Addendum to Heritage Impact Assessment for 1385 Bleams Road

Lot 5, Registrar's Compiled Plan 1469, Hiestand Tract
in the City of Kitchener, ON

CHC Limited
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August 22, 2024

Addendum to Heritage Impact Assessment
1385 Bleams Road, Kitchener, ON

cover: Williamsburg, from the 1881 Atlas of Waterloo County

1.0 BACKGROUND - ADDENDUM to HERITAGE IMPACT ASSESSMENT (HIA)

A Cultural Heritage Impact Assessment (HIA)[1] for 1385 Bleams Road was prepared and submitted June 8, 2023 and approved. A change in the planned site development of the severed portion of the lot has prompted this addendum to the HIA. This addendum should be read in conjunction with that HIA. The property is designated under the *Ontario Heritage Act* under City of Kitchener By-law 87-309.

The heritage attributes of the property are:

- 1864 stone schoolhouse and 1874 brick addition:
  - rubble stone facades of the 1864 schoolhouse,
  - gable roofs of the 1864 stone schoolhouse and 1874 brick addition,
  - 9/6 double hung sash windows of the 1864 stone schoolhouse and 1874 brick addition,
  - 6-pane transom over back door of the stone schoolhouse,
  - belfry.
- board and batten wood shed in rear yard:
  - board and batten siding,
  - gothic window in upper east facade,
  - gable roof.

[1] *Heritage Impact Assessment, 1385 Bleams Road, Kitchener, ON*, CHC Limited, June 8, 2003

2.0 ADDENDUM to HERITAGE IMPACT ASSESSMENT

2.1 Proposed development and impacts

The heritage resources on the subject property are located near the middle of the property, with the eastern and western portions being open lawn and the original playgrounds for the school (Figure 1).

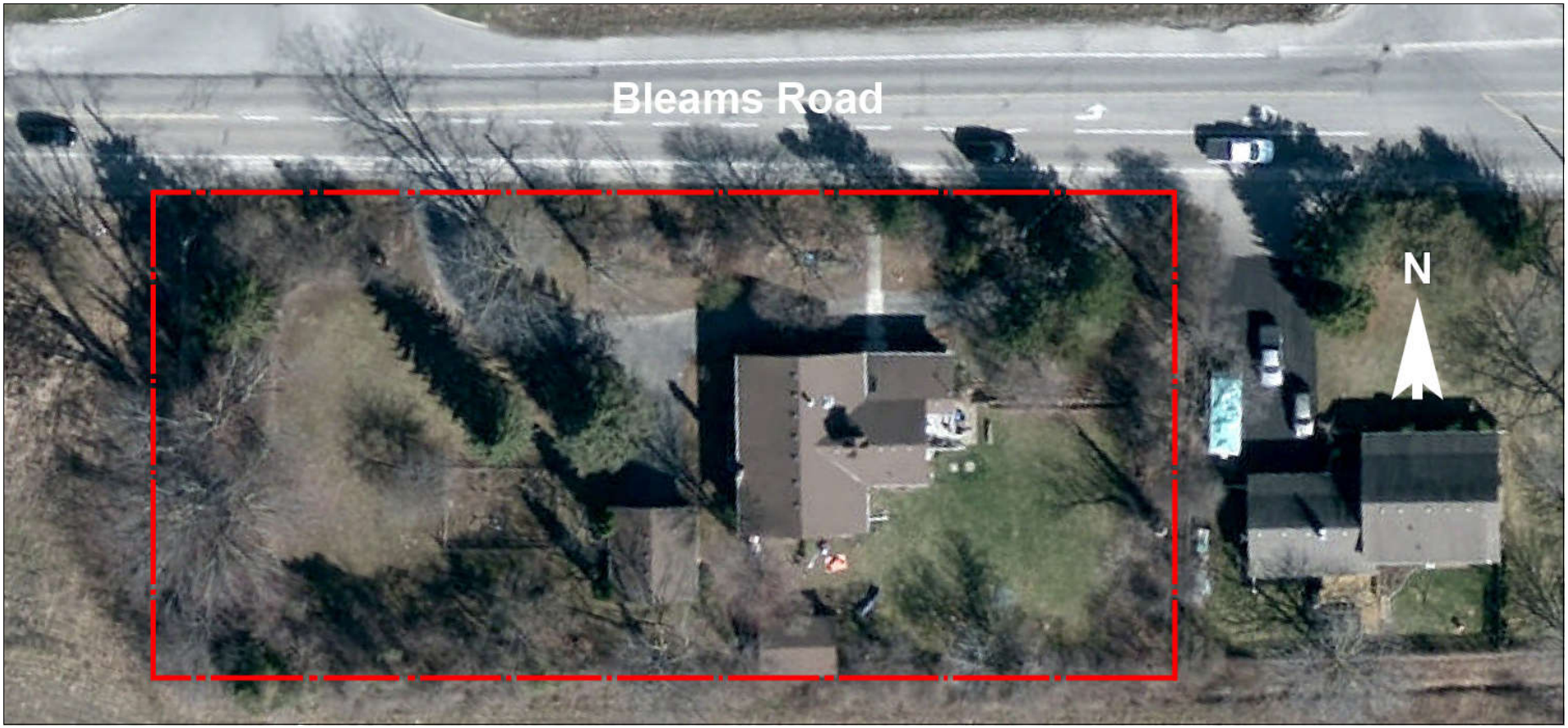

Figure 1 1385 Bleams Road - *GRCA mapping*

The western open lawn portion was proposed to be redeveloped with eight, three-storey townhomes in the June 2023 HIA. The change in plans now proposes to develop that western open lawn portion as shown on the site plan in Figure 2. The proposed 3-storey stacked townhouse unit is set near the street with parking behind the building accessed by a driveway on the east. The building is approximately 30 metres from the westerly facade of the former schoolhouse.

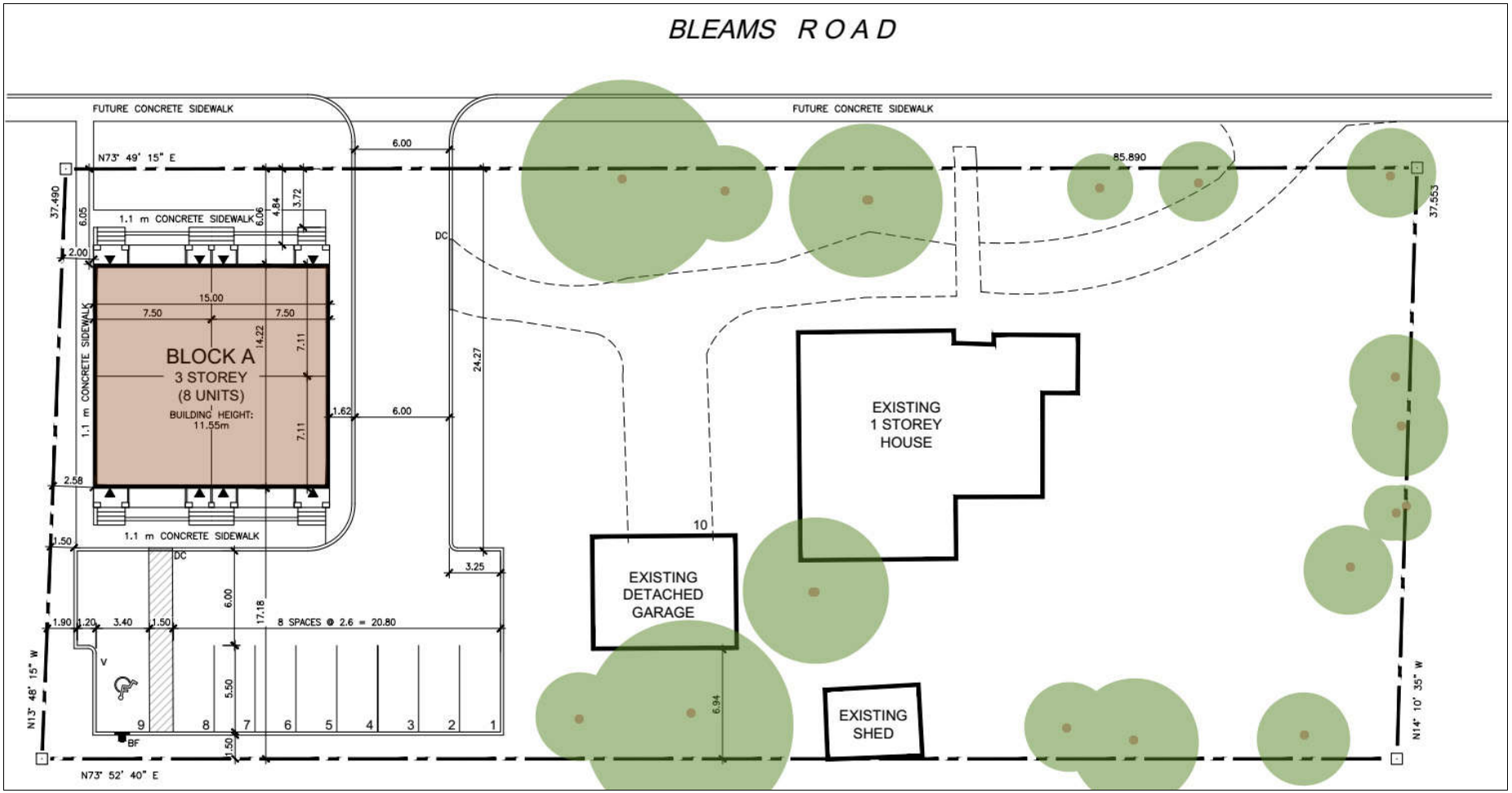

Figure 2 site plan - *Orchard Design*, August 14, 2024

There are no consistent setbacks from Bleams Road on the south side near the subject property, as open space fronts Bleams Road to the west, and there is one lot to the east before Fischer-Hallman Road that currently contains a residence which is setback at a greater distance than either the former schoolhouse or the proposed stacked townhomes. That property to the east is slated for redevelopment in the future. The lands to the south of the property are zoned open space, leaving the proposed development and the heritage resources bounded on two sides by open space.

Public views of the schoolhouse are not impeded. The former schoolhouse is in complete public view from the street (Figure 2). The facades of the stacked townhouse unit are illustrated in Figures 3 - 6.

Figure 3 front elevation - *Orchard Design*, June 24, 2024

Figure 4 rear elevation - *Orchard Design*, June 24, 2024

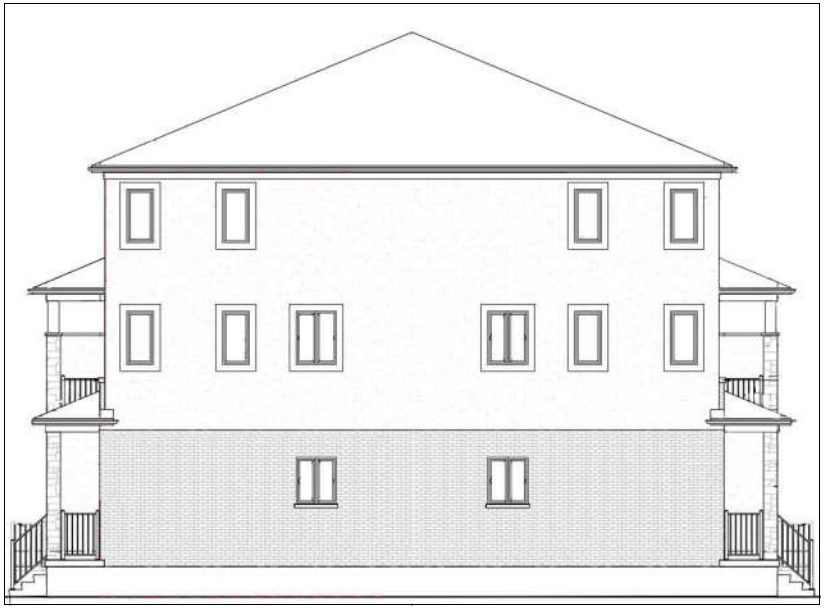

Figure 5 west side elevation - *Orchard Design*, August 20, 2024

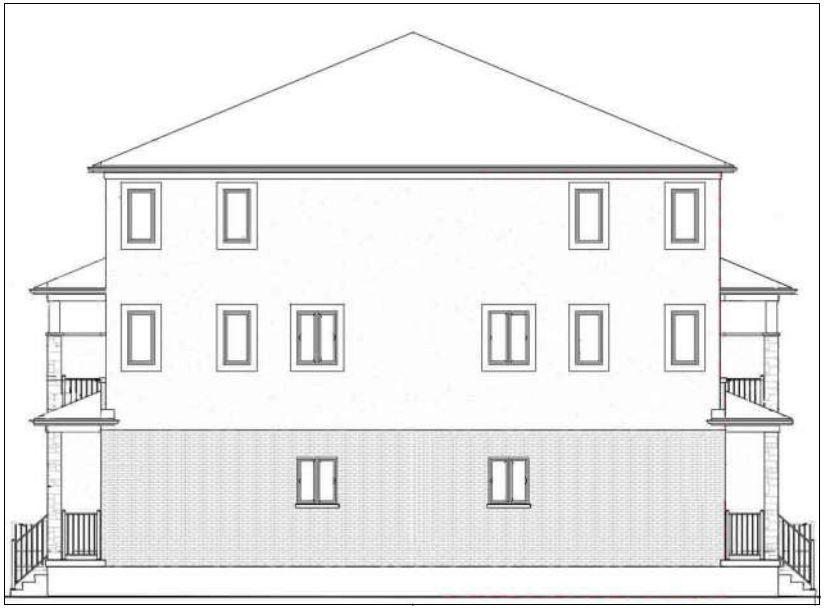

Figure 6 ast side elevation - *Orchard Design*, August 20, 2024

The following assessment of potential impacts the proposed amended redevelopment or site alteration may have on the cultural heritage resource is based on the possible negative impacts as stated in the *Ontario Heritage Tool Kit.*[2]

Potential Negative Impact	*Assessment*
Destruction of any, or part of any, significant heritage attributes or features	No significant heritage attribute, nor any part thereof is to be destroyed.
Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance	No alterations to the buildings are proposed. The development is proposed on lands that are currently vacant of buildings.
Shadows created that alter the appearance of a heritage attribute or change the viability of an associated natural feature or plantings, such as a garden	Shadows created do not alter the appearance of any heritage attributes, nor change the viability of any plantings. The proposed building is some 30 metres from the former schoolhouse.
Isolation of a heritage attribute from its surrounding environment, context or a significant relationship	Heritage attributes are not isolated from their environment by this proposal.
Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features	The former schoolhouse is totally exposed to public view from the street and has open space to the east, west and rear.
A change in land use (such as rezoning a church to a multi-unit residence) where the change in use negates the property's cultural heritage value	There is no change in land use.
Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect a cultural heritage resource, including archaeological resources	There is no land disturbance to the area of the property that contains the heritage resources. Drainage patterns are not altered.

[2] *PPS, 2005*, Info Sheet No. 5 Cultural Heritage and Archaeology Policies 2.6, p. 3. (*Heritage Tool Kit*)

2.2 Options and Mitigating Measures

Comments provided in the Pre-submission Consultation[3] regarding the form of development included:

1. Building height should generally be a minimum of three stories per the Medium Density 1 designation policies, although the HIA will be key in that regard.
3. The proposed density may be too low. Whereas the proposed density is 3-4.5 uph, the density contemplated in the secondary plan is 26-100 uph. While the density range is not necessarily required to be achieved on every site, the proposal should explore opportunities for additional density while responding appropriately to the heritage resource on site.

The proposal provides the minimum three stories and proposes a lower density than that contemplated in the secondary plan to accommodate the heritage resource. With that in mind, options for the development of the property included the positioning of the stacked townhomes to both protect views of the heritage resource and provide access and parking for the units. Because the proposed solution does nothing to impair public views, utilizes the existing and historic access points from Bleams Road, and provides private open space with unimpeded views of the proposed adjacent parkland, it was deemed to be an appropriate solution.

The architecture of the proposed stacked townhouses is contemporary and in keeping with that of the neighbouring residential architecture. It does not overwhelm the adjacent heritage resource, mainly as a result of its location on the lot, being set back some 30 metres from the west wall of the former schoolhouse (Figure 2).

Mitigating measures to ensure conservation of the heritage attributes of the heritage resource include securely fencing the area of new construction to prohibit the placement of construction materials and equipment within the heritage resource block. A vibration monitoring assessment had been recommended as part of the Heritage Protection Plan for this property (CHC Limited, May 30, 2023). An assessment was conducted by OZA Inspections Ltd. (Appendix 1) which specified monitoring requirements and associated vibration controls as necessary towards the preservation of the subject property, based on the current site plan. The assessment concluded that "based on modelling, work will not encroach within the minimum setback distances required for vibration pertaining to heritage structures on the subject property. Therefore, specific vibration controls are not required. Initial testing of vibration levels from key construction operations will help ensure safe management and subsequent protection of the nearby heritage buildings"[4].

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[3] Record of Consultation, Development Services - Planning, Pre-Submission Consultation Meeting: February 10, 2022

[4] Preliminary Construction Vibration Assessment, 1385 Bleams Road, Proposed Stacked Townhouse Block, City of Kitchener, OZA Inspections Ltd., August 20 2024, p 5

2.3 Heritage Conservation Principles

None of the 14 standards (conservation principles) of the *Standards and Guidelines for the Conservation of Historic Places in Canada* (Parks Canada) is applicable to this project as the heritage resource is not being altered in any way by the development proposal. It will remain as is.

Similarly none of the *Eight Guiding Principles in the Conservation of Built Heritage Properties* (Ontario Ministry of Heritage, Sport, Tourism and Culture Industries) is applicable.

2.4 Summary Statement and Conservation Recommendations

The property at 1385 Bleams Road meets all three *Ontario Heritage Act Regulation 9/06* criteria for significance and is worthy of designation under Part IV of the *Act*. It is protected by heritage designation by-law 87-309 which lacks the statement of cultural heritage value or interest prescribed by the *Act* since 2005 for new designations, although it remains valid. If the City finds merit in updating By-law 87-309 through the amending provisions of the *Act*, it could recognize the heritage attributes observed in this report with the exception of the post and rail fence.* Those heritage attributes are:

- for the 1864 stone schoolhouse and 1874 brick addition
  - rubble stone facades of the 1864 schoolhouse,
  - gable roofs of the 1864 stone schoolhouse and 1874 brick addition,
  - 9/6 double hung sash windows of the 1864 stone schoolhouse and 1874 brick addition,
  - 6-pane transom over back door of the stone schoolhouse,
  - belfry.
- for the board and batten wood shed in rear yard
  - board and batten siding,
  - gothic window in upper east facade,
  - gable roof.

The 1987 stone clad addition should be clearly noted as not being part of the designation.

* Because the post and rail fence will now, as a result of the development and the road widening, be on the Regional right-of-way, and because it cannot be successfully moved as it is in such poor condition, it was recommended that its heritage attribute status be removed in the amended by-law in the approved June 2023 HIA.

There are no expected potential impacts on the property from the development proposal. To facilitate minimum impact on the heritage resources during construction, a 'Heritage Protection Plan'[5] was prepared to consist of protective fencing for the schoolhouse during construction. That Plan requires an addendum to conform to this amended HIA.

In the opinion of the author, there are no negative impacts to the heritage resources on the property with respect to the revised development proposal.

This addendum to the June 2023 Heritage Impact Assessment is respectfully submitted by:

CHC Limited

[redacted]

Owen R. Scott, OALA, FCSLA, CAHP

[5] *Heritage Protection Plan, 1385 Bleams Road, Kitchener, ON*, CHC Limited, May 30, 2023

REFERENCES

Eight Guiding Principles in the Conservation of Built Heritage Properties (Ontario Ministry of Heritage, Sport, Tourism and Culture Industries)

Heritage Impact Assessment, 1385 Bleams Road, Kitchener, ON, CHC Limited, June 8, 2003

Heritage Protection Plan, 1385 Bleams Road, Kitchener, ON, CHC Limited, May 30, 2023

H. Parsell & Co and Walker & Miles, Compiler, *Illustrated Historical Atlas of Waterloo & Wellington Counties Ontario 1881 & 1877*, Richardson, Bond & Wright Ltd., Owen Sound, ON, 1972

Parks Canada, *Standard & Guidelines for the Conservation of Historic Places in Canada*, www.pc.gc.ca 2003

PPS, 2005, Info Sheet No. 5 Cultural Heritage and Archaeology Policies 2.6, p. 3. (*Heritage Tool Kit*)

Record of Consultation, Development Services - Planning, Pre-Submission Consultation Meeting: February 10, 2022

Appendix 1

Preliminary Construction Vibration Assessment, 1385 Bleams Road, Proposed Stacked Townhouse Block, City of Kitchener, OZA Inspections Ltd., August 20, 2024

OZA Inspections Ltd.

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August 20, 2024

[redacted]
1385 Bleams Road
Kitchener, ON N2E 3X7

[redacted]

Re: Preliminary Construction Vibration Assessment
1385 Bleams Road
Proposed Stacked Townhouse Block
City of Kitchener
Our File No. 23355

INTRODUCTION

In accordance with your request and the requirements imposed by the City of Kitchener for site plan approval, OZA Inspections Ltd. has conducted a preliminary vibration assessment with respect to the proposed development and the potential impact of construction vibrations relative to the existing 'Heritage' designated buildings located at 1385 Bleams Road. A vibration monitoring assessment has been recommended as part of the Heritage Protection Plan for this property (CHC Limited, May 30, 2023, Addendum July 18, 2024). This assessment shall specify monitoring requirements and associated vibration controls as necessary towards the preservation of the subject property, based on the current site plan.

Prediction models were developed based on conventional types of machinery used in excavation, grading and servicing. Standard equipment was modeled separately to assess the impact. Predicted vibration levels were compared with thresholds for potential building damage to determine the required safe set-back distances.

Vibration impact shall be controlled through the implementation of recommended mitigation measures and vibration monitoring for key operations.

CONSIDERATIONS

Development of the subject site will include, but not necessarily be limited to: excavation for construction and servicing of the proposed 3-storey, 8-unit stacked townhouse block, excavation for driveway and parking lot construction, and backfilling and compaction associated with these activities. Driveway and parking lot construction west of the existing heritage buildings (former Williamsburg schoolhouse and batten wood shed) shall involve vibratory compaction of granular base and asphalt. The new building is proposed in the west site area.

Based on our review of the Site Plan (Preliminary, Drawing No. A1.01, Orchard Design Studio Inc. Project 15158, updated 2024-08-14), we estimate that the proposed driveway construction is offset by 23± metres from the old schoolhouse building, the proposed new building footprint is offset 30.5± metres. We note that the nearest part of the proposed parking area is offset from the schoolhouse building by 20± metres, the shed structure by 21± metres.

We have anticipated that construction activities for this project as described above will involve the following conventional construction equipment:

- Bulldozers
- Excavators
- Compactors (vibratory drum roller and/or hoe-pac)
- Dump trucks

ASSESSMENT METHODS / DETAILS

For assessment of ground borne vibration impact, measurement of the Peak Particle Velocity (PPV) is widely accepted as the best descriptor of potential for damage; pre-construction assessment involves prediction methods in lieu of measurement.

The United States Department of Transportation has published procedures (Reference: United States Federal Transit Administration, Transit Noise and Vibration Impact Assessment, Report No. 0123, September 2018) for construction vibration prediction. The reference values provided are considered a reasonable average based on a wide range of site conditions. This procedure involves the use of these reference values at a given distance, factored into a distance attenuation equation to calculate the PPV value. These predicted values are then compared to appropriate criterion to assess potential impact.

CRITERIA

This section forms a preliminary criteria guideline and the basis for the calculation of the setback distances.

Currently there is not a universally accepted standard in Ontario for limiting vibration relative to heavy construction such as grading, excavation and vibratory compaction. Subsequently, vibration and loss control consultants rely on our expertise, and interpretation of resources, such as international vibration standards. For specific projects, many factors are typically considered, including but not limited to the structural sensitivity and construction methods (source characteristics).

In general, more restrictive vibration limits are applied to vibration sensitive structures, such as buildings designated under the Ontario Heritage Act, than limits for modern buildings.

The previously referenced FTA procedures report suggests limits based on the structure type; see Table 1 following:

Table 1: Construction Vibration Damage Criteria

Building Type	**PPV (mm/s)**
Reinforced concrete, steel or timber (no plaster)	12.7
Engineered concrete and masonry (no plaster)	7.6
Non-engineered timber and masonry	5.1
Buildings extremely susceptible to vibration damage	3.0

Other references, such as the City of Toronto Municipal Code (Chapter 363-5), specify PPV limits with consideration of the corresponding frequency of the construction generated vibration, with the lower thresholds applicable at frequency levels of 10Hz or less. Based on our extensive experience monitoring construction we anticipate vibration frequency levels from conventional machinery measuring in the 20-50 Hz range for this project, well above the typical natural frequency of buildings (3-11 Hz). Older ‘Heritage Designated’ structures are often assigned lower criteria regardless of favourable frequency and building condition. We note that the age of a structure or the heritage designation does not necessarily mean that it is more susceptible to vibration than other structure types. Structure condition should be

considered.

At the time of this report, condition survey documentation of the subject heritage structures at 1385 Bleams Road was not available. Review of the aforementioned CHC Limited Addendum to the Heritage Protection Plan indicates that these structures are in good, sound condition; nonetheless, for the purposes of this assessment and considering the heritage designation and age of these buildings, we have conservatively modeled based on a restrictive ***3.0 mm/s*** PPV value, typically applied to buildings that are considered extremely susceptible to vibration damage.

ASSESSMENT

Table 2 presents the reference values used in prediction of the vibration levels with respect to the proposed activities and anticipated machinery.

TABLE 2 **Activity**	**Equipment Type**	**Reference Distance (m)**	**Reference PPV (mm/s)**
Grading	Large Dozer	7.6	2.261
Grading	Small Dozer	7.6	0.076
Compaction	Vibratory Roller / Hoe-pac	7.6	5.334
Excavation	Large Excavator	7.6	2.261
Hauling	Loaded Truck	7.6	1.930

Using these FTA reference values, we calculated the minimum separation distance at which a level of 3.0 mm/s is predictable for each activity (source), without consideration of site specific mitigation. The following equation was used:

$$PPV_{source} = PPVRef\ (DR/D)^{n}\ (mm/sec)$$

PPVRef = reference value at 7.6m
DR = reference distance (7.6m)
D = Distance of machinery/activity to the receiver in metres
n = value for attenuation rate based on soil conditions

Factoring the Table 2 typical reference values for the various activities and factoring competent soil conditions for this site (n = 1.3), set-back distances for the various machinery types are presented in Table 3 following:

TABLE 3	Required Minimum Separation Distance (m)				
PPV (mm/s)	Dozer	Small Dozer	Compactor	Excavator	Dump Truck
3.0	6.5	<1	12	6.5	5.5

MITIGATION PROCEDURES

Setback distances outlined in Table 3 should be maintained for each of the identified activities in order to control vibration to below PPV limits generally specified for vibration sensitive structures. Based on the revised site plan (August 14, 2024), construction operations will not encroach within ±20 metres of the nearest existing heritage structure at 1385 Bleams Road. See Figure 1.

Predicted vibration levels indicate work can be carried out in a safe manner, without implementation of a fulltime vibration monitoring program, as the proposed work is outside the required minimum setback distances for the various construction vibration sources.

We recommend vibration testing at the onset of key activity, specifically compaction of backfill and/or granular for pavement base, to verify the accuracy of the reference values used in determining the safe setback distances. Testing/monitoring of these key activities shall serve to assess site specific machinery, and allow for additional mitigation of vibrations, if necessary.

During the recommended test period, digital, tri-axial seismographs shall be used, with sensors spiked at ground level, positioned in line between the nearest point of the existing heritage structures at 1385 Bleams Road and the vibration source, programmed to measure and record PPV in real time (see Figure 1).

Should testing confirm vibration levels consistent with the reference values used in this assessment, further mitigation will not be required. In the event that any of the tested activities produce levels approaching the recommended PPV limit used for assessment purposes, additional vibration mitigation measures may be required.

In summary, the following mitigation measures are required:

- Application of the Table 3 minimum setback distances
- Site vibration testing at the onset of key activities to verify the accuracy of the Table 3 set-backs

Supplementary mitigation measures, should actual site testing indicate higher than predicted levels, may include but not be limited to the following:

- Use of equipment known to produce lower generating vibration where set-back distances are not feasible, verified through site specific vibration monitoring
- Use of smaller vibratory equipment, such as a 48-inch drum versus a 60-inch drum roller, in low mode for granular compaction and asphalt compaction
- Smaller excavators/bulldozers for grading and granular placement work
- Ongoing remote vibration monitoring with automated alert notification capability for vibration levels approaching the specified threshold

CONCLUSION

OZA Inspections Ltd. has conducted a pre-construction vibration impact assessment for the proposed 1385 Bleams Road stacked townhouse block development. Based on modelling, work will not encroach within the minimum setback distances required for vibration pertaining to heritage structures on the subject property. Therefore, specific vibration controls are not required.

Initial testing of vibration levels from key construction operations will help ensure safe management and subsequent protection of the nearby heritage buildings.

INDEMNITY

The information and recommendations contained in this report represent our judgement in light of the limitations and industry standards for the preparation of similar reports. Judgement was exercised in gathering and analyzing the information obtained and the compilation of our report. This report carries no guaranties or warranties as to the structural competence of adjacent buildings. This report must be a read as a whole.

Notwithstanding full compliance with the specifications of the project, approval of the

construction plan and the successful completion of the work, the Contractor shall be solely responsible for any damage, direct or indirect, arising from the work and shall hold OZA harmless from any costs, liens, charges, claims or suits, including the costs of defence arising from such damage, real or alleged. OZA accepts no responsibility for damages that may be suffered by any third party as the result of decisions made or actions taken based on this report.

Respectfully submitted,

OZA Inspections Ltd.

[redacted]

David Williams
Senior Vice President

[redacted]

Erik Quist
P.Eng.

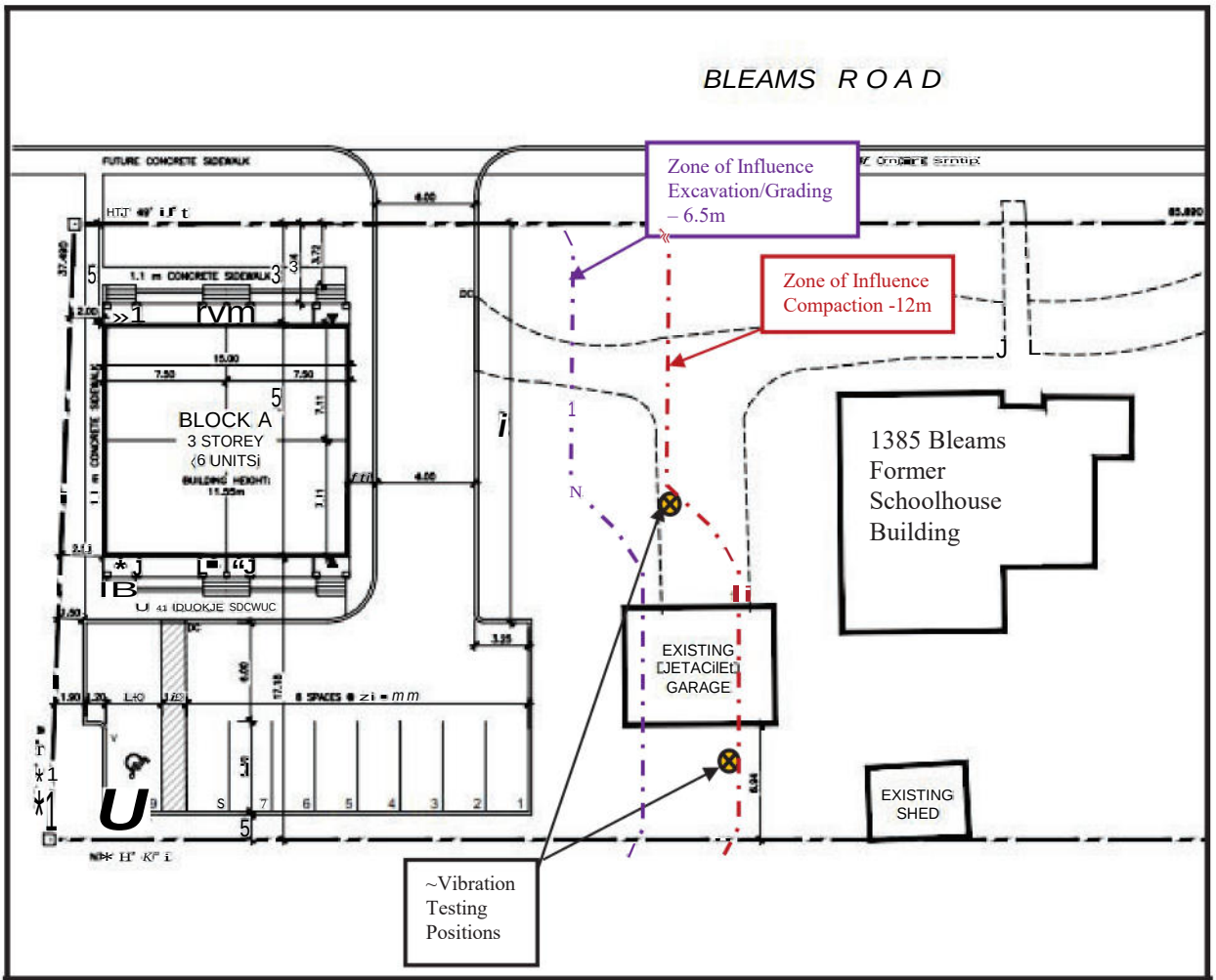

FIGURE 1: VIBRATION ZONE OF INFLUENCE AUGUST 2024

OZA INSPECTIONS LTD 1385 BLEAMS ROAD HERITAGE STRUCTURES NTS