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# Rail Safety Report – Site Plan Control Application

# 100 Steacie Drive

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

## Table of Contents

1.0 INTRODUCTION ..... 1
1.1 Executive Summary ..... 1
1.2 Purpose ..... 1
2.0 SITE CONTEXT ..... 3
2.1 Subject Property Location ..... 3
3.0 FCM/RAC PROMXIITY REQUIREMENTRS ..... 5
3.1 FCM/RAC Proximity Guidelines ..... 5
4.0 SITE SAFETY & MITIGATION MEASURES ..... 7
4.1 Standard Site Mitigation Measures ..... 7
4.2 Proposed Site Mitigation Measures ..... 9
5.0 CONCLUSION ..... 14

## List of Figures

Figure 1 *Subject Property.*
Figure 2 *Proposed Site Plan.*
Figure 3 *Sketch of Mitigation Measures from FCM/RAC Proximity Guidelines.*
Figure 4 *Additional Sketch of Proposed Mitigation Measures.*
Figure 5 *Proposed Landscape Plan.*
Figure 6 *Proposed Grading Plan.*

# 1.0 INTRODUCTION

## 1.1 Executive Summary

J.L. Richards & Associates Limited (JLR) has been retained by 3223701 Canada Inc. (a.k.a. Brigil) to prepare a Rail Safety Report in support of a Site Plan Control Application for their property at 100 Steacie Drive in Kanata. The proposed development is an application for a low-rise, four (4) storey residential apartment building consisting of 214 dwelling units. Brigil has previously submitted and received approval through the Ontario Land Tribunal (OLT) for of a Zoning By-law Amendment for the subject lands in June 2023.

The subject property is located in Kanata, in the west-end urban area of Ottawa. The lands are located at the end of Steacie Drive, adjacent to other employment and commercial uses found on Steacie Drive as well as a residential subdivision known as Beaverbrook to the south-west, Kanata North Phase 9 subdivision to west and the Beachburg/Renfrew Rail Corridor to the North of the subject lands.

This report will demonstrate how the proposed development follows all rail safety and risk mitigation best practices including fencing, berm, development setbacks, and notices on title. As part of the rezoning process, a 30-metre setback was introduced through the site-specific exception. A 2.5-metre-high berm with a max 3:1 slope is also proposed along the shared property line of the railway corridor and the subject lands, with a 1.83 m chain link fence on this shared property line, outlined by the FCM/RAC guidelines. Additionally, noise and vibration measures have been implemented as outlined in the Environmental Noise and Vibration report by Gradient Wind, dated March 5th, 2024.

It is our opinion that the development proposal follows the FCM/RAC Guidelines for New Development in Proximity to Railway Operations and implements the best practices and mitigation described in the guidelines, ensuring acceptable safety measures.

## 1.2 Purpose

J.L. Richards & Associates Limited (JLR) has been retained by 3223701 Canada Inc. (a.k.a. Brigil) to produce a Rail Safety Report. This report is required to support their current Site Plan Control

Application for their property at 100 Steacie Drive in Kanata. JLR had previously worked with Brigil to received approval of a Zoning By-law Amendment for the subject lands in June 2022 from the Ontario Land Tribunal from IP6 H(14) to R4Y [2809] S463-h. This ZBA implemented a site-specific zoning schedule for the subject lands, specifically with a 30-metre setback from the shared property line of 100 Steacie Drive and the railway corridor.

This Report is required based on the City of Ottawa's Terms of Reference for Rail Proximity Studies, which require all new development applications on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan. This is to ensure that the proposed development follows all rail safety and risk mitigation best practices and implements appropriate development setbacks.

This Report will demonstrate how the proposed development follows the FCM/RAC Guidelines for New Development in Proximity to Railway Operations and implements the best practices and mitigation described in the guidelines to ensure safety of the adjacent residents and railway operations.

The proposed development is sufficiently setback from the adjacent Beachburg/Renfrew Rail Corridor, 30 metres, and proposes a 2.5-metre-high berm with a 2.5 to 1 slope. A 1.83 m chain link fence will be erected at the bottom of the berm, on the mutual property line between Brigil's land and the railway corridor to prohibited trespassing as well as between the SMW pond and the railway corridor. Additional noise and vibration mitigation measures will be implemented as outlined in the Environmental Noise and Vibration report by Gradient Wind, dated March 5th, 2024. This includes warning clauses regarding the potential noise generated from the railway as well as specific construction materials, to reduce the noise and vibration.

# 2.0 SITE CONTEXT

The following section provides an overview of the subject property in terms of site location, context and surrounding conditions. This will provide a basis to review the FCM/RAC Proximity Requirements.

## 2.1 Subject Property Location

The Subject Property is an irregular shaped lot, which is situated at the end of Steacie Drive, to the west of March Road, in South March Station. South March Station is located in Kanata North, in Ward 4 of the City of Ottawa. The Subject Property is approximately 2.24 hectares (ha) and has 125 metres (m) frontage along Steacie Drive (Please see **Figure 1** for more site dimensions).


*Figure 1: Subject Property.*

The Subject Property has a rolling topography and is currently undeveloped (vacant) with a combination of grass and relatively dense tree cover. As previously noted, a Beachburg/Renfrew Rail Corridor abuts the northern property line. As a result of the property located a 40 Station Road, the lot abuts the railway corridor in two different sections. The first section is on the north-west portion of the property for 136 metres. This portion of the property does not have any proposed buildings and will only contain the dry stormwater pond. This portion of the property also has the current easement for Hydro One transmission corridor. The second portion of the

property is the area that needs to be evaluated further as proposed development is adjacent to this part of the railway corridor for 50 metres, as seen in the image below. The portion of the property that does not abut the railway abuts asmall contractor / construction building at 40 Station Road. Figure 2 below is the site plan of the proposed development.

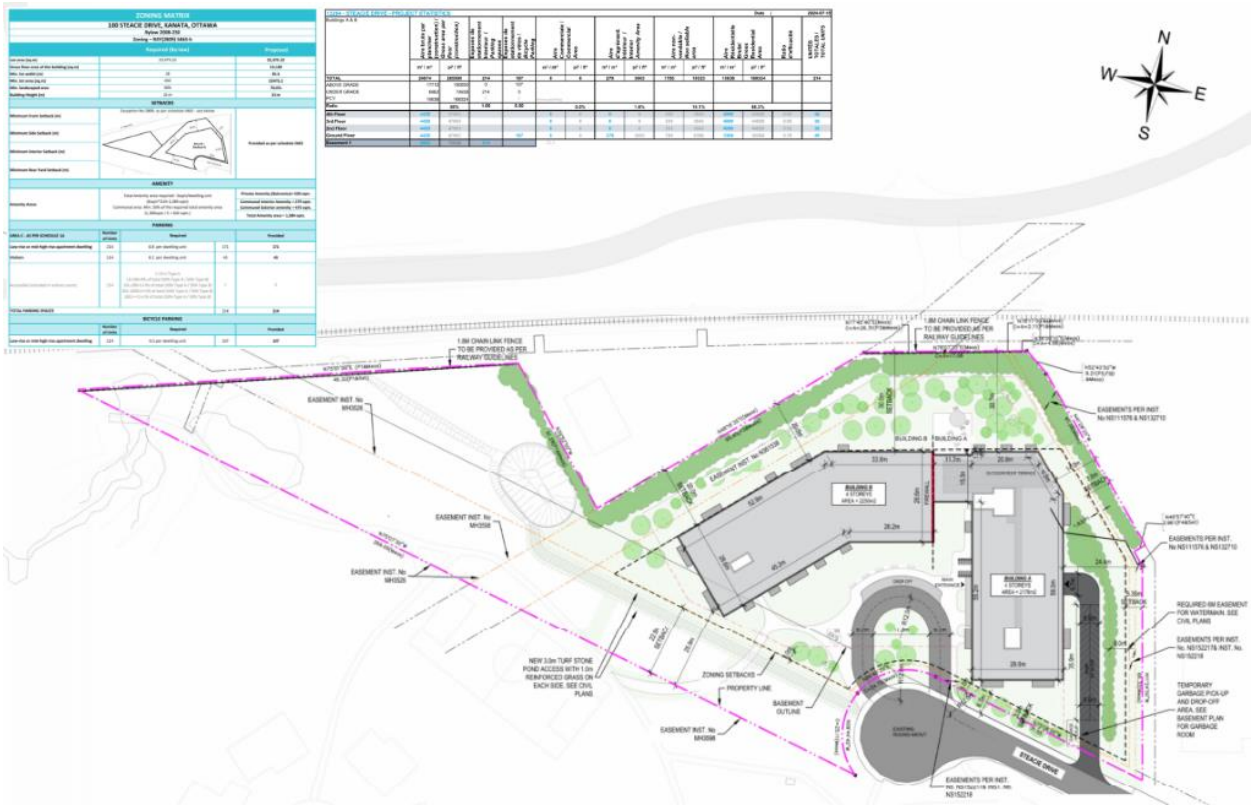


*Figure 2: Proposed Site Plan.*

There are some ditches and small hills that form the perimeter of the site, especially around the densely forested areas and on the northern portion of the land that is abutting the existing rail corridor and the Keizell drain/watercourse. As mentioned, hydro corridor easement runs along the southwestern portion of the Subject Property. A sewer easement runs from the southwest corner of the Subject Property to the northeast corner of the Subject Property, intersecting with the rail corridor.

# 3.0 FCM/RAC PROMXIITY REQUIREMENTRS

This section will provide an overview of the the FCM/RAC Guidelines for New Development in Proximity to Railway Operations.

## 3.1 FCM/RAC Proximity Guidelines

The current version of the FCM/RAC Proximity Guidelines were published in May 2013, intended to replace and build on versions published in 2004 and 2007. The guidelines were a joint initiative between the FCM (Federation of Canadian Municipalities) and the RAC (Railway Association of Canada) guidelines set out requirements for:

- Safety: Impact from a derailed train, fire, projectile elements, smoke
- Comfort: Noise and Vibration

As both provincial and federal legislation has evolved, updated guidelines were required to reflect new best practices for new development in proximity to railway operations. In addition, as cities continue to urbanize, new and increased amount of development will be located either adjacent too or abutting railway corridors. The guidelines were published with the help of stakeholders from railways, municipalities, and government to ensure safety between development and railways. Below is a sketch of the measures outlined in the FCM/RAC Proximity Guidelines

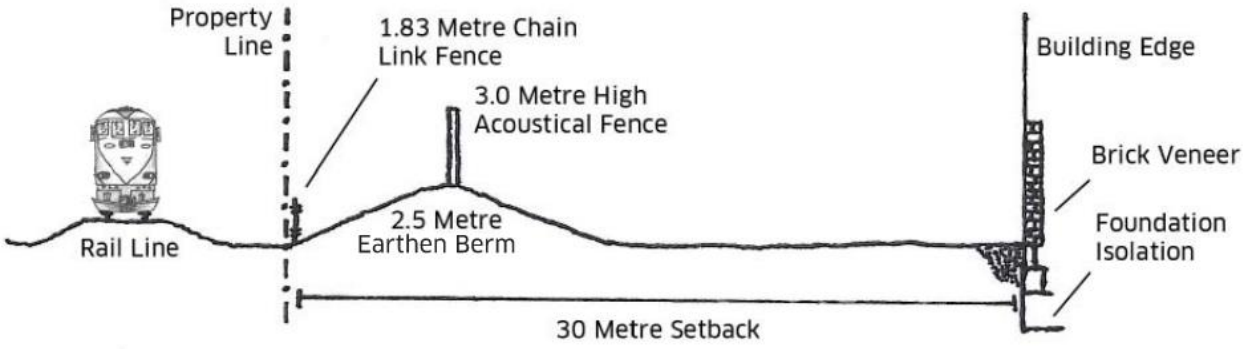


*Figure 3: Sketch of Mitigation Measures from FCM/RAC Proximity Guidelines.*

The guidelines are intended to be used by both government and developers when developing lands in proximity to railway operations. They have established general planning policies when developing on lands in proximity to railway facilities, as well to establish a process for making site

specific recommendations and decisions to reduce land-use incompatibilities for developments in proximity to railway operations. This is especially the case of the subject development, considered to be infilling an existing site, which is adjacent to a railway corridor, to ensure any potential conflicts are either reduced and/or avoided all together.

The guidelines are broken into three main sections that need to be reviewed when assessing developments. These three sections provide the basis in how development should proceed when adjacent to railway corridors. The sections are as follows:

*2.0 Common Issues and Constraints*

*3.0 Guidelines*

*4.0 Implementation*

# 4.0 SITE SAFETY & MITIGATION MEASURES

Section 4.0 of this report will review the standard site safety and mitigation measures outlined by the guidelines and then demonstrate what measures the proposed development is following.

## 4.1 Standard Site Mitigation Measures

As part of Section 3.0 Guidelines, the FCM/RAC Guidelines outline mitigation measures that should be considered in the following areas.

- Building Setbacks for New Development
- Noise and Vibration Mitigation
- Safety Barriers
- Security Fencing
- Stormwater Management and Drainage
- Warning Clauses
- Construction Issues

The following section will provide a brief overview of each of these mitigation measures.

*Building Setbacks for New Development*

The guidelines provide standard recommended building setbacks for new residential development in proximity to railway operations. They range from 300 metres for a freight rail yard and 15 metres for a spur line. Most setbacks fall into the 30-15 metre range. These setback distance provide a buffer from railway operations; permits dissipation of rail-oriented emissions, vibrations, and noise; and accommodates a safety barrier. Setback distances are to be measured from the mutual property line to the building face. This will ensure that the entire railway right-of-way is protected for potential rail expansion in the future.

*Noise and Vibration Mitigation*

Both noise and vibration from railway operations are a key issue with regards to the livability of residential developments adjacent to railway. Both of these factors are very site specific and depend on the time and frequency of railway operations that take place on the subject rail corridor. These can be problematic for day to day living as well as create impacts on physical and mental health. As well, considerations need to be taken into account regarding the design of the building, as heights and layouts (both internal and external) will affect how these impacts are mitigated.

Retaining a qualified acoustic consultant with the preparation of a noise and/or vibration impact study is the main strategy in how impacts can be mitigated and contained.

*Safety Barriers*

Along with noise and vibration measures, safety measures need to be considered if there is ever an accident to occur on the railway corridor, adjacent to any proposed development. Within the proposed setback, safety berms or crash walls are to be installed. The requirements of these are to be determined by a qualified engineer but in essence these barriers will reduce the risks associated with railway incidents by intercepting or deflecting derailed cars to reduce or eliminate potential loss of life and damage to property. An earthen berm is the preferred safety barrier which is intended to absorb the energy of derailed cars, slowing them down and limiting the distance they travel outside of the railway right-of-way. As the car travels into the berm, it is pulled down by gravity, causing the car to begin to dig into the earth, and pulling it into the intervening earthen mass, slowing it down, and eventually bringing it to a stop.

*Security Fencing*

In combination with the above noted safety measures, safety measures for people include security fencing at the share property line, at the bottom of the berm. Trespassing onto a railway corridor can have dangerous consequences given the speed and frequency of trains along with their extremely large stopping distances. New residential developments in proximity to railway corridors must include a 1.83-metre-high chain link fence along the entire mutual property line.

*Stormwater Management and Drainage*

New residential development located adjacent to railway corridors should be aware of the discharge and drainage of water towards railway operations. This infrastructure require for residential development should not create any negative impacts on the function, operation, or maintenance of the corridor. Any proposed alterations to existing rail corridor drainage patterns must be substantiated by a suitable drainage report.

*Warning Clauses*

Warning clauses are considered an essential component of the communication process, and ensure all parties are aware of any property constraints and the potential implications associated with rail corridor activity. These clauses can come in a variety of ways and measures, either being

through studies requested by a municipality or through development agreements, in this case being Site Plan Control and the subsequent agreement.

*Construction Issues*

When considering development adjacent to a railway corridor, the construction period should not adversely impact the operations of the railway. Service is to be maintained, with proper safety precautions while avoiding disruptions and ensuring efficiency of all operations. Any infrastructure indirectly affect a proposed development (ie: telecommunications, retaining walls, bridge footings) should be examined and should such information need to be adjusted, this is to take place priot to construction of the new development.

### 4.2 Proposed Site Mitigation Measures

As outlined above, the FCM/RAC Guidelines provide for a variety of mitigation measures that should be considered for new development adjacent to railway operations, specifically ones that are the nature of residential development. Proposed developments should best adhere to all guidelines outlined in the document to ensure any potential issues are best mitigated. A review of the proposed Site Plan Control Application and supporting engineering studies demonstrate the proposed development as submitted can accommodate the standard mitigation measures outlined in Section 3.0 of the FCM/RAC Guidelines.

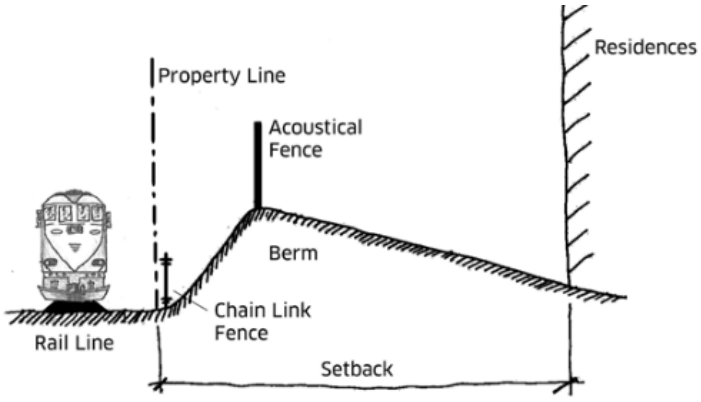


*Figure 4: Additional Sketch of Proposed Mitigation Measures.*

The following section will demonstrate how each guideline has been met by the proposed development in context of how they have been outlined above and further in Section 3.0 of the Guidelines. The below sketch generally demonstrates the proposed measures for the subject site.

*Building Setbacks for New Development*

As part of the rezoning process, a 30-metre setback was implemented with the rezoning of the subject lands to R4Y [2809] S463-h. As outlined in the FCM/RAC Guidelines, a 30-metre setback is required for all development adjacent to a Principle or Secondary Main Line. This setback is to be measured at the mutual property line and will ensure future development of the corridor can take place, protecting the proposed development on the subject lands. As the setback has been implemented through the rezoning process, it cannot be changed unless another approval is sought from the City of Ottawa, which would have to demonstrate why a reduced setback would be appropriate. Therefore, the proposed setback meets the recommended building setback as part of the guideline.

*Noise and Vibration Mitigation*

As requested by City Staff at the Phase 1 Pre-Consultation Meeting in October 2023, a noise and vibration study were required to determine any potential impacts from the adjacent railway, as well as the adjacent industrial uses. This report will only review the conclusion of the study regarding the railway corridor.

The noise and vibration study were complete by Gradient Wind and determine that noise levels will range between 38 and 61 dBA with whistle noise, and 40 to 46 dBA without whistle noise during the daytime period (07:00-23:00). As there are no trains operating during the nighttime, the nighttime noise levels associated with the railway are zero. This highest level of noise occurs along the northeast façade of the building, that which is closeted to the railway and crossing at March Road. In terms of vibration levels, estimated levels due to railway activity in the area are expected to fall below the criterion of 0.14 mm/s RMS at the nearest building foundation (northeast corner of the building) to the railway. Thus, mitigation for vibrations is not required.

The study concluded that no additional fencing on top of the required safety berm is to be required as based on the grade changes and height of the building. Enhanced construction quality such as brick cladding (or acoustical equivalent) and multipane windows along the north façades of buildings will be required, in addition to warning clauses, which will be discussed further below.

*Safety Barriers*

As outlined in the guidelines, an earthen berm is required to ensure safety of any proposed development to minimize any potential impacts of a derailment. This berm is required to be 2.5

metres high, with the steepest slopes of 2.5 to 1. With this requirement, this will require a berm width of 6.25m from the mutual shared property line. The engineering requirements of this berm are simply earthen mounds compacted to 95% modified proctor. The berm does not have to be brought down to the grade level of the railway on the other side of the berm but can be raised. This is the case of the proposed development on the subject lands, which will be raised to the required height. This will support both the stormwater approach, noise and vibration and building design.

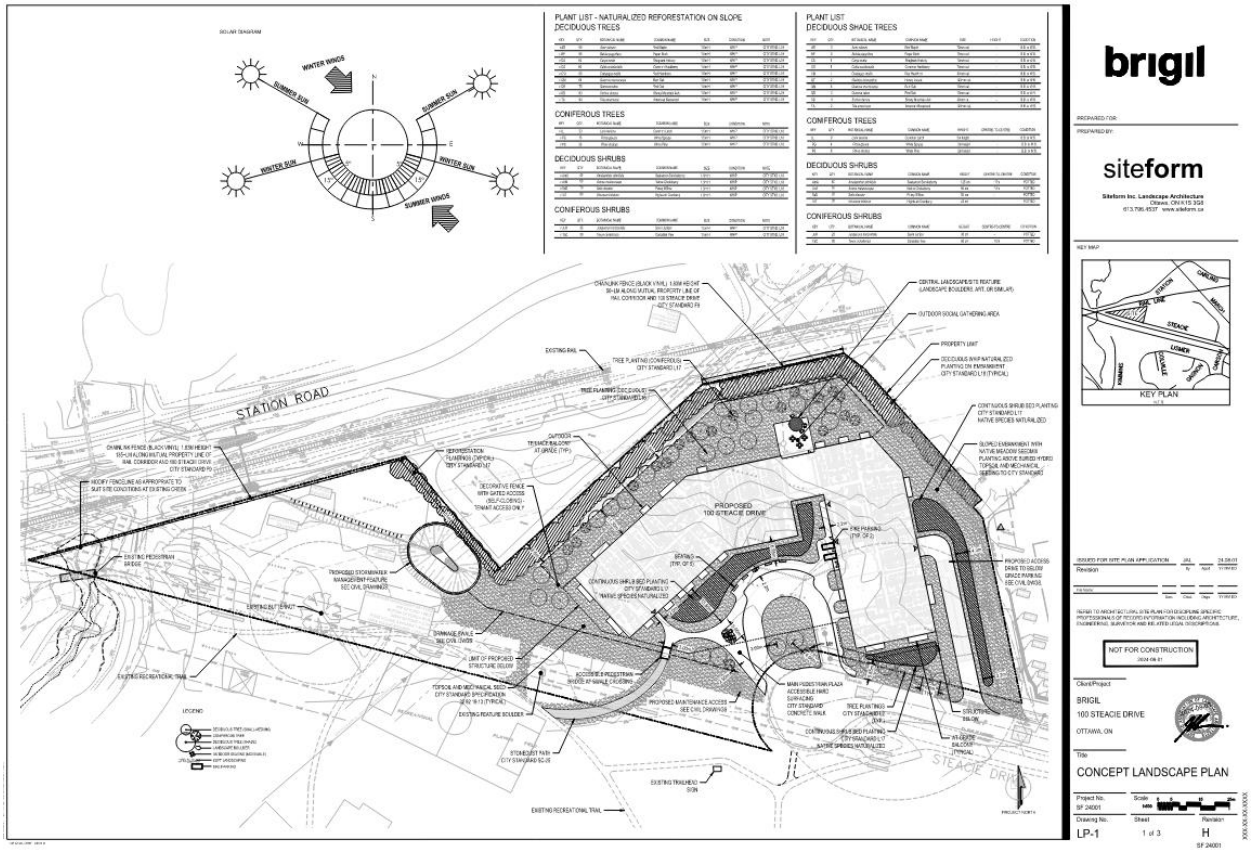


*Figure 5: Proposed Landscape Plan.*

*Security Fencing*

As outlined in the submitted landscape and engineering plans, a security fence will be installed along the mutual property line between the subject lands and the railway corridor. As described in the guidelines this will be constructed on Brigil's property and at a height of 1.83m, chain link fence. Trespassing through the subject lands, onto 40 Station Road and then across the railway

corridor is currently as issue. Therefore, additional signage and fencing will be investigated to ensure no trespassing takes place.

*Stormwater Management and Drainage*

Stantec Inc has prepared the site servicing, stormwater and grading plans for the subject lands. The proposed plans direct all water on the subject lands away from the railway corridor. A small, stormwater management pond is located on the western portion of the property to capture the majority of the water on site. The water, once captured by the pond, will be directed towards the north-west corner of the site, where the outlet will go underneath to the corridor and to the other side, into existing ditches on Station Road. This approach has confirmed by the PCCSWM modle and will not negatively impact any infrastructure related to the railway. The project team has discussed this approach with City of Ottawa Real Estate and are currently undergoing a review of the proposed engineering approach from Stantec.

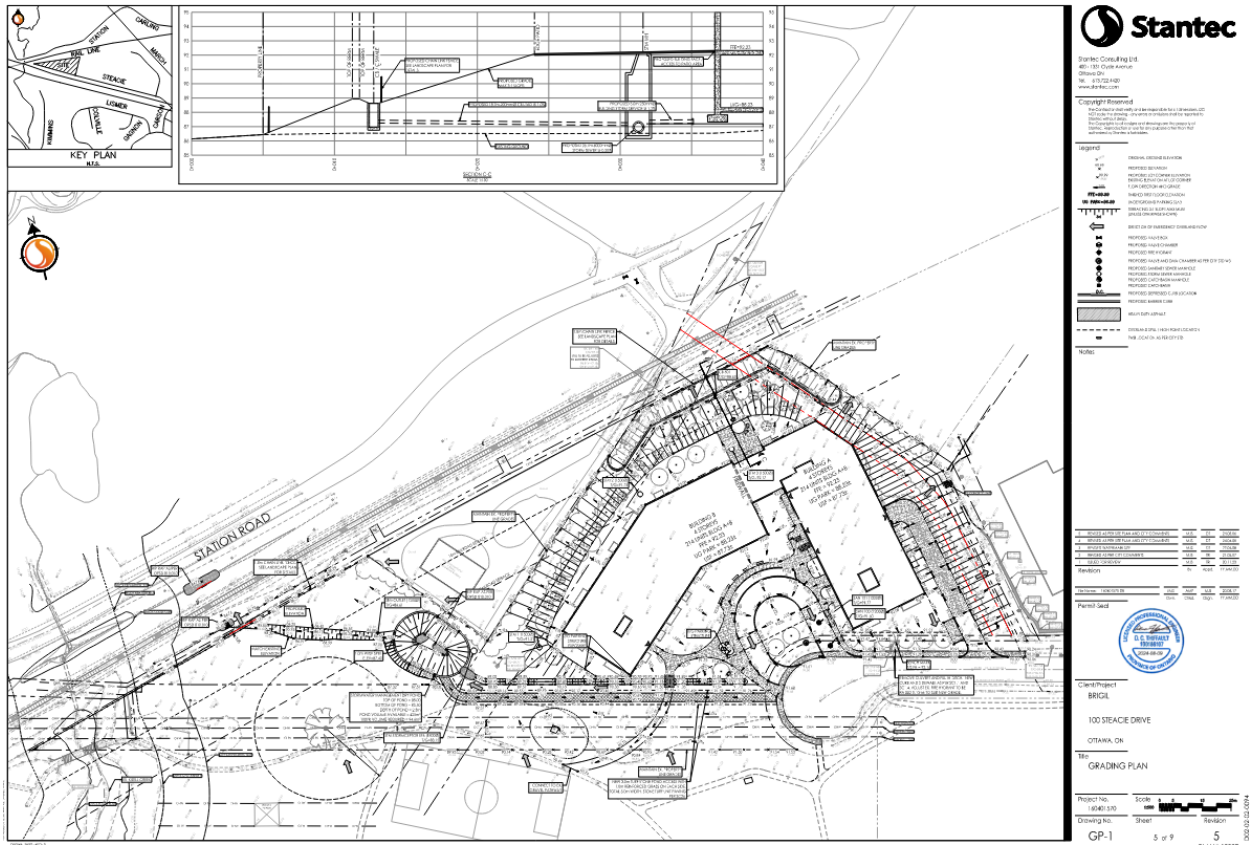


*Figure 6: Proposed Grading Plan.*

*Warning Clauses*

As discussed above and concluded by the noise and vibration report prepared by Gradient Wind warning clauses will be required in in all Agreements of Lease, Purchase and Sale. These warning clauses will describe the potential impacts and measures that have been taken in mitigate the issue, including enhance construction and central air conditioning. Any additional clauses or agreements from PRED or other departments will be confirmed with City at the time of Site Plan Approval.

*Construction Issues*

Constructing infrastructure to support the development is a complex undertaking and every effort is made to avoid utilizing in any way shape or form land that is not part owned by Brigil. In the case of the proposed residential development the main access and infrastructure services are located along Steacie Drive. As previously mentioned, our client has had discussions with City Staff and PRED to ensure proper construction techniques will be followed. As a result, construction of the development will have no adverse impacts on the rail corridor or railway operations.

# 5.0 CONCLUSION

This Rail Safety Report has been prepared in support of the Site Plan Control Application for Brigil's property at 100 Steacie Drive, which is an application for a low-rise, four (4) storey residential apartment building. Brigil has previously submitted and received approval of a Zoning By-law Amendment for the subject lands in June 2022. A Rail Safety Report was outlined as a required study in the Phase 1 Pre-Consultation List of Plans and Studies in a meeting with City Staff in October 2023.

This Report has demonstrated how the proposed development follows the FCM/RAC Guidelines for New Development in Proximity to Railway Operations and implements the best practices and mitigation described in the guidelines to ensure safety of the adjacent residents and railway operations.

The proposed development is sufficiently setback from the adjacent Beachburg/Renfrew Rail Corridor, 30 metres, and proposes a 6.25-metre-high berm with a max 3:1 slope. A 1.83 m chain link will be erected at the bottom of the berm, on the mutual property line between Brigil's land and the railway corridor to prohibited trespassing. Additional noise and vibration mitigation measures will be implemented as outlined in the Environmental Noise and Vibration report by Gradient Wind, dated March 5th, 2024. This includes warning clauses regarding the potential noise generated from the railway as well as specific construction materials, to reduce the noise and vibration.

This report has been prepared by J.L. Richards & Associates Limited for Brigil's exclusive use. Its discussions and conclusions are summary in nature and cannot properly be used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report is based on information, drawings, data, or reports provided by the named client, its agents, and certain other suppliers or third parties, as applicable, and relies upon the accuracy and completeness of such information. Any inaccuracy or omissions in information provided, or changes to applications, designs, or materials may have a significant impact on the accuracy, reliability, findings, or conclusions of this report.

This report was prepared for the sole benefit and use of the named client and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates

Limited, and anyone intending to rely upon this report is advised to contact J.L. Richards & Associates Limited in order to obtain permission and to ensure that the report is suitable for their purpose.

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