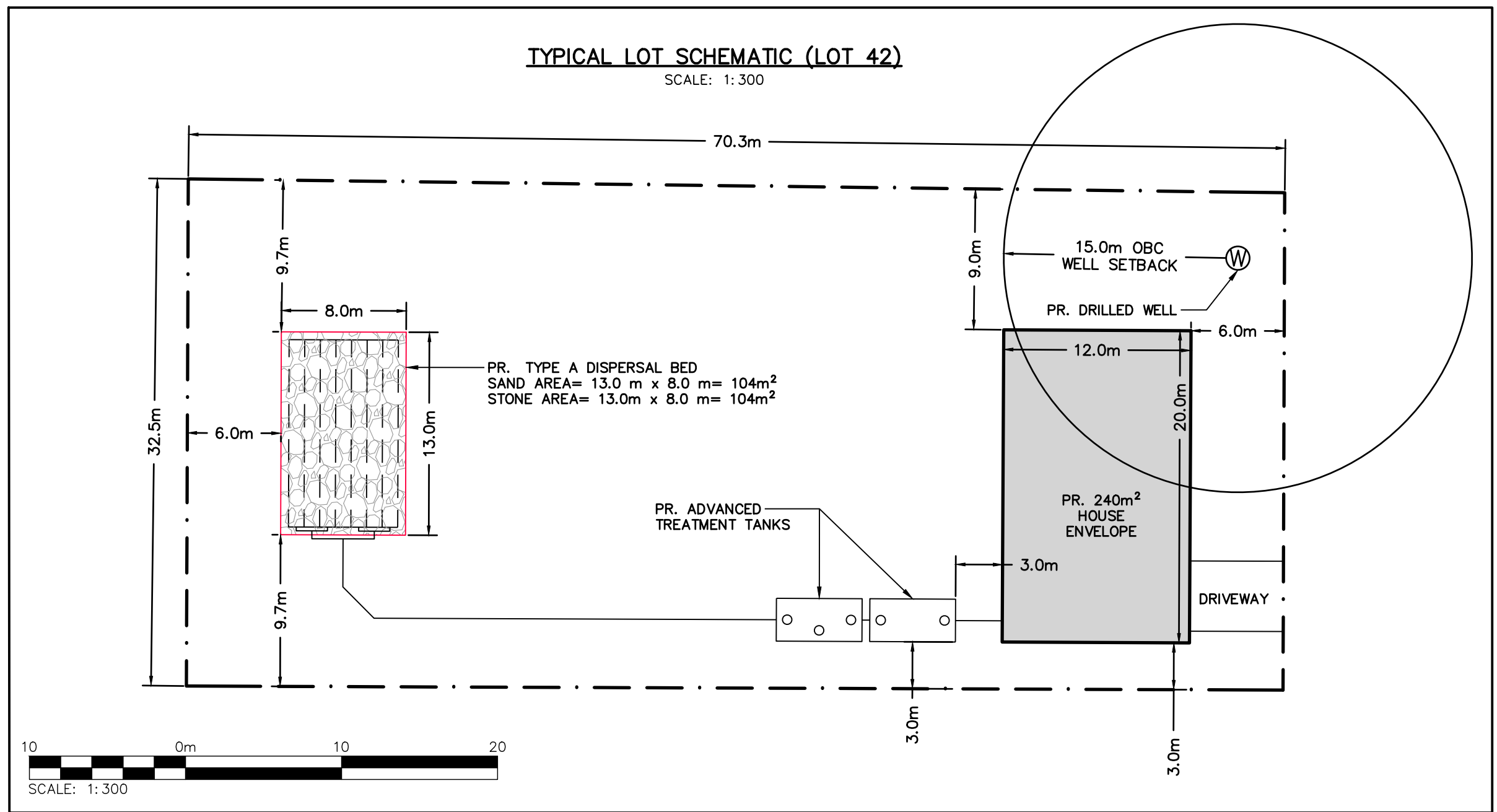


Figure 3: Proposed Concept Plan Showing Ventilation and Acoustic Barrier Requirements



LEGEND	
	PROPERTY LINE
	EXISTING CONTOUR (0.5m)
	EXISTING CONTOUR (1.0m)
	LOT NUMBER
	EXISTING GRADE
	PROPOSED GRADE
	PROPOSED GRADE (TO MATCH EXISTING)
	PROPOSED SLOPE (3:1 MAX.)
	PROPOSED LOT-LINE
	CONCEPTUAL 240 m² BUILDING ENVELOPE
	PROPOSED TYPE A DISPERSAL BED 104 m²
	CONCEPTUAL PROPOSED DRILLED WELL LOCATION C/W 15.0m OBC SETBACK

ONSITE SEWAGE SYSTEM DESIGN TYPICAL LOT NOTES	
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SOIL PERCOLATION RATE	T = 15 min/cm (ESTIMATED BY C.F. CROZIER)
PROPOSED TREATMENT UNIT	WATERLOO BIOFILTER AD-BA50
TYPE A DISPERSAL BED STONE AREA	MINIMUM SIZE=Q/50=4,575/50 = 91.5m² PROVIDED 13m x 8m = 104m²
TYPE A DISPERSAL BED SAND AREA	MINIMUM SIZE=QT/850= 4,575*15/850 = 80.7m² PROVIDED 13m x 8m = 104m²



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0	ISSUED FOR PRE-CONSULTATION	2023/AUG/31

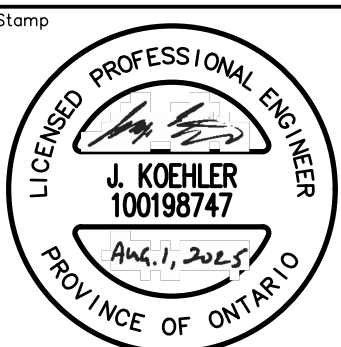
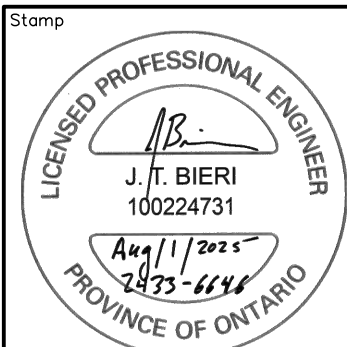
No.	ISSUE / REVISION	YYYY/MM/DD
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**WATSON ROAD SOUTH
TOWN OF PUSLINCH**

Drawing
ONSITE SEWAGE SERVICING SCHEMATIC



Drawn	J.G.	Design	J.G.	Project No.	2433-6646
Check	J.G.	Check	J.G.	Scale	1:1500
				Dwg.	C102