

consulting engineers

re: Excavation Protection Plan for Foundations
Proposed Multi-Use Development – 1131-1151 Teron Road – Kanata
to: Westview Projects – Ms. Jessica Earle – jearle@westviewprojects.com
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file: PG6246-MEMO.01

Further to your request, Paterson Group (Paterson) has prepared a protection plan for the foundations of the neighbouring buildings to the aforementioned site during excavation activities.

Proposed Development

Based on the available information, it is understood that the proposed development will consist of two multi-storey mix-use buildings sharing one underground level. These buildings are to be located within the southern portion of the site. The easternmost building will consist of 3 floors above ground and the other building will consist of nine floors. It is further understood that the proposed development will include associated at grade car parking areas, access lanes and landscaped areas. It is anticipated that the site will be municipally serviced. It is expected that the existing dwelling situated on site will be demolished as part of this project.

Protection Plan for Foundations

Paterson Group has reviewed the risks associated with the proposed development and the impact it will have on neighbouring properties. The risk can be broken down into three components: Risk due to undermining the foundation, risk due to dewatering of the site, and risk due to vibration and construction activities.

Upon reviewing the proposed foundation plans in addition to the proximity of the neighbouring buildings to the subject site, a risk of undermining the existing foundations is low. While there is sufficient room between the edge of the shoring and the existing buildings, the shoring system should be designed to adequately support the existing low-rise buildings along the east and south side of the site.

Second, a risk due to dewatering occurs when the existing buildings are founded on shallow foundations that are located on a silty clay deposit. Based on the geotechnical investigation performed for this development (Paterson Report PG5283-1 Revision 3 dated December 20, 2021), it was determined that the existing low-rise buildings are probably founded on the stiff silty clay crust.

Based on observations, the long term groundwater level for this site is anticipated at depths below 3 to 4 m. A local groundwater lowering is anticipated under short-term conditions due to construction of the proposed building. However, the extent of any significant groundwater lowering should occur within a limited range of the subject site due to the minimal temporary groundwater lowering. The neighbouring structures are expected to be founded within the brown silty clay crust bearing surface. No issues are expected, with respect to groundwater lowering, that would cause long term damage to adjacent structures surrounding the proposed building.

The third risk to neighbouring foundations is damage due to vibrations caused by excessive vibrations from piling and shoring activities. There are two primary methods to reduce the risk to damaging neighbouring foundation: completing a pre-construction survey and installing vibration monitors.

1. Pre-Construction Survey

A pre-construction survey program will be completed prior to the start of shoring activities. The pre-construction program will work to protect the property owners from damage incurred from construction and the developer from erroneous claims.

Letters of invitation will be delivered to the immediate neighbouring homes on Bethune and Gingras Court (please see attached **Figure 1**). Homeowners will be given the opportunity to have the interior ground level and basement level of their homes documented prior to work. Homeowners must contact Paterson if they would like the survey completed. Paterson will not enter yards or properties without the consent of the homeowner.

During the survey, Paterson will utilize a combination of photographs and notes to document the conditions. Photos will be taken of any previous damage, settling, stains, structural abnormalities and/or repairs noted by Paterson personnel. Please note, the pre-construction survey only covers what is made available to Paterson personnel (i.e. we will not move the homeowner's furniture and/or belongings).

Once the survey is completed, Paterson will retain the photographs and notes for future comparison. Should a homeowner believe damage has occurred at their home, we ask they contact Paterson Group to report the damage. Paterson Group will review the proposed damage and the pre-construction photographs then provide remediation options and alternatives to mitigate further damage.

2. Vibration Monitoring and Vibration Limits

A vibration monitoring program will be in place during shoring activities. The vibration monitoring program will utilize InstanTel Micromate or InstanTel Minimate Seismographs with tri-axial geophones. The monitors are capable of measuring vibration intensities up to 254 mm/s at a frequency response of 2 to 250 Hz which ensures all vibrations, construction induced or otherwise, are recorded for review. The monitors will be connected to modem which will allow for the review of real-time results. All Paterson monitors are calibrated yearly by the manufacturer. Trigger levels for the monitors will be set to a conservative 2 mm/s to ensure all vibrations related to construction are recorded.

Two monitors total will be installed for this development. It is anticipated that they will be installed in the rear or side yard of a home on Bethune Court and on Gingras Court. The exact monitor locations will be dependent on the response to the pre-construction, the permission of the homeowner, and Paterson's recommendation for the monitor locations to provide the best coverage of the neighbouring homes. See **Figure 1** for the proposed locations.

Additional consideration must be given to the type of work being performed when assessing the vibrational limits for a project. For this project, it is recommended that the standard USBM R18507 and OSMRE be utilized, which is an industry standard that limits structural damage to neighbouring properties due to excessive vibrations. Please see the attached **Figure 2** outlining the standard USBM R18507 and OSMRE vibrational limits. Unfortunately for humans and pets, annoyance and perception levels for vibrations are significantly lower than the limits which we use to protect buildings. It is important to note some homeowners may become frustrated at this proximity to the project. Communication about the piling timeline and overall construction activities is often the key to assuaging any concerns.

We trust that this information satisfies your immediate request.

Best Regards,

Paterson Group Inc.



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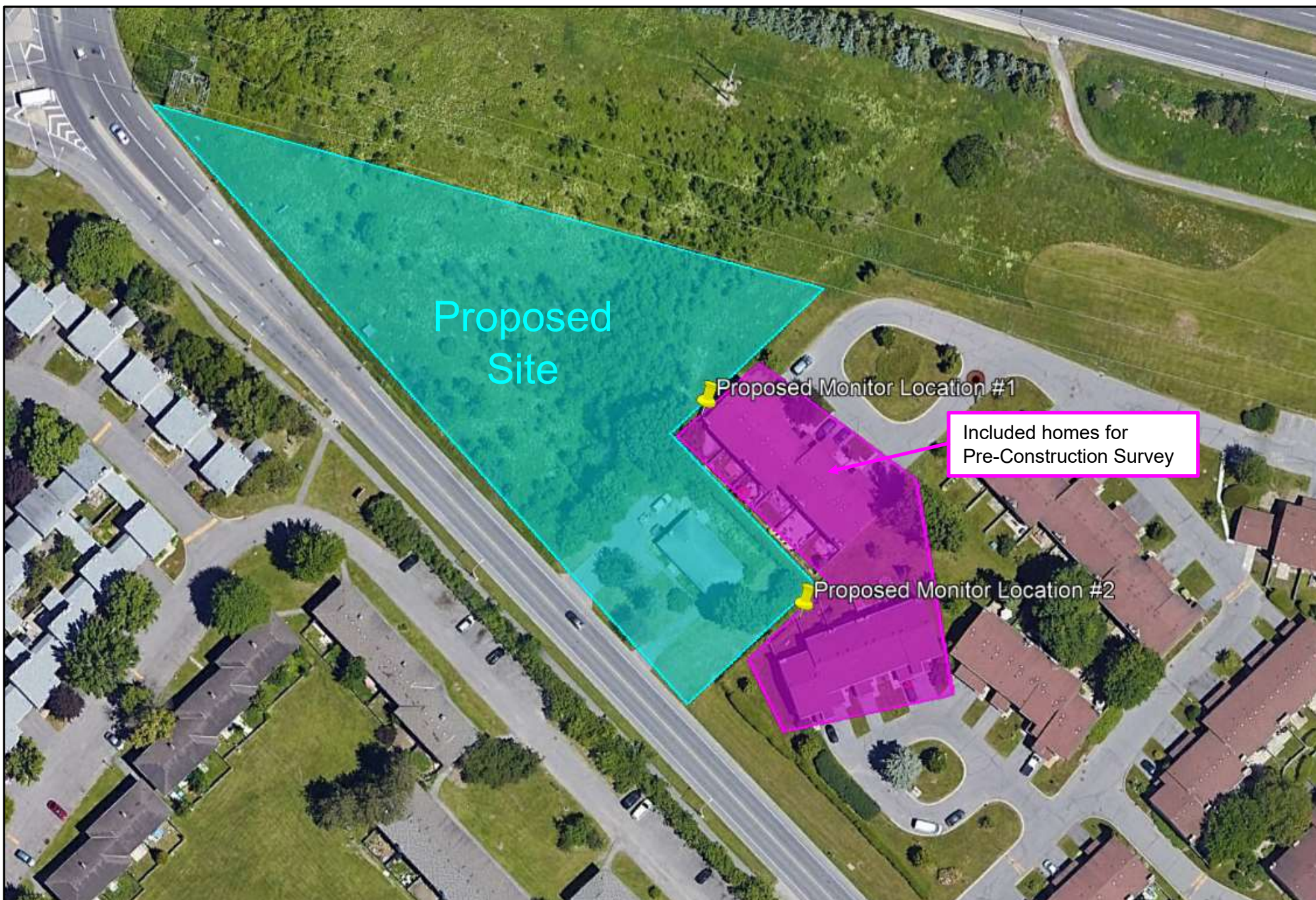


Figure 1 – Westview Projects – 1131-1151 Teron Road (PG6246)

USBM RI8507 And OSMRE

Velocity versus Frequency (Zero Crossing)

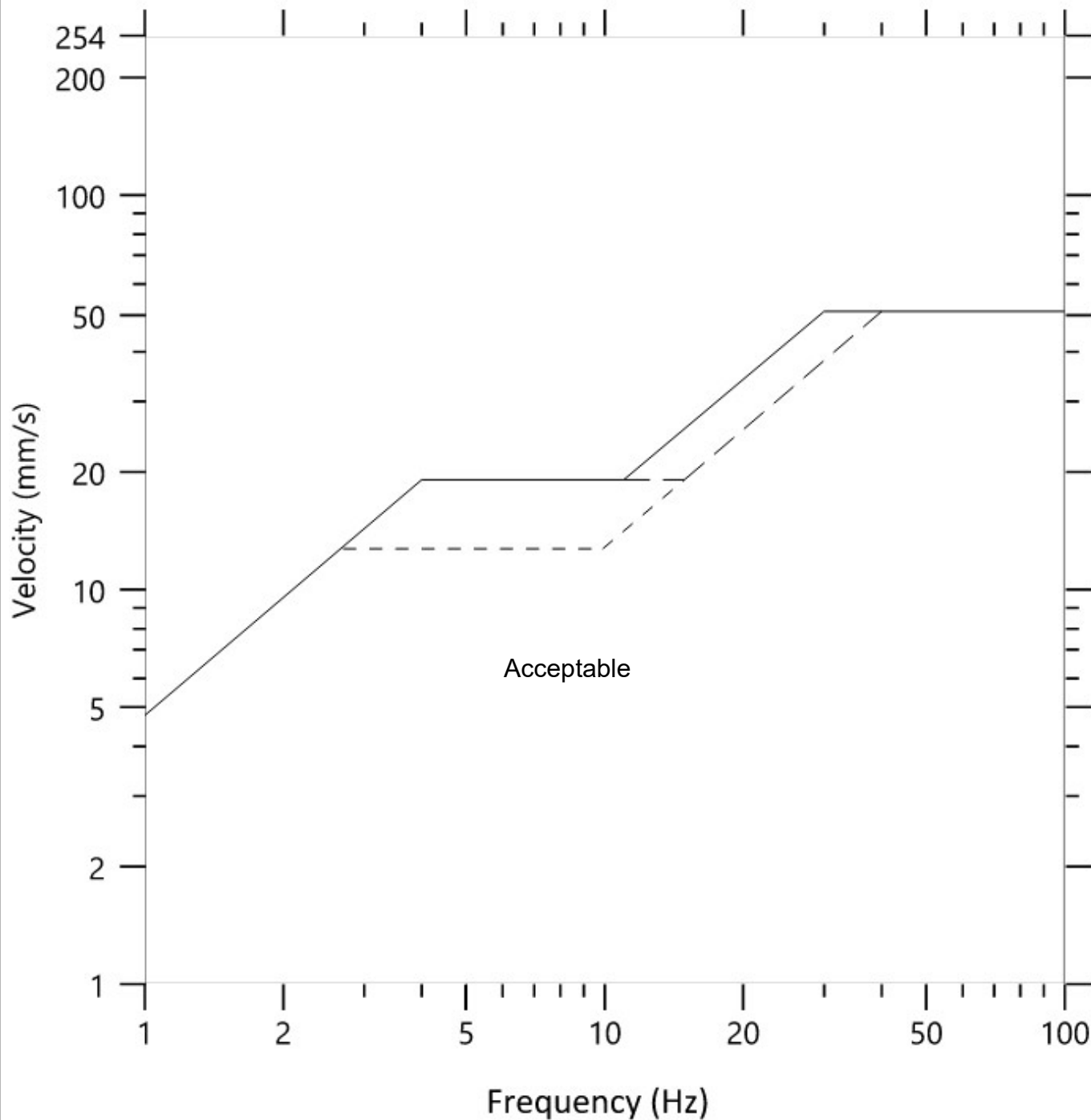


Figure 2 – Recommended Vibration Limits (PG62646)