




Rail Safety and Risk Mitigation Study

2280 Dundas Street West, Toronto

Choice Properties Limited Partnership

Issue and Revision Record					
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Table of Contents

1	Executive Summary	3
2	Guidelines and Methodology	6
2.1	FCM/RAC Guidelines for New Development in Proximity to Railway Operations (2013)	6
2.1.1	Development Viability Assessment.....	6
2.2	City of Toronto Land Use Study: Development in Proximity to Rail Operations (2019)	7
2.2.1	City of Toronto Terms of Reference.....	7
2.3	Metrolinx Adjacent Development Guidelines (2013).....	8
2.4	AECOM Crash Wall Guidelines	8
3	Land Use and Proposed Development	10
3.1	Site Conditions	10
3.2	Rail Corridor Conditions	12
3.2.1	Current Operating Environment	12
3.2.2	Traffic Volumes	13
3.2.3	Future Operating Environment.....	14
3.3	Proposed Development.....	15
3.4	Park Space and Landscaping Design	17
4	Risk Assessment at 2280 Dundas Street West	18
4.1	Risk Profile by Operating Environment.....	18
4.2	Site-Specific Risk Considerations.....	19
4.3	Potential Derailment Scenarios and Impact	19
5	Mitigation Measures	21
5.1	Application of Safety Barrier	21
5.1.1	Crash Wall Design Specifications	22
5.1.2	Crash Wall Height	23
5.1.3	Earthen Berm Return	23
5.1.4	Corrosion Protection	24
5.1.5	Structural Isolation and Design Load	24
5.2	Application of Setbacks	24
5.3	Application of Non-Sensitive, Low Occupancy Uses	25
5.4	Trespassing	25
5.4.1	Metrolinx Noise Wall	26
5.5	Anti-Graffiti Treatment	26
5.6	Vegetation Clearance Zone	26
6	Additional Risks and Considerations	27
6.1	Noise and Vibration	27
6.2	Stormwater Management.....	27
6.3	Air Quality	27
7	Conclusions and Recommendations	28
8	Appendix	28
8.1	Appendix A: References and Guidelines.....	29
8.2	Appendix B: Architectural Plans	30
8.3	Appendix C: Topographic Survey	31
8.4	Appendix D: Rail Corridor Details	32
8.5	Appendix E: Risk Assessment	33

1 Executive Summary

Hatch Ltd. ('Hatch') has been retained by Choice Properties Limited Partnership (the 'Owner', 'Applicant', or 'Choice') to provide a Rail Safety and Risk Mitigation Study for the property at 2238, 2252, 2264, 2280, 2288, and 2290 Dundas Street West, and 104-105 Ritchie Street (the 'Site' or '2280 Dundas Street West'), in support of the Zoning By-Law Amendment application to permit a multi-phase, mixed use development adjacent to Bloor GO Station and Metrolinx's rail corridor.

The site is an irregularly shaped lot bound by the Metrolinx / GO Transit rail corridor to the east, existing low-rise residential development to the south, Dundas Street West to the west, and a secondary school to the north. The property is located approximately 100 metres south of Bloor Street where Metrolinx's Bloor GO Station is located. The Toronto Transit Commission's (TTC) Dundas West and Lansdowne subway stations are both within close proximity of the site, making this an important transit-oriented development (TOD) that will provide strong local and regional connections for future residents and visitors.

The purpose of this report is to assess the risk profile of the adjacent rail corridor, identify the risks to people and property, and summarize the mitigation measures that are proposed as part of the new development.

This assessment has been prepared in accordance with the FCM/RAC Guidelines for New Development in Proximity to Railway Operations, the City of Toronto Land Use Study for Development in Proximity to Rail Operations, the Metrolinx Adjacent Development Guidelines, and the AECOM Submission Guidelines for Crash Walls.

The Site is identified in the context plan, shown in Figure 1-1 below.

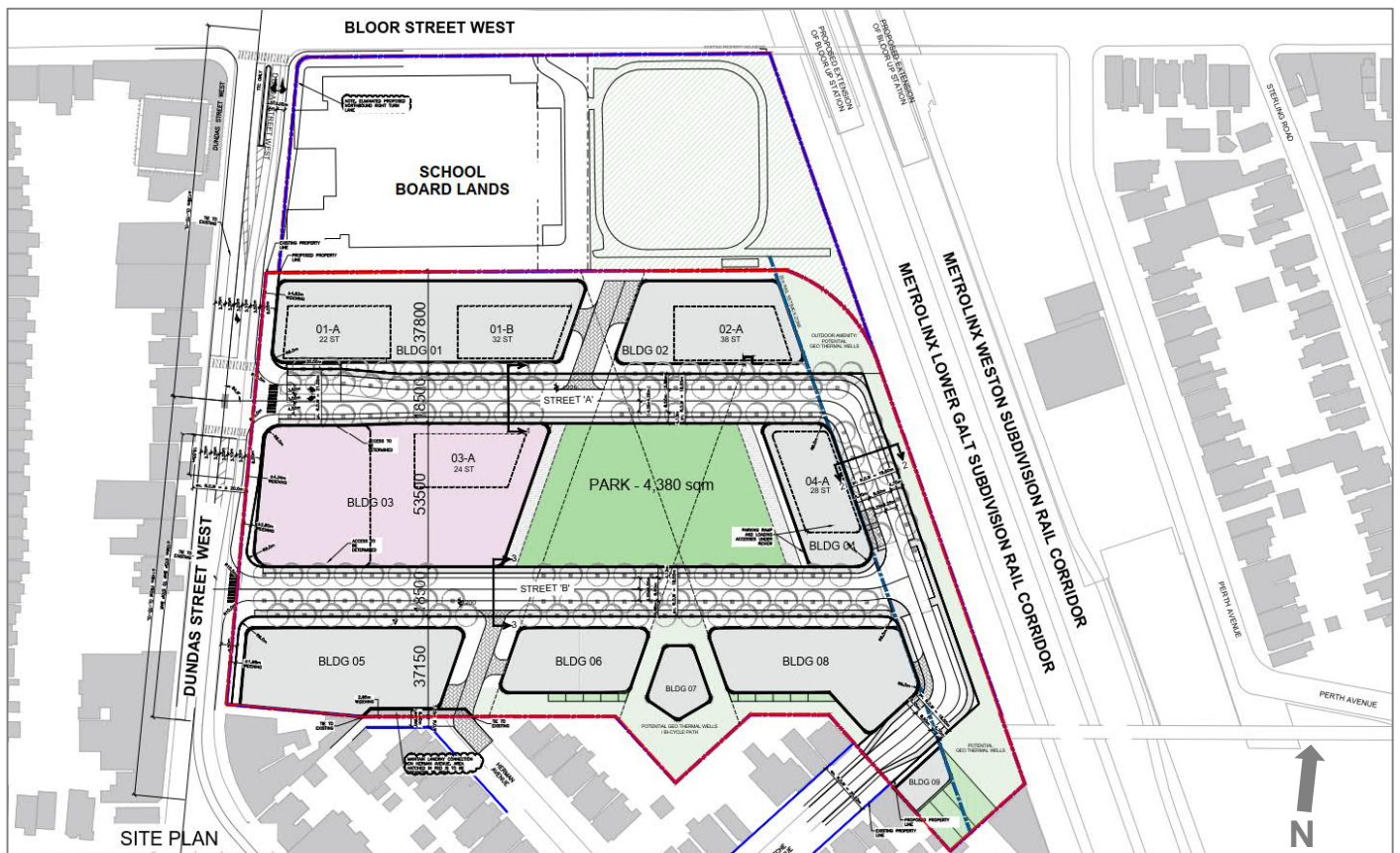


Figure 1-1: Context Plan

The Site is planned as a mixed-use residential development with a large food store and retail element to replace the existing uses on site.

The property is adjacent to the Metrolinx Lower Galt Subdivision and Weston Subdivision rail corridors. Metrolinx operates daily passenger service on the Milton GO Transit line on the Lower Galt Subdivision. Metrolinx also operates daily passenger service on the Weston Subdivision for both the Kitchener GO Transit line and the Union-Pearson Express (UPX) services.

Canadian Pacific Railway (CP) retained freight operating rights when they sold this section of the Galt Subdivision to Metrolinx; currently, freight traffic is unscheduled. Similarly, Canadian National Railway (CN) also retained freight operating rights when they sold the Weston Subdivision rail corridor to Metrolinx, however, freight traffic is also unscheduled through this corridor. VIA Rail Canada (VIA) also operates passenger service within Metrolinx's Weston Subdivision rail corridor.

To ensure the risks associated with nearby rail operations are appropriately considered, the following mitigation measures have been proposed for the new development:

- **Derailment protection** in the form of:
 - A 2.5-metre-high crash wall along the eastern boundary of the site, designed to the specifications of the AECOM crash wall guidelines
 - The crash wall will be designed to withstand a minimum impact of 2700kN, per Method 1 of the AECOM guidelines;
 - A 2.5-metre-high earthen berm at the north end of the site, in lieu of a return wall.
- **Setbacks** in the form of:
 - A minimum 25-metre horizontal setback, measured from the rail corridor property line to the face of the new building, will be provided and maintained at all times.
- **Additional mitigation** provided in the form of:
 - The application of non-sensitive uses within the setback area;
 - Grading of the site such that drainage patterns within the rail corridor are unaffected by the development;
 - Security fencing where appropriate to reduce trespassing events;
 - Central air systems to allow residents to keep windows and doors closed for climate control; and
 - Warning clauses registered on title.

While the standard earthen berm is considered impractical for this site, the alternative strategy to address the proximity to the railway offers an equivalent, if not better, protection than the standard measure.

Importantly, certain details, particularly those related to detailed design, construction, and permitting are not available at this time and are omitted from this study. These items will be submitted as part of a future Site Plan Approval application and work permit applications.

The proposed mitigation measures are consistent with the FCM/RAC guidelines¹ for rail-adjacent development and combine aspects of both the 'standard' and 'alternative' approaches outlined in the guidelines. Figure 1-2 below illustrates the guidelines standard and alternative mitigation measures recommended to address rail corridor proximity and safety concerns.

¹ FCM/RAC *Guidelines for New Development in Proximity to Railway Operations*. 2013. p.40

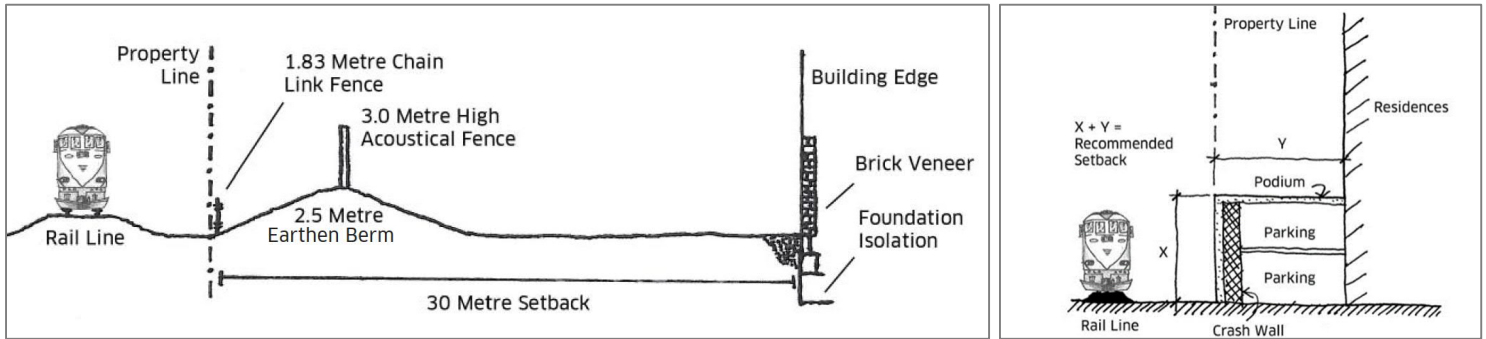


Figure 1-2: Standard and Alternative Rail Safety Mitigation Measures

The Project proposes a modest reduction in the horizontal setback, made possible through the provision of an engineered crash wall (also known as a ‘deflection wall’). The crash wall is planned to be 2.5-metres high, measured from the adjacent ground level and will run the length of the site along the mutual property line shared between the landowner and rail operator. It will be designed to withstand a minimum impact of 2,700kN and will be built to a thickness of 760mm, consistent with the standard crash wall design guidelines. The crash wall will be designed to account for future conditions and the presence of new tracks within the right-of-way.

The cross section in Figure 1-3 below illustrates the location of the crash wall and uses planned immediately within the setback area, which include a public road, sidewalks, and other landscaping elements. Additional details are included in Section 5 – Mitigation Measures.

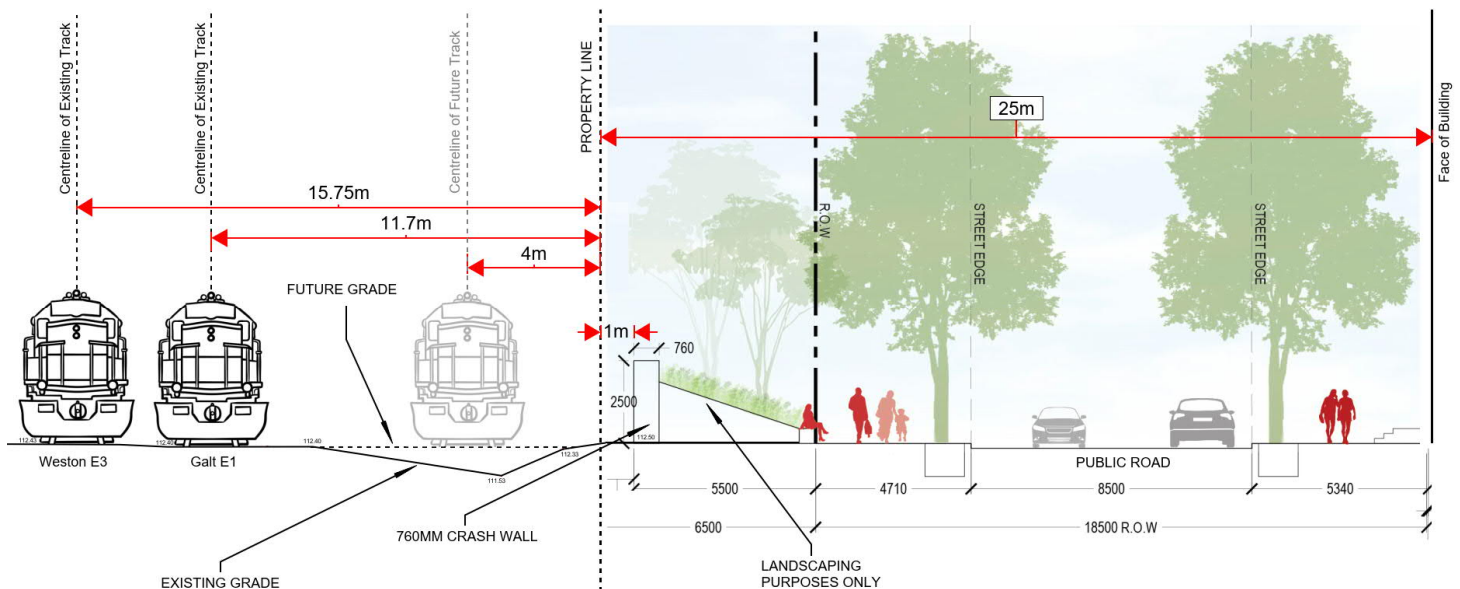


Figure 1-3: Cross Section with Crash Wall (looking south)

Rail safety is a key objective for the development approval process at 2280 Dundas Street West. The risks to people and property posed by railway operations and activities must be considered and, as appropriate, mitigated. This report responds to these requirements within the context of existing regulations, guidance, and procedures considering site-specific characteristics of the proposed development.

2 Guidelines and Methodology

All new development proposals within proximity of the rail corridor(s) should consider the rail safety requirements set out by the City of Toronto Terms of Reference, as part of their development approval process, and relevant railway operator, i.e., Metrolinx. Both the City of Toronto and Metrolinx have independent criteria, based principally on the FCM/RAC Guidelines, both allowing for site-specific approaches to determining appropriate rail safety requirements. The guidelines reviewed in the preparation of this report include:

- FCM/RAC Guidelines for New Development in Proximity to Railway Operations (2013)
- City of Toronto – Land Use Study: Development in Proximity to Rail Operations (2019)
- AECOM Submission Guidelines for Crash Walls (July 29, 2014) and Development of Crash Wall Design Loads from Theoretical Train Impact
- Metrolinx Adjacent Development Guidelines (2013)

2.1 FCM/RAC Guidelines for New Development in Proximity to Railway Operations (2013)

In May 2013, the Federation of Canadian Municipalities (FCM) and the Railway Association of Canada (RAC) published the “Guidelines for New Development in Proximity to Railway Operations” (FCM-RAC Guidelines), a collaborative effort between the two groups that provided proximity guidelines and best practices for development along railway lines.

The FCM-RAC Guidelines define standard mitigation measures for new residential development in proximity to a railway corridor. Along principal main lines, the standard recommended building setback is 30 m, measured from the property line to the building face. This setback provides a buffer from railway operations, including noise, vibrations, and emissions, accommodates a safety barrier (i.e., 2.5 m earthen berm), and addresses the fundamental land use incompatibilities. Where the standard mitigation measures are not viable, alternative safety measures are recommended, including the application of the Development Viability Assessment tool.

2.1.1 Development Viability Assessment

The FCM/RAC Guidelines recommend the use of a ‘Development Viability Assessment’ to evaluate the rail corridor and site conditions, to determine appropriate mitigation measures that offer an equivalent level of protection as the standard measure.

The assessment should evaluate any potential impacts on the operation of the railway as a result of the new development. As well, the assessment should take into consideration details of the proposed development site, including topography and proximity to the railway corridor; details of the railway corridor including track geometry or alignment and track speed; details of the proposed development, including the proposed collision protection in the event of a train derailment; and identification of the potential hazards and risks associated with development on that site. The Development Viability Assessment process / framework is outlined in Figure 2-1 below.

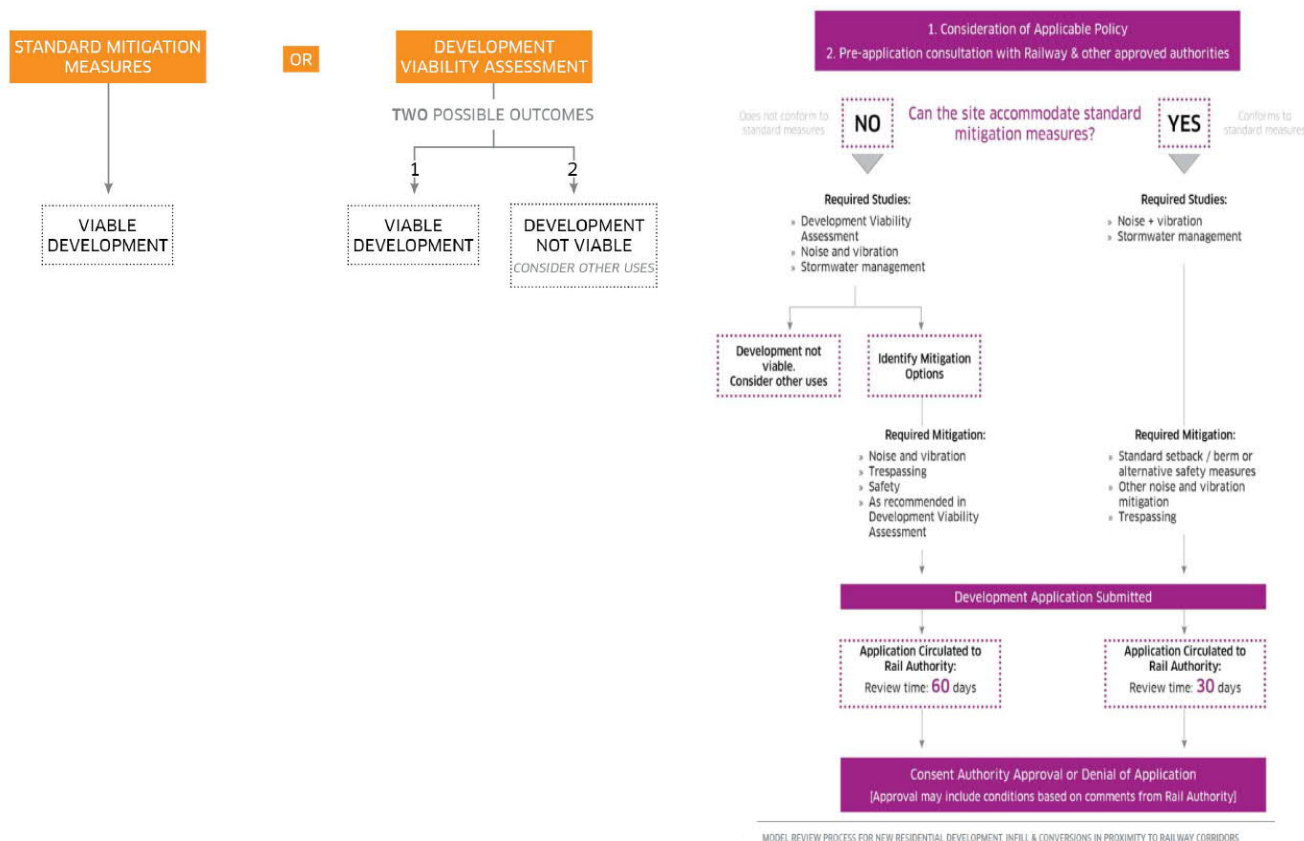


Figure 2-1 - Development Viability Assessment Framework²

2.2 City of Toronto Land Use Study: Development in Proximity to Rail Operations (2019)

In 2019, the City of Toronto commissioned and published the Land Use Study: Development in Proximity to Railway Operations. The purpose of the study is, “to provide the City with recommendations specific to Toronto” as the City of Toronto is ultimately responsible for regulating land use and managing development proposed on sites that are in proximity to railway lands.

2.2.1 City of Toronto Terms of Reference

The City of Toronto Terms of Reference indicate that where the risk mitigation measures vary from the City’s preferred approach (that includes a 30-metre setback combined with a 2.5-metre-high earthen berm) a technical report (and/or series of reports) shall be prepared and submitted to the municipality and rail operator.

The report should demonstrate the practical and/or technical reasons why the preferred safety and risk mitigation measures cannot be accommodated on the proposed development site. The report shall show how the proposed alternative measures reduce the risks to acceptable levels or eliminate it in its entirety.

The report contained herein has been prepared in accordance with these Terms of Reference.

² FCM/RAC 2013. *Guidelines for New Development in Proximity to Railway Operations*. p.26 https://www.proximityissues.ca/wp-content/uploads/2017/09/2013_05_29_Guidelines_NewDevelopment_E.pdf

A copy of the City’s Terms of Reference is included in Appendix A – References and Guidelines. The guidelines are available through the City of Toronto’s website.

2.3 Metrolinx Adjacent Development Guidelines (2013)

The Metrolinx Adjacent Development Guidelines, produced in 2013 and renewed in 2018, provide guidance for new developments that are planned within 300 metres of any GO Transit / Metrolinx facility. While the Metrolinx Guidelines are similar to the FCM/RAC Guidelines with respect to the mitigation measures that are available and the preferred building setbacks, the Metrolinx Guidelines provide additional information on processes specific to GO Transit operations. These additional processes include but are not limited to a formal peer review process for submissions that include engineered crash walls, the execution of Adjacent Development Agreements, Corridor Access Permits, Crane Swing Agreements, Tie Back Agreements and more recently, Corridor Development Permits.

Unlike the FCM/RAC Guidelines, the Metrolinx Adjacent Development Guidelines also specify safety measures and technical reporting requirements for different land uses, shown in Figure 2-2 below.

Land Use	General Safety Measures			General Technical Studies			Dev. Agreement / Env. Easement
	Setback	Berm	Fencing	Drainage	Noise	Vibration	
Residential	Mandatory 30 Metres	Mandatory 2.5 Metres	As Required 1.83 Metres	As Required	Mandatory	Mandatory	Mandatory
Commercial	Recommended 30 Metres	Recommended 2.5 Metres	As Required 1.83 Metres	As Required	Recommended	Recommended	Not required
Industrial	Recommended 15 Metres	Recommended 2.0 Metres	As Required 1.83 Metres	As Required	Recommended	Recommended	Not required
Institutional	Recommended 30 Metres	Recommended 2.5 Metres	As Required 1.83 Metres	As Required	Recommended	Recommended	Not required
Intensively Used Grounds	Recommended 30 Metres	Recommended 2.5 Metres	As Required 1.83 Metres	As Required	Recommended	Recommended	Not required
Low Occupancy Land Uses	Not Required*	Not Required*	As Required 1.83 Metres	As Required	Not Required	Not Required	Not required
Zone of Influence	Immediately Adjacent Sites (up to 120 Metres)				Sites within 300 Metres	Sites within 75 Metres	Sites within 300 Metres

Figure 2-2: Metrolinx Requirements by Land Use³

2.4 AECOM Crash Wall Guidelines

In 2014 AECOM produced the “*Development of Crash Wall Design Loads from Theoretical Train Impact*” (or ‘AECOM Crash Wall Guidelines’).

Within the AECOM Crash Wall Guidelines, two methods for determining crash wall design load requirements are outlined.

The AECOM Crash Wall Guidelines indicate that one of the methods may be chosen, or an alternative design load may be selected if it can be justified by the engineer responsible for the safety barrier design.

The simplified approach of Method 1 may be used in most cases.

³ Metrolinx. 2013. *Adjacent Development Guidelines*. p.7.
<https://www.metrolinx.com/en/projectsandprograms/constructionanddevelopment/docs/GO-Transit-Rail-Corridors-Metrolinx-Adjacent-Development-Guidelines.pdf>

Method 1:

- The wall shall be designed for a minimum point load of 2700kN applied horizontally and normal to the face at any point along the wall;
- The point load shall be applied at a height of 6 feet (1.8m) *above the top of rail* for walls up to 25 feet (7.6m) from the centre line of the track, or a height 6 feet (1.8m) *above the adjacent groundline* for walls farther than 25 feet (7.6m) from the centre line of the track.
- This method may be applied where track speeds do not exceed 50mph (80km/hr) for freight or 70mph (112km/hr) for passenger trains; where speeds exceed these limits, Method 2 shall be used.

Method 2 may be used to check or optimize the design, or where factors such as distance from the track to the wall, track speeds, side slopes along the rack, consequences of collision or others may justify a different load.

Method 2:

An energy balance approach considering collision by glancing blow and single car rotation may be used to determine the design load for a wall at a distance d_{CL} from the centerline of track in feet (m). The closest existing or future/proposed track is to be used. The four cases to be considered:

- Freight Train Load Case 1 – Glancing Blow: nine cars weighing 143 tons (129 700 kg) each, impacting the wall at an angle, θ_G . The angle of impact will be a function of track curvature, and for tangent track may be taken as 3.5 degrees.
- Freight Train Load Case 2 - Single Car Impact: single car weighing 143 tons (129 700 kg) impacting the wall as it undergoes rotation about its center. Where d_{CL} is greater than 28 feet (8.5 m), this load case need not be considered.
- Passenger Train Load Case 3 - Glancing Blow: eight cars weighing 74 tons (67120 kg) each impacting the wall at an angle, θ_G . The angle of impact will be a function of track curvature, and for tangent track may be taken as 3.5 degrees.
- Passenger Train Load Case 4 - Single Car Impact: single car weighing 74 tons (67120 kg) impacting the wall as it undergoes rotation about its center. Where d_{CL} is greater than 42'-6" (13 m), this load case need not be considered.

The AECOM Crash Wall Guidelines have become the standard set of guidelines for crash wall designs adjacent to Metrolinx-owned rail corridors. Crash wall designs are subject to review and approval by Metrolinx's technical advisor, AECOM to confirm conformance with the applicable design standards.

3 Land Use and Proposed Development

The following section provides an overview of the site conditions, rail corridor conditions and operating environment, and summarizes the development details, floor plans, and use of space.

3.1 Site Conditions

The site is an irregularly shaped lot bound by the Metrolinx Lower Galt and Weston Subdivision rail corridors to the east, existing low-rise residential development to the south, Dundas Street West to the west, and a secondary school to the north.

The satellite image in Figure 3-1 below depicts the site and current land use, the rail corridor, and the adjoining properties.



Figure 3-1: Aerial image of 2280 Dundas Street West and local area

In the current condition, the site is occupied by a variety of retail uses. The largest building on site accommodates a food store, which will eventually be relocated as part of the proposed development.



Figure 3-2: Existing uses on site (looking east from Dundas Street West)

The development lands are flat and generally at-grade with the existing rail corridor. The elevation of the property varies between approximately 111.5m and 112.5m. The closest Metrolinx track is observed at an elevation of 112.01m which is similar to the elevation of the Site. These details are all included in the topographic survey, located in Appendix C of this report.

In the current condition, the centreline of the closest track is approximately 11.5 metres from the mutual property line. The property extends approximately 170 metres along the rail corridor, parallel to the existing tracks. These dimensions are illustrated on the topographic survey in Figure 3-3 below.



Figure 3-3: 2280 Dundas Street West Topographic Survey

At the northeast end of the site, the property line curves away from the rail corridor and a small corner of the school board lands extends south between the property line of 2280 Dundas Street West and the Metrolinx rail corridor. The curvature of the property line and its impact on the proposed mitigation measures is further discussed in Section 3.3 – Proposed Development, and in Section 5.1 – Application of a Safety Barrier.

All existing buildings on site will be demolished in a phased approach as part of the proposed development.

3.2 Rail Corridor Conditions

The following section provides a summary of the rail corridor conditions within the Metrolinx right-of-way, adjacent to the site.

3.2.1 Current Operating Environment

The site is located at Mile 3.8 of the Weston Subdivision and Mile 3.7 of the Lower Galt Subdivision rail corridors. In the current condition, there are four (4) tracks adjacent to the development site where the three eastern-most tracks are part of the Weston Subdivision and the western-most track is part of the Lower Galt Subdivision.

The tracks are straight in alignment and run in a north-west direction serving Bloor GO Station.

Metrolinx / GO Transit currently operate daily passenger for the Milton GO line on the Lower Galt Subdivision closest to the property. The Kitchener GO line and Union Pearson Express operate on the Weston subdivision, further from the property.

Canadian Pacific Railway (CP) retained freight operating rights on the Lower Galt Subdivision when they sold this section of the track to Metrolinx, however, freight traffic is currently unscheduled along this section of the rail corridor. Similarly, Canadian National Railway (CN) retained freight operating rights when they sold the Weston Subdivision to Metrolinx, however, in the current condition, CN Railway does not have scheduled freight through this corridor.

A rail corridor access road is located south of the development site in the car park of the No Frills at 222 Lansdowne Avenue, where its entrance is secured with chain link fence. Another access point exists directly across the rail corridor near Sterling Road, which is used for ongoing track expansion work within the railway.

The track design speeds are as follows:

Table 3-1: Track Speeds

Track	Subdivision (current)	Subdivision (future)	Passenger Speed	Freight Speed
E0 (Future E1)	-	Weston	80mph	25mph
E1 (Future E2)	Weston	Weston	80mph	25mph
E2 (Future E3)	Weston	Weston	80mph	25mph
E3 (Future E4)	Weston	Weston	80mph	25mph
E4 (Future E5)	Galt	Galt	50mph	50mph
E0 (Future E6)	-	Galt	50mph	50mph

Note: Track design speeds are assumed to remain the same in the future.

The tracks closest to the property within the Galt Subdivision are limited to 50mph as a maximum allowable speed for both passenger and freight traffic.

The maximum allowable speed within the Weston Subdivision rail corridor, further from the property is 80mph.

Notably, due to the presence of Bloor GO Station, the majority of trains within the rail corridor will be decelerating to serve the station.

The Metrolinx track diagram below illustrates the current track alignment, rail corridor operating speeds, track mileage, the location of the nearest signal bridge and the location of the two new tracks that are planned within the rail corridor. The full track diagram is included in Appendix D – Rail Corridor Details.

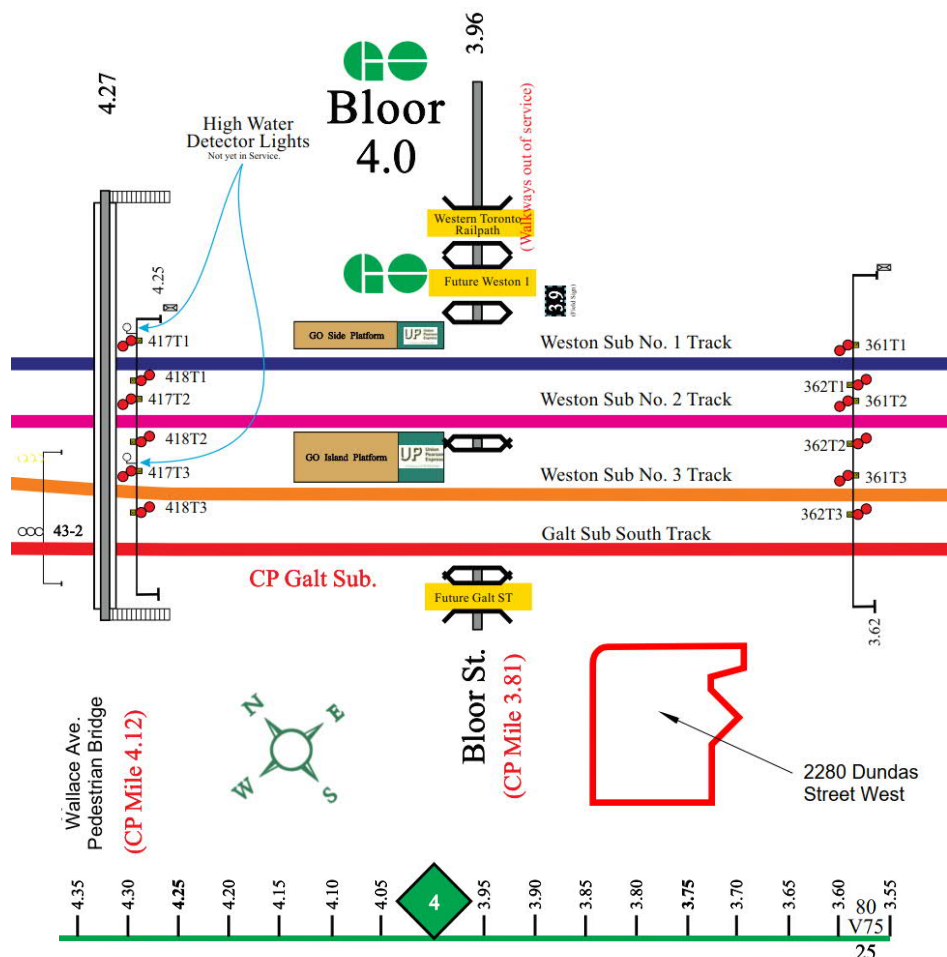


Figure 3-4: Metrolinx Track Diagram

Metrolinx has plans to add two new tracks as part of the GO Expansion, one on either side of the existing rail corridor (see Figure 3-9 below). The future Galt track will become the most westerly track within the rail corridor, and consequently the closest active track to the Site when it is complete.

3.2.2 Traffic Volumes

As part of this Rail Safety Assessment, current and future rail traffic volumes were considered.

Metrolinx has indicated the It's anticipated that GO rail service on this Subdivision will be comprised of diesel and electric trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO train volume near the subject lands, including both revenue and equipment trips is in the order of 524 trains. The planned detailed trip breakdown is listed below:

Weston Subdivision (which carries Kitchener GO rail service)

	1 Diesel Locomotive	2 Diesel Locomotives		1 Diesel Locomotive	2 Diesel Locomotives
Day (0700-2300)	92	36	Night (2300-0700)	22	2

Metrolinx Lower Galt Subdivision

	1 Diesel Locomotive		1 Diesel Locomotive
Day (0700-2300)	38	Night (2300-0700)	6

It's anticipated that UP Express rail service at this location will be electrified and comprised of up to three (3) passenger cars. The planned detailed trip breakdown is listed below:

	1 Electric Locomotive		1 Electric Locomotive
Day (0700-2300)	256	Night (2300-0700)	72

3.2.3 Future Operating Environment

Work within Metrolinx's right-of-way is currently underway that will result in 2 additional tracks, one on either side of the existing corridor. The new Lower Galt subdivision track will be placed along the western extent of the railway, closest to 2280 Dundas Street West. It is anticipated the maximum allowable speed of this track will be the same as the existing Galt track. The exact location of this track has not been confirmed, so conservatively, it is assumed the track could be placed within 4 metres of the property line, consistent with feedback from Metrolinx.

An additional track will also be added to the Weston Subdivision, along the eastern most extent of the rail corridor. This new track is not considered to have any impact on the proposed development at 2280 Dundas Street West.

Such improvements would be expected to improve safeguards and make the infrastructure more robust, delivering a higher standard of safety than possible by the existing legacy infrastructure.

Metrolinx Electrification Project as Part of Their Expansion Program

Introduction of the Electrification Project is part of Metrolinx's strategy to increase the service level of the GO network as well as increase operational efficiency and emission-free service. While electrification of the Weston and Galt subdivisions are long-term objectives for Metrolinx, there is currently no consensus on when this can be realistically achieved.

In January 2021, Metrolinx announced that they are continuing to explore opportunities to electrify the Kitchener GO line. Metrolinx will be collecting all study information and consultation feedback to keep on file for future reference prior to advancing further with the formal Transit Project Assessment Process (TPAP).⁴ There is little public information available on the potential electrification of the Galt Subdivision. The electrification of this corridor will require CP's approval as they own the rail corridor between the North Toronto Diamond and Milton.

⁴ Metrolinx. January 2021. *Metrolinx updates Kitchener Line GO Expansion Plans – rules out Guelph's Margaret Greene Park as power substation site*. Online: <https://blog.metrolinx.com/2021/01/21/metrolinx-updates-kitchener-line-go-expansion-plans-rules-out-guelphs-margaret-greene-park-as-power-substation-site/>

3.3 Proposed Development

The development is proposed as six separate blocks, consisting of buildings varying between 7 and 37 storeys. Each of the residential towers will sit atop mixed-use podiums containing residential, retail, and office uses. The proposed site concept is illustrated below in Figure 3-5.



Figure 3-5: Proposed Development Concept

Each building will be setback from the rail corridor a minimum of 25 metres. The three buildings closest to the railway lands will be separated by a new public road, sidewalks, a small, landscaped area that runs parallel to the rail corridor, and a continuous concrete crash wall along the mutual property line.

The crash wall will be setback from the rail corridor property line 1-metre so that routine maintenance and inspection activities may take place without having to access the rail corridor. Extensive repairs and/or reconstruction of the crash wall may require access to the rail corridor, but the 1-metre setback has been applied to minimize the need to access the railway in most routine scenarios.

Buildings 2, 4, and 8, closest to the rail corridor, maintain a 25-metre setback at all times.

The 25-metre setback is enabled through the provision of a crash wall that exceeds the minimum height requirements. The minimum crash wall height, as prescribed by the AECOM Guidelines, is 2.135 metres. The crash wall proposed at 2280 Dundas Street West will be 2.5-metres high.

The crash wall, which will extend along the property line and run parallel to the rail corridor, will be completely independent of any building on site. A small amount of earthen material will abut the crash wall to reduce the visual impact of the wall on the surrounding public realm.

The Site Plan, shown in Figure 3-6 below, illustrates the proposed development blocks, new public road network, and landscape features that will form the on-site parkland dedication. The Ground Floor Plan in Figure 3-7 illustrates the proposed location of the safety barrier.

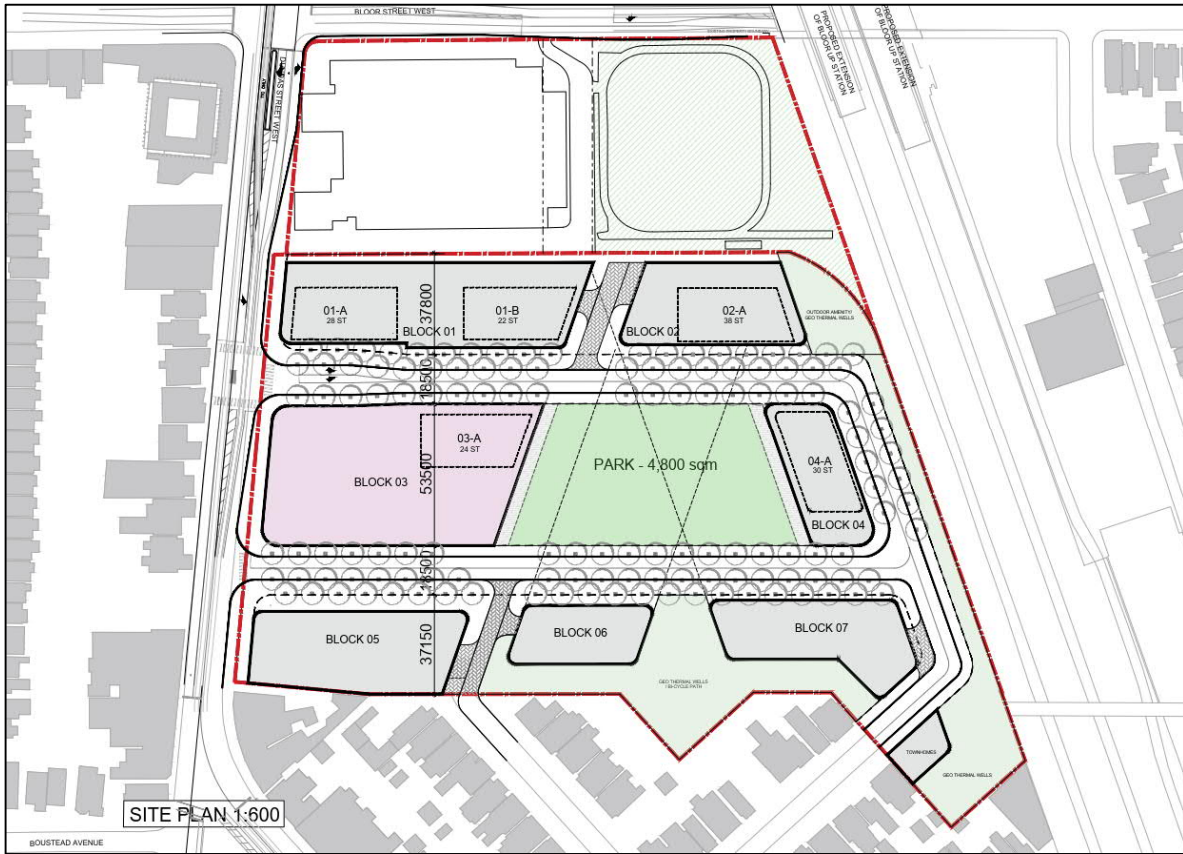


Figure 3-6: Site Plan

The Ground Floor plan is pictured in Figure 3-7 below

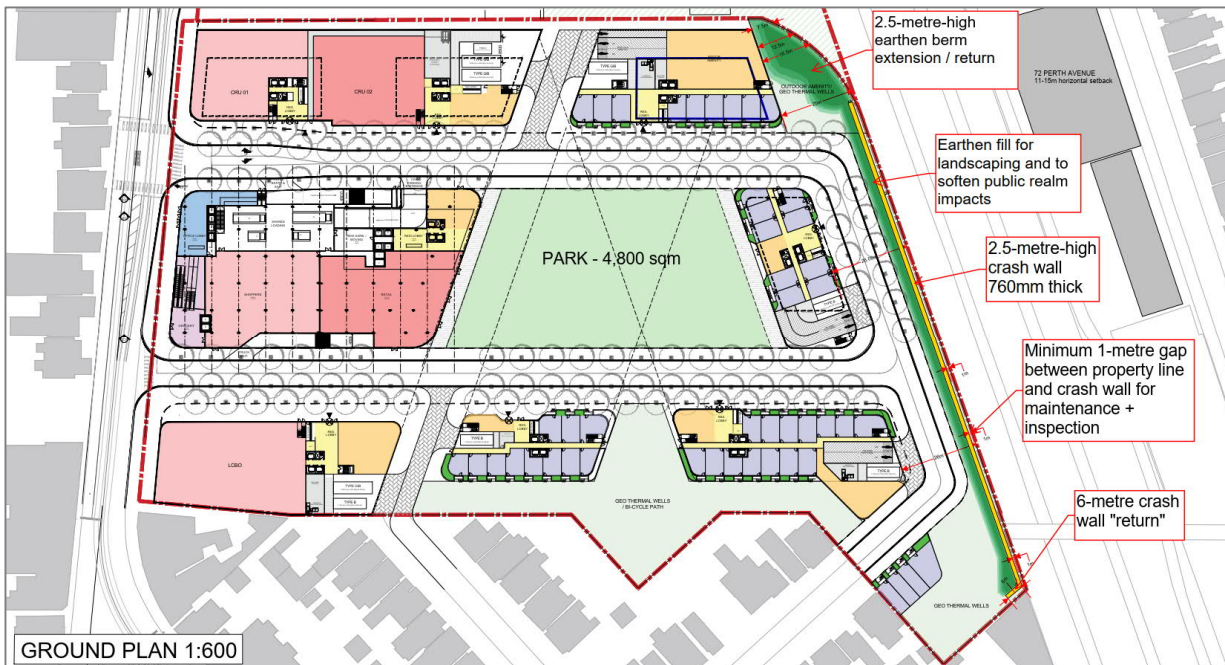


Figure 3-7: Ground Floor Plan

Given the horizontal setback of 25-metres, the programming of space within the buildings on the ground floor can be done without any restrictions on where sensitive use, high occupancy spaces may be located.

3.4 Park Space and Landscaping Design

A large park and various landscaping elements, including a small earthen berm, are also proposed at 2280 Dundas Street West. These details are illustrated in the landscape plan included in Figure 3-8 below.

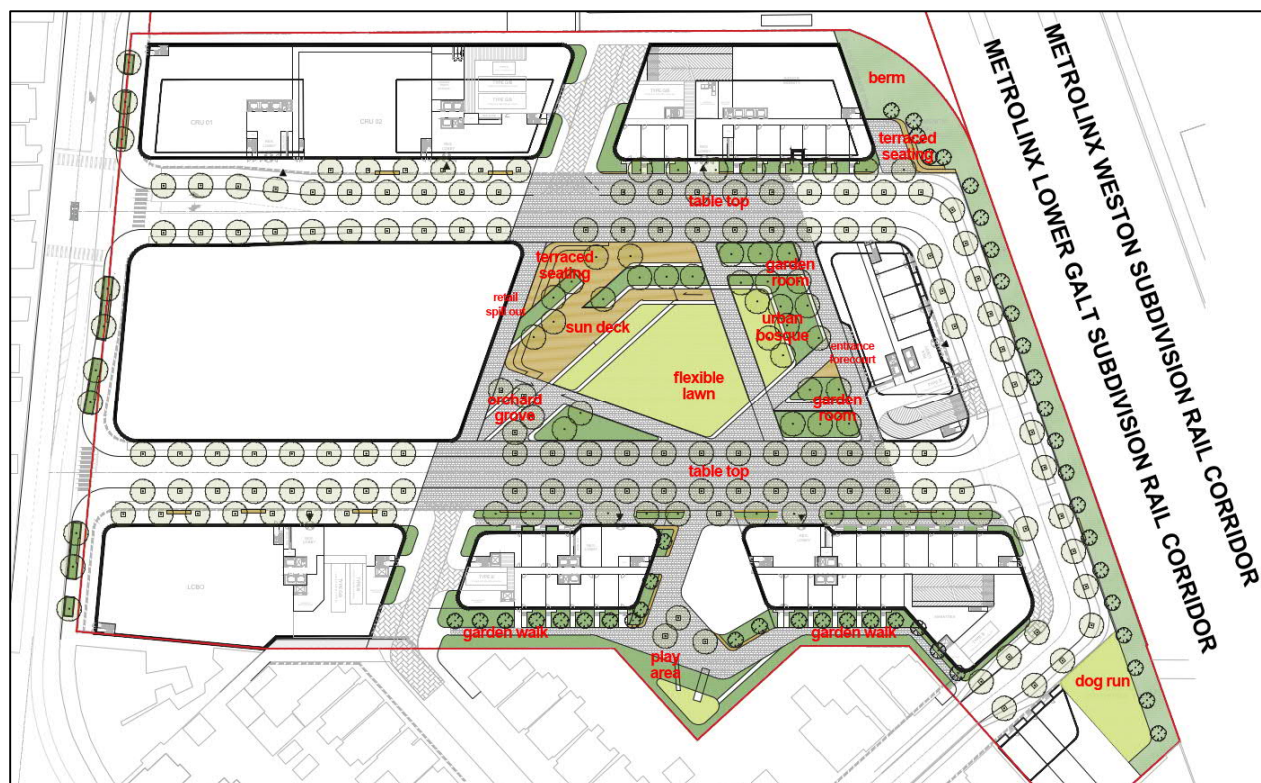


Figure 3-8: Landscape Plan

A large, central park space is proposed. The park has been designed to not only provide a natural public amenity space for future occupants of the site, but to facilitate pedestrian and cycling movements through the property. Smaller vegetated and landscaped areas are proposed along the southern boundary of the site. The landscape plan is included with the architectural plans in Appendix B.

At the northeast corner of the proposed development where the property line curves away from the rail corridor, a 2.5-metre-high earthen berm is proposed. The earthen berm is proposed in lieu of a wall return. The rationale for this approach is based on a couple of factors:

1. The property line curves away from the rail corridor and an earthen berm will better meet the objectives of the site while providing derailment protection for Block 2; and
2. The earthen berm protects for the future extension of the crash wall into the northern property when future development is initiated on that site.

The details of the earthen berm are discussed further in Section 5 – Mitigation Measures.

4 Risk Assessment at 2280 Dundas Street West

4.1 Risk Profile by Operating Environment

The Transportation Safety Board (TSB) rail accident/incident data was reviewed as part of this application. The following accidents were recorded between Mile 0.0 and Mile 10.0 on both the Weston and Galt Subdivision rail corridors between 2000 – 2021.

Table 4-1 below summarizes the accidents recorded by the TSB by subdivision and rail operator.

Table 4-1: TSB Reported Incidents

Incident	Frequency (2000-2021) ⁵			
	Galt		Weston	
Subdivision	CP	Metrolinx	CN/TTR	Metrolinx
Mainline track derailment	1	-	-	-
Derailment involving track unit	1	-	-	-
Non-mainline track derailment	95	-	1	1
Non-mainline track collision	9	-	-	-
Main track switch in abnormal position	-	-	-	-
Fire	2	-	-	-
Movement exceeds limit of authority	15	-	-	2
Dangerous Goods Leaker	4	-	-	-
Collisions with objects / track unit	5	-	-	1
Trespasser	12	-	3	1
Crossing	8	-	3	-
Signal less restrictive than required	1	-	-	-

After reviewing the rail accident data there are four key items to note:

1. Of the 95 non-mainline track derailments, 51 of them occurred between Mile 5.0 and Mile 6.0.
2. Nine (9) fatal accidents and six (6) serious injuries were recorded between 2000-2021 and were all due to trespassing apart from one serious injury which took place at a crossing.
3. There is one recorded mainline derailment between 2000-2021 at Mile 7.0 of the Galt Subdivision. The summary provided by the TSB, as reported by CP Rail is:
 “CP reports train assignment, while lifting four auto flat cars from Lambton Yard track #2, derailed the four cars on Main Track #3 while returning to their train which was secured on Main Track #2 at Scarlett Rd (Galt Sub.). No injuries.”
4. A ‘Derailment Involving Track Unit’ was recorded in 2014. It is unclear whether this is a mainline derailment or non-mainline derailment. However, CP notes the following accident summary:
 “CP Foreman derailed track unit H06081 while on Interlocking track, Mile 7.0 Galt Sub. No injuries.”

The Mainline track derailment and derailment involving track unit occurred at Mile 7.0 of the Galt Subdivision. As freight movements are currently unscheduled within the rail corridor at 2280 Dundas Street

⁵ Transportation Safety Board. Data and statistics on rail transportation occurrences. <http://www.tsb.gc.ca/eng/stats/rail/index.html>

West and anticipated to decline in the future, the recorded incidents (particularly those related to derailment) are not considered to pose a risk to the proposed development.

The CP-owned section of the Galt Subdivision is approximately 1.7km from the development site. Freight operations on the CP-owned section of track further from the Site are not anticipated to have an impact on the property.

4.2 Site-Specific Risk Considerations

Site-specific factors that demonstrate a lower risk profile at 2280 Dundas Street West include:

- **Low Level of Scheduled Freight Operation** – CP maintains the rights to operate through the Lower Galt Subdivision. CN also maintained operating rights when they sold the Weston Subdivision to Metrolinx. However, due to high volume of passenger trains (and anticipated increase in passenger train volume), freight train operational window is limited. Under an assumption there is one freight train per day through the rail corridor, passenger train service is accounted for more than 99% of the rail traffic at this site. This limits the risk of environmental contamination, explosions, fire and exposure to hazardous goods and dangerous materials.
- **Bloor GO Station** – Bloor GO Station is situated approximately 160 metres north of the property and will accommodate frequent trains accelerating and decelerating to serve the station and passengers. Trains approaching and departing the station will not reach maximum allowable speeds until further north or south of the station, past the Site.
- **Track Alignment** - the tracks are straight in their alignment. Due to the track being without any curvature, there is a lower risk of trains derailing adjacent to the site.
- **Track Crossovers** – there are no crossovers observed in the rail corridor within 500m north or south of the property.

The combination of the discussed factors and safety barrier implementation can be reasonably considered to improve the safety and hazard level on the development site that may arise from the railway operation.

4.3 Potential Derailment Scenarios and Impact

The risk assessment has identified a total of fourteen (14) potential derailment scenarios posed by the Weston Subdivision and Lower Galt Subdivision rail corridors at the site. Under the current Risk Matrix Assessment framework (Appendix E) the current overall corridor risk classification is considered low. The mitigation measures proposed for the development increase the overall levels of safety and improve the overall risk score of scenarios assessed in below.

Current potential derailment scenarios and their impact are identified and assessed on its level of frequency and severity to determine the scenario's risk category (i.e., from lowest to highest risk, the categories are: acceptable, tolerable and intolerable) and finally its mitigation strategy. The detailed Risk Assessment is included in Appendix E.

Table 4-2: Risk Assessment at 2280 Dundas Street West

Assessed Risk with Proposed Mitigation Measures				
Hazard	Frequency	Severity	Residual Risk Level	Risk Classification
1. Passenger Train Derailment (at speed) <i>Passenger train derailment on either corridor, at maximum allowable speeds</i>	1	3	3	Acceptable
2. Passenger Train Derailment (above maximum allowable speed) <i>Passenger train derailment on either corridor, above the maximum allowable speeds</i>	1	4	4	Acceptable
3. Freight Train Derailment (at-speed) <i>Freight train derailment on either corridor, at maximum allowable speeds</i>	1	3	3	Acceptable
4. Freight Train Derailment (above maximum allowable speed) <i>Freight train derailment on either corridor, above the maximum allowable speeds</i>	1	4	4	Acceptable
5. Freight Train Derailment (Explosive) - at maximum allowable speed <i>Freight train derailment on either corridor, at maximum allowable speeds with dangerous goods, hazardous materials, resulting in fire or explosion.</i>	1	5	5	Acceptable
6. Train Derailment Through a Curve <i>Derailment of passenger train at speed or above speed through a curve</i>	1	1	1	Acceptable
7. Dangerous Goods Leak/Release <i>From a loaded freight train due to a failure of, or damage to the railcar carrying said goods</i>	1	4	4	Acceptable
8. Airborne Train Derailment <i>Top level of sea-can (double stack intermodal) freight car becomes airborne in a derailment</i>	1	2	2	Acceptable
9. Crew Member Incapacitated <i>Controller of the train loses consciousness or ability to use train controls while train is in motion</i>	2	2	4	Acceptable
10. Runaway Rolling Stock - Explosive <i>Unattended railcar(s) loaded with dangerous goods begin moving by gravity without an active prime mover</i>	1	4	4	Acceptable
11. Runaway Rolling Stock – Freight / Intermodal <i>Unattended railcars, unloaded or loaded with non-hazardous goods begin moving by gravity without an active prime mover</i>	1	3	3	Acceptable
12. Movement Exceeds Limits of Authority <i>Unauthorized movement by a train placing the train in a position that could be struck by another train</i>	2	2	4	Acceptable
13. Trespassing onto Railroad <i>Trespassing onto railroad by unauthorized member</i>	2	4	8	Tolerable
14. Vandalism / Damage to Railway Equipment <i>Damage to overhead line equipment as a result of throwing of objects and potential for disruption to railway services / operations</i>	2	2	4	Acceptable

5 Mitigation Measures

The FCM/RAC Guidelines recommend a package of mitigation measures to protect against the risks associated with nearby rail operations. The following section summarizes the mitigation measures that are proposed as part of the new development to address safety concerns at the site.

5.1 Application of Safety Barrier

The development application at 2280 Dundas Street West proposes a 2.5-metre-high engineered crash wall to principally protect against a potential train derailment. At the northeast corner of the site where the property line curves away from the rail corridor, a 2.5-metre-high earthen berm is proposed as an extension of the crash wall.

At the north end of the crash wall where the property line curves away from the rail corridor, an earthen berm will act as an extension of the safety barrier. At the south end, a 6-metre-long return wall is proposed. The extent of the proposed safety barrier is illustrated in Figure 5-2 below.

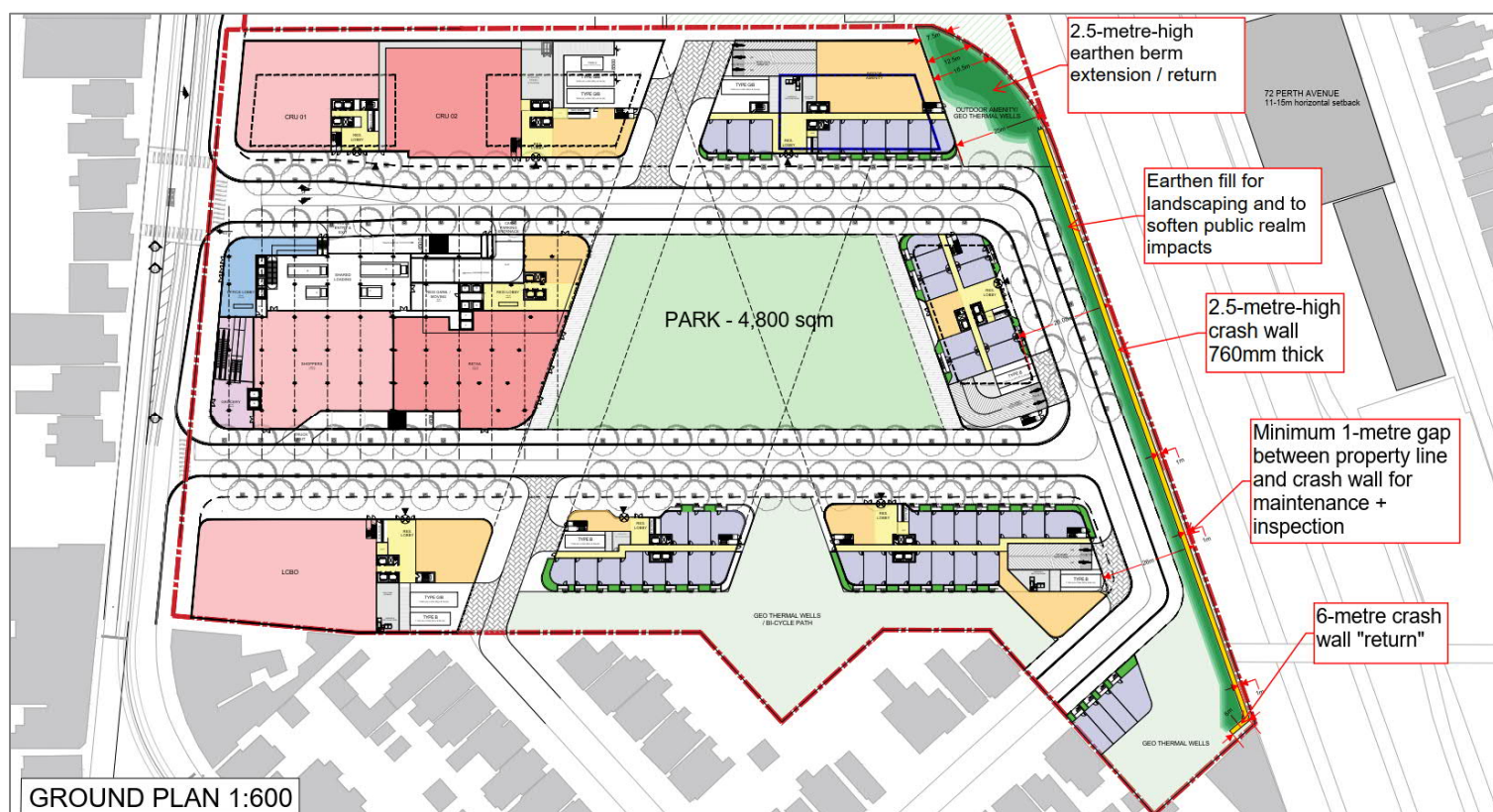


Figure 5-1 – Proposed Crash Wall Location

The proposed crash wall will exceed the minimum height requirement of 2.135 metres, specified in the AECOM Crash Wall Guidelines. The additional height of the crash wall enables a 5-metre reduction in the total setback.

The crash wall will be informed by Method 1 of the AECOM Guidelines and will be designed to withstand a minimum impact of 2,700kN. The closest subdivision, Galt, is limited to 50mph for both passenger and freight traffic, which falls within the allowable threshold for Method 1.

The further Weston tracks, which are rated for 80mph passenger rail service and 25mph freight speeds, were considered using Method 2, the ‘energy balance approach.’ Under Load Case 3 – Passenger Glancing Blow – a resulting impact of 1350kN was observed.

As such, the higher 2,700kN will be used as the design load for the crash wall.

The crash wall will run continuously along the eastern edge of the property line, parallel to the tracks. The crash wall will be setback 1 metre from the mutual property line so that routine inspection of the wall and site maintenance (e.g. Landscaping) may take place without having to encroach or access the rail corridor.

5.1.1 Crash Wall Design Specifications

The crash wall will be designed in accordance with the AECOM Development of Crash Wall Design Loads from Theoretical Train Impacts and will be designed withstand an impact of 2700kN, in accordance with Method 1.

The crash wall design will be built to the following specifications:

- The crash wall is planned to be 2.5 metres high (measured from the adjacent ground level and will be designed for a thickness of 760mm.
- The crash wall will be capable of withstanding a minimum impact of 2700kN.
- The crash wall will incorporate a 6-metre-long return at the south end of the property, at a height of 2.5m, consistent with the height of the wall.

Note: A crash wall return is not proposed along the northern end due to the orientation of the property line; instead, a 2.5-metre-high earthen berm will extend along the curved section of the property line, and provide derailment protection in conjunction with the crash wall.

The section view in Figure 5-3 below identifies the crash wall and nearby rail operations.

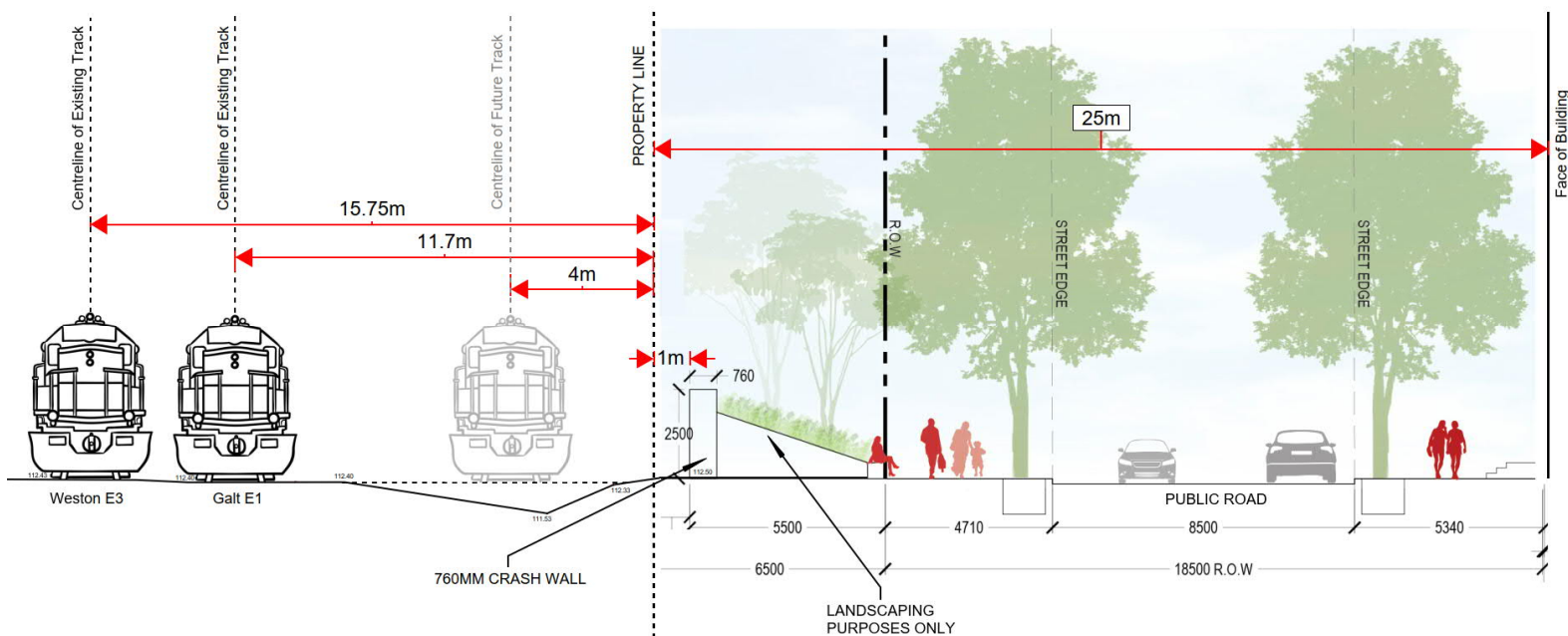


Figure 5-2: Cross Section (looking south)

Currently, a security fence is not proposed along the rail corridor property line as the crash wall will function similar to a security fence and limit trespassing opportunities. Additionally, 5-metre-high noise

walls are located within the rail corridor immediately adjacent to the property line which further limit trespassing opportunities.

5.1.2 Crash Wall Height

The decision to design a 2.5-metre-high crash wall at 2280 Dundas Street West was based on a number of different factors.

First, the AECOM Crash Wall Design Guidelines recommend crash walls be a minimum of 2.135 metres above the adjacent ground level, if the crash wall is greater than 7.6 metres from the centreline of the closest track. In the case of 2280 Dundas Street West, the crash wall will be approximately 12.5 metres from the closest current track and approximately 8 metres away from the closest future track.

Second, the FCM/RAC Guidelines state that, “marginal reductions in the recommended setback of up to 5 metres may be achieved through a reciprocal increase in the height of the safety berm.”

In the case of 2280 Dundas Street West, the decrease in setback from 30 metres to 25 metres represents a reduction of 17%. When the minimum crash wall height of 2.135 metres is increased by 17% (a ‘reciprocal increase’) the resulting height is 2.5 metres. As such, the 2.5-metre-high crash wall is considered appropriate for the development in the context of the proposed setbacks and the current guidelines.

Finally, the minimum crash wall height for CP freight trains is recommended to be 2.5 metres high. While CP does not actively run freight traffic through this corridor, the proposed height of the crash wall is consistent with their guidelines if freight traffic were to resume here in the future.

When considering the above factors, the crash wall height is considered suitable for the development proposed at 2280 Dundas Street West.

5.1.3 Earthen Berm Return

At the north end of the crash wall, an earthen berm is proposed which will wrap around the irregularly shaped property line, similar to a return to prevent a train from encroaching the development site on an angle.

The purpose of the earthen berm is twofold:

1. Provide derailment protection for Block 2 where the property line curves away from the rail corridor. This would allow the crash wall to remain parallel to the tracks while providing derailment protection to the rail-facing side of the building. The extension of the safety barrier as a berm provides similar function to a return wall.
2. To protect for the extension of the crash wall in the future into the neighbouring property to the north. The crash wall will be designed to accommodate an extension and the earthen berm will act as a permanent solution in the interim. If the crash wall extension does not occur, the earthen berm will become the permanent mitigation measure as it is expected to provide an equivalent level of protection as the crash wall.

The earthen berm will be designed in accordance with the FCM/RAC Guidelines. The berm will be comprised of 95% modified proctor and will be designed with a slope of 2.5:1. Given the site constraints, a steeper berm slope may be explored, however the final berm design is subject to review and approval by the rail operator and their technical advisors.

At the south end of the property, the crash wall will extend to the neighbouring property line where an existing building is situated. As such, a return wall is not contemplated at the south end. In the event the building is removed, it is understood a return wall would be needed at that time.

5.1.4 Corrosion Protection

As stipulated by the AREMA Guidelines under Section 2.6.4, exposed reinforcing bars, inserts, and plates intended for bonding with future extensions, shall be protected from corrosion. This is particularly relevant to the northern section of the crash wall, where it will meet the earthen berm.

The crash wall may be extended in the future if the neighbouring lands are developed. As such, any elements that could experience corrosion, are required to implement measures to prevent this from occurring.

5.1.5 Structural Isolation and Design Load

The crash wall will be structurally isolated from any building structure to ensure energy from a derailed train is not transferred into any part of the proposed development.

5.2 Application of Setbacks

The FCM/RAC Guidelines and Metrolinx Adjacent Development Guidelines both recommend the application of a standard 30-metre horizontal setback, measured from the rail corridor property line, when combined with a standard earthen berm. The setback provides a “buffer zone that contains the impacts associated with a potential train derailment; permits dissipation of rail-oriented emissions, vibration, and noise; and accommodates a safety barrier.”⁶

At 2280 Dundas Street West, a horizontal setback of 25 metres is proposed, measured from the rail corridor property line to the face of the closest building.

This reduction in setback was premised on two additional aspects of the guidelines. First, the FCM/RAC Guidelines state that, “marginal reductions in the recommended setback of up to 5 metres may be achieved through a reciprocal increase in the height of the safety berm.”⁷

To achieve this, the crash wall safety barrier has been increased in height (reciprocally) to enable a reduction of 5 metres in the total setback.

The reduction in setback is further supported by the provision of a crash wall. The FCM/RAC Guidelines state that the “horizontal setback requirements may be substantially reduced with the construction of a crash wall.”

Given these additional caveats within the guidelines, a modest reduction in the horizontal setback from the standard 30 metres to 25 metres has been proposed. The building setbacks for Blocks 2, 4 and 8 are illustrated in Figure 5-1 below.

⁶ Metrolinx. 2013. *Adjacent Development Guidelines*. p.8.
<https://www.metrolinx.com/en/projectsandprograms/constructionanddevelopment/docs/GO-Transit-Rail-Corridors-Metrolinx-Adjacent-Development-Guidelines.pdf>

⁷ FCM/RAC *Guidelines for New Development in Proximity to Railway Operations*. 2013. p.27

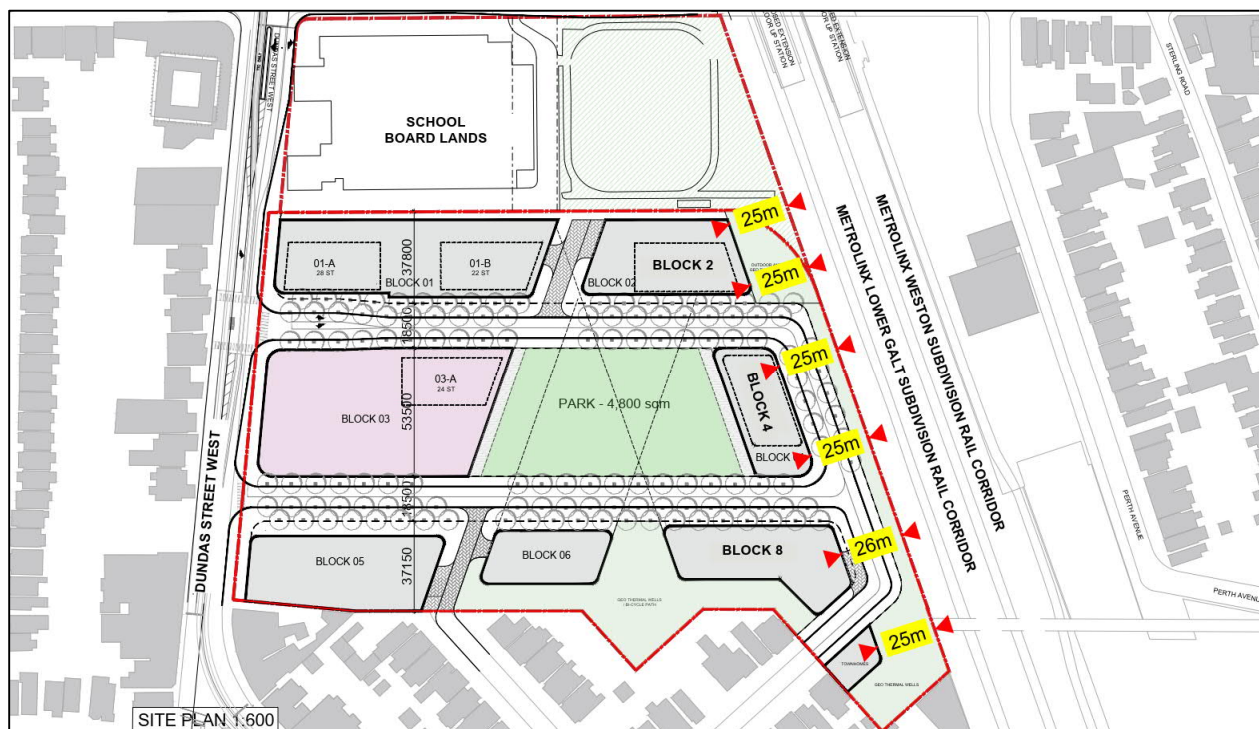


Figure 5-3: Section View at South End (facing north)

Detailed architectural plans are included in Appendix B.

5.3 Application of Non-Sensitive, Low Occupancy Uses

The proposed development at 2280 Dundas Street West makes use of the setback area by locating only low-occupancy, non-sensitive uses within a 25-metre horizontal setback from the rail corridor. These uses include a public road, sidewalks, landscaped areas with small trees and shrubs, and the crash wall. All high-occupancy, sensitive use spaces are located outside of the 25-metre-horizontal setback area.

5.4 Trespassing

New residential developments must include a 2.43-metre-high chain link fence along the mutual property line to discourage trespassing within the rail corridor. Trespassing represents *“by far the greatest number of annual fatalities” in the context of railway accidents and is considered “at least as great, if not greater a safety concern than is derailment.”*⁸

Since the development site does not share a boundary with the rail corridor, trespassing concerns are outside of the control of the Owner. In the future, access to the West Toronto Rail Path will be provided by the adjacent property owner to the north along the northern boundary of the 2280 Dundas Street West development site.

In the future, a noise barrier and a chain link fence will be constructed between the rail corridor and the WTRP as part of the realignment. As the owner of the West Toronto Rail Path, the municipality has a responsibility to ensure there is a continuous barrier to reduce trespassing along the mutual property line.

⁸ FCM/RAC *Guidelines for New Development in Proximity to Railway Operations*. 2013. p.18

While trespassing is a real concern for railway operations, the development site does not share a mutual property line with the rail right-of-way. There are multiple points nearby that grant access to the WTRP, adjacent to the railway. As such, it is unlikely the new development will have any impact on trespassing onto the rail corridor.

5.4.1 Metrolinx Noise Wall

Within the rail corridor a 5-metre-high noise wall has been constructed by Metrolinx. The noise wall is located approximately 1 metre from the mutual property line. At the northeast corner of the site, there is a gap in the noise wall approximately 45 metres long. It is unclear whether Metrolinx intends on closing the gap, however, given the ongoing rail corridor expansion plans and proposed residential develop, it is likely that Metrolinx will extend the wall to maintain continuity for noise mitigation.

5.5 Anti-Graffiti Treatment

Typically, Metrolinx/GO Transit request that anti-graffiti treatment be applied to any surface adjacent to their right-of-way that could be subject to graffiti. In the case of the crash wall at 2280 Dundas Street West, anti-graffiti coating is not contemplated at this time.

The primary reason anti-graffiti treatment is not considered necessary is that the crash wall will not be exposed to the development or rail corridor in a way that would warrant anti-graffiti treatment.

The crash wall facing the development will have earthen material placed against it for landscaping purposes. Small shrubs and a narrow grassy area will limit the exposure of the wall to members of the public, reducing the likelihood of graffiti.

On the rail-facing side of the crash wall the existing 5-metre-high noise barrier within the Metrolinx rail corridor will limit both access to and visibility of the crash wall proposed within the 2280 Dundas Street West site. The existing noise wall will remain in the rail corridor. Additional details of the noise wall are included in Section 5.3.1 below.

As a result of these site-specific characteristics, the application of anti-graffiti treatment is not considered to be necessary.

5.6 Vegetation Clearance Zone

In accordance with the Metrolinx Adjacent Development Guidelines, a 3.5-metre-wide vegetation clearance zone will be provided along the rail corridor property line. The landscape plan includes a treeline running along the rail corridor; however, these trees will be setback 3.5 metres to minimize foliage and or debris falling into the rail corridor from within the development lands.

The Landscape Concept Design, prepared by PFS Studio, was submitted as part of the development application which highlights the location of vegetation and trees in the future.

6 Additional Risks and Considerations

While the primary focus of this study is on rail corridor proximity and derailment protection, there are other potential risks to both the public and rail operator associated with new developments in proximity of rail corridors.

These additional risks and considerations include risks to life safety (such as fire, explosions), risks to quality-of-life (such as noise, vibration, and air quality), and potential risks that could affect the railway in the future (such as stormwater discharge, construction operations, trespassing and vandalism).

Some of these risks and impacts will be identified and appropriately mitigated through individual studies including:

- Noise Assessment Report
- Railway Vibration Assessment
- Stormwater Management
- Air Quality

6.1 Noise and Vibration

The FCM/RAC Guidelines recommend that the Site owner conduct a full noise and vibration assessment to mitigate the external impacts that arise as a result of railway operations.

The Applicant has retained SLR to prepare an Environmental Noise and Vibration Assessment as part of the development application. The recommended control measures, risk, and mitigation strategy is addressed therein.

Hatch defers to the recommendations within this assessment.

6.2 Stormwater Management

Stormwater drainage can be an issue for any new development. Maintaining current drainage patterns for the rail corridor is important to ensure the stability of the tracks. The grading of the rail corridor is intended to maintain existing longitudinal drainage patterns. The rail corridor is not designed to handle additional flows from neighboring properties. This is addressed in the FCM/RAC Guidelines:

“Stormwater management and drainage infrastructure associated with a development [...] should not adversely impact on the function, operation, or maintenance of the corridor, or should not adversely affect area development.”⁹

As such, the development must not discharge or direct stormwater, roof water, or floodwater onto the railway corridor.

All drainage will be directed to municipal infrastructure and no impact to the rail corridor is anticipated as a result of the development. A stormwater management report has been conducted to ensure stormwater runoff is appropriately mitigated on site and there are no residual impacts to the rail corridor.

6.3 Air Quality

The Applicant has retained SLR to prepare an Air Quality, Dust, & Odour Study as part of the development application. The recommended control measures, risk, and mitigation strategy is addressed therein.

Hatch defers to the recommendations within this study.

⁹ FCM/RAC Guidelines for New Development in Proximity to Railway Operations. 2013. p.42

7 Conclusions and Recommendations

This Rail Safety and Development Viability Assessment has been undertaken within the context of existing regulations, guidance and procedures while taking into consideration the specific site conditions and constraints at 2280 Dundas Street West.

A reduced setback of 25m is proposed, measured as a horizontal straight-line distance from the rail corridor property line to the face of the closest building. This reduction in total setback is enabled through the provision of a crash wall that exceeds the minimum height requirements, design to withstand an impact of 2,700kN. The conservative design load applied to the crash wall improves the overall level of safety and increases the likelihood the wall will be capable of deflecting a derailed train back towards the rail corridor. The crash wall provides superior derailment protection when compared to the standard earthen berm.

An earthen berm will extend along the northeastern property line, which curves away from the rail corridor. The earthen berm extension / return offers better overall coverage at the corner of the site than a return would and is a standard form of safety barrier. The berm will be designed to the standard specifications with slopes of 2.5:1 and be comprised of 95% modified proctor.

The proposed uses within the setback area are consistent with the City of Toronto's and Metrolinx's preferred uses. A public roadway, pedestrian walkways, safety barrier and landscaping elements will make up the setback area.

It is our opinion that a site-specific analysis of the rail corridor (that includes confirmation of the future track locations) indicates that the level of residual risk is acceptably low, once the application of the proposed mitigation measures is complete.

The risks associated with railway activities and the potential impact to the proposed development at 2280 Dundas Street West have been assessed. The proposed safety measures effectively mitigate the identified to the property and are consistent with the industry-wide best practices for rail adjacent development. When the mitigation measures proposed herein are implemented, it is our opinion that the necessary requirements will be met and the development should be allowed to proceed.

8 Appendix

- Appendix A: References and Guidelines
- Appendix B: Architectural Plans
- Appendix C: Topographic Survey
- Appendix D: Rail Corridor Details
- Appendix E: Risk Assessment

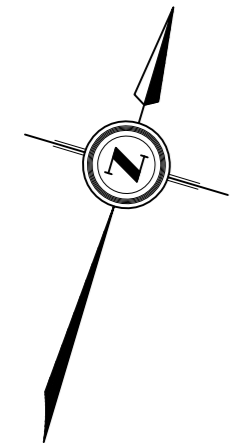
8.1 Appendix A: References and Guidelines

1. FCM/RAC Guidelines for New Development in Proximity to Railway Operations (May 2013)
2. Metrolinx – GO Transit Adjacent Development Guidelines (April 1, 2013)
3. AECOM Submission Guidelines for Crash Walls (July 29, 2014)
4. Development of Crash Wall Design Loads from Theoretical Train Impact by Gaylene Layden, P.Eng, Bridge Engineer AECOM (2014)
5. City of Toronto – Land Use Study: Development in Proximity to Rail Operations (March 2019)
<https://www.toronto.ca/wp-content/uploads/2019/05/960c-City-Planning-Final-Report-City-Wide-Land-Use-Study-Development-in-Proximity-to-Rail-Operations-Phase-2-March-21-2019.pdf>
6. Transportation Safety Board – Occurrence Database
<http://www.tsb.gc.ca/eng/stats/rail/data-5.asp>
7. Bombardier Bi-Level IX Coach – Crumple Capacity Information (responded email from Bombardier on March 4, 2019)
8. Motive Power MP54AC Tier 4 Commuter Locomotive Specifications
9. GO Rail Network Electrification Transit Project Assessment Process Environmental Project Report (October 2017)
http://www.metrolinx.com/en/electrification/docs/EPR_Volume%205_For%20Web_Revised_Jan2018_20180212_R2.pdf
10. Bi-level coach locomotive weight - <https://transit.toronto.on.ca/archives/maps/GoTransit/GO-quick-facts-2013-06.pdf>
11. MP54 locomotive specifications sheet: -
<https://www.wabtec.com/uploads/outlinedrawings/MP54AC-Commuter-Locomotive.pdf>

8.2 Appendix B: Architectural Plans

Due to file size limitations, the Architectural Coordination set has been submitted under separate cover as part of the development application.

8.3 Appendix C: Topographic Survey



PLAN OF SURVEY WITH TOPOGRAPHY OF
PART OF LOTS 50, 51 AND 52
REGISTERED PLAN 287
 AND
LOT 27, BLOCK B AND PART OF BLOCK A
REGISTERED PLAN 790
CITY OF TORONTO
 SCALE 1 : 500

SPEIGHT, VAN NOSTRAND & GIBSON LIMITED
 ONTARIO LAND SURVEYORS
 2017

THE REPRODUCTION, ALTERATION OR USE OF THIS PLAN
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ELEVATION NOTE

ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM THE CITY OF TORONTO
 BENCH MARK NO. CT-1515, (ALSO KNOWN AS 12219741515)

LOCATION :
 SOUTH EAST CORNER OF BLOOR STREET WEST AND DUNDAS STREET WEST,
 BENCH MARK ON A 3 STOREY BRICK BUILDING (1515 BLOOR STREET WEST)
 NORTH END OF WEST WALL

ELEVATION:
 PUBLISHED ELEVATION = 113.060 metres.

BEARING NOTE

BEARINGS ARE ASTROMONIC AND ARE REFERRED TO THE NORTHERLY LIMIT
 OF LOT 51 AS SHOWN ON PLAN OF SURVEY BY SPEIGHT, VAN NOSTRAND &
 GIBSON LIMITED, DATED JUNE 27, 1997, HAVING A BEARING OF N73°41'30"E.

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES
 AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND

SYMBOL	DENOTES
■	SURVEY MONUMENT FOUND
○	SURVEY MONUMENT PLANTED
W	WITNESS MONUMENT
SB	STANDARD IRON BAR
SBIB	SHORT STANDARD IRON BAR
IB	IRON BAR
CC	CUT CROSS
N.S.E.W	NORTH, SOUTH, EAST, WEST
OU	ORIGIN UNKNOWN
SV	SPEIGHT, VAN NOSTRAND & GIBSON LIMITED, O.L.S.
AIM	A. T. MCLAREN LIMITED, O.L.S.
P	PLAN OF SURVEY BY SPEIGHT, VAN NOSTRAND & GIBSON LIMITED, O.L.S.
P1	DATED JUNE 27, 1997
P2	PLAN OF SURVEY BY SPEIGHT AND VAN NOSTRAND LIMITED, O.L.S.
P3	DATED DECEMBER 09, 1977
P4	PLAN 648-13705
P5	PLAN 648-15495
P6	EXPROPRIATION PLAN W/ 132600
P7	DATED MAY 22, 1968
P8	PLAN OF SURVEY BY SPEIGHT, VAN NOSTRAND, WARD & ANDERSON, O.L.S.
P9	DATED MARCH 12, 1963
P10	PLAN OF SURVEY BY P. SALVA COMPANY LTD., O.L.S.
P11	DATED DECEMBER 20, 2001
P12	PLAN OF SURVEY BY HARBEAU & CZERWINSKI, O.L.S.
P13	DATED JULY 13, 1999
P14	PLAN 669-02889
P15	PLAN OF SURVEY BY SPEIGHT AND VAN NOSTRAND LIMITED, O.L.S.
P16	DATED NOVEMBER 21, 1977
ATS	AUTOMATIC TRAFFIC SIGNAL
B	BOLLARD
SB	BELL BOX
SBH	BELL MANHOLE
SBP	BELL POLE
BRP	BREATHING PIPE
CAM	CAMERA
CB	CATCH BASIN
CHP	CONCRETE HYDRO POLE
CLS	CONCRETE LIGHT STANDARD
CP	CONCRETE POLE
FF	FINISHED FLOOR
FM	FIRE MANTON
GM	GAS METER
GVP	GUY WIRE/POLE
GV	GAS VALVE
HB	HYDRO BOX
HMH	HYDRO MANHOLE
HW	HAND WELL
HP	HYDRO POLE
HPT	HYDRO TRANSFORMER
ICV	IRRIGATION CONTROL VALVE
LS	LIGHT STANDARD
M	METER
MH	MANHOLE
MHP	METAL HYDRO POLE
MLS	METAL LIGHT STANDARD
MP	METAL POLE
PIV	PRESSURE INDICATOR VALVE
SI	SMOKE CONNECTION
THES	TORONTO HYDRO ELECTRIC SYSTEM
WB	WOODEN BELL POLE
WEL	WATER WELL
WHP	WOODEN HYDRO POLE
WMH	WOODEN MANHOLE
WLS	WOODEN LIGHT STANDARD
WV	WATER VALVE
○	DECIDUOUS TREE
○	CONIFEROUS TREE
■	CONCRETE
■	BRICK
—	TOP ELEVATION
—	BRIDGE SOFFIT ELEVATION
—	TRACK ELEVATION
—	OVERHEAD WIRE ELEVATION
—	FENCE TOP OF BASE ELEVATION
—	FENCE TOP ELEVATION
—	FENCE COLUMN TOP ELEVATION
—	DOOR SILL ELEVATION
—	FINISH FLOOR MATERIAL

SURVEYOR'S CERTIFICATE

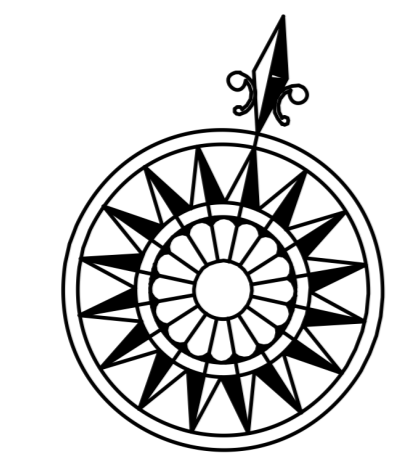
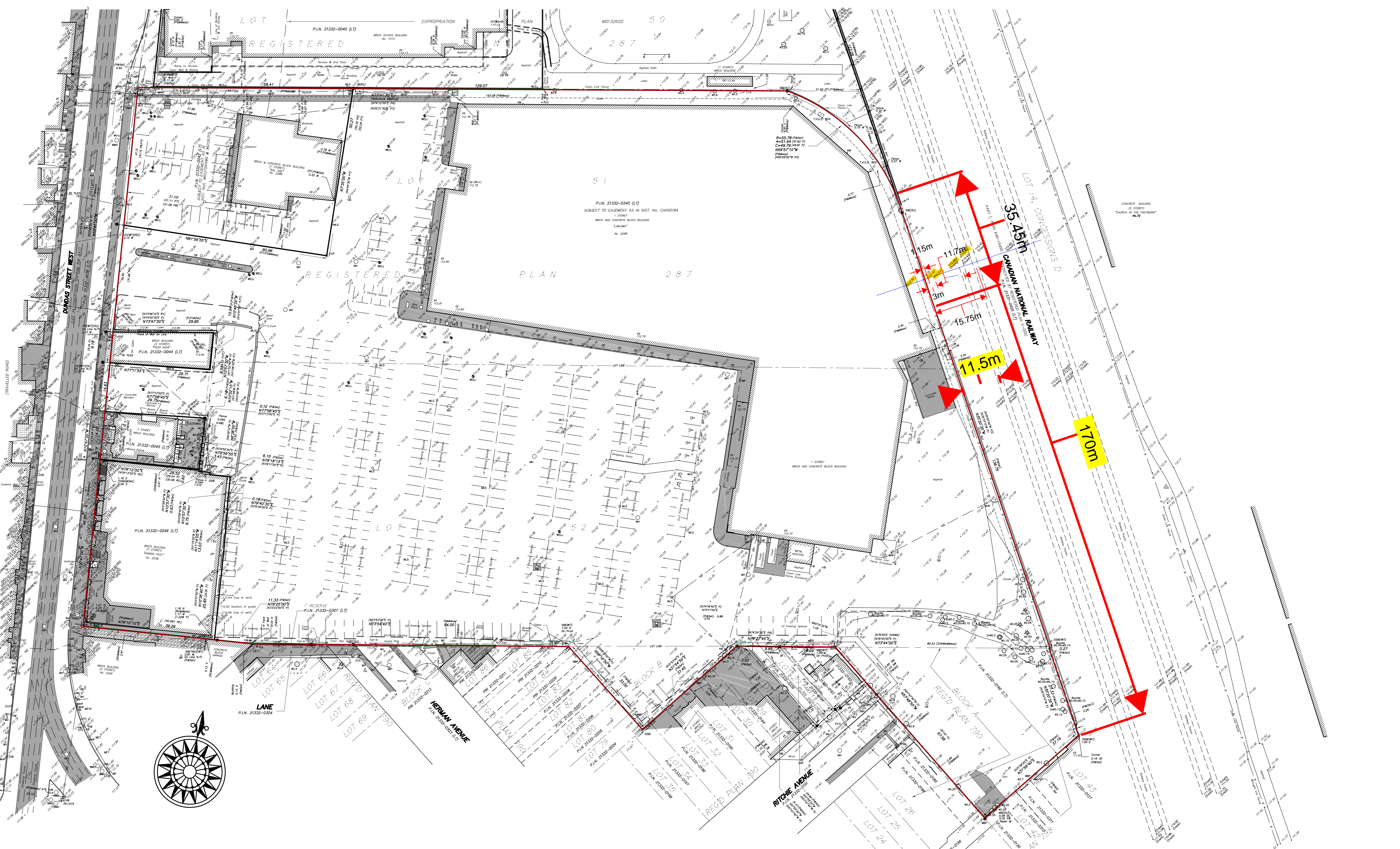
I CERTIFY THAT:
 1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT,
 THE SURVEYS ACT AND THE REGULATIONS MADE UNDER THEM.
 2. THE SURVEY WAS COMPLETED ON JULY 25th, 2018.

DATE : AUGUST 10th, 2018

D. A. WILTON
 Ontario Land Surveyor

<p>SPEIGHT, VAN NOSTRAND & GIBSON LIMITED ONTARIO LAND SURVEYORS 750 OAKDALE ROAD, UNITS 65 & 66 TORONTO, ONTARIO M3N 2Z4 TEL: 416-749-5762/7654 FAX: 416-749-7866 E-MAIL: toronto@svng.on.ca</p>	<p>ASSOCIATION OF ONTARIO LAND SURVEYORS PLAN SURVEYOR FORM 2046487</p>

57-287Y



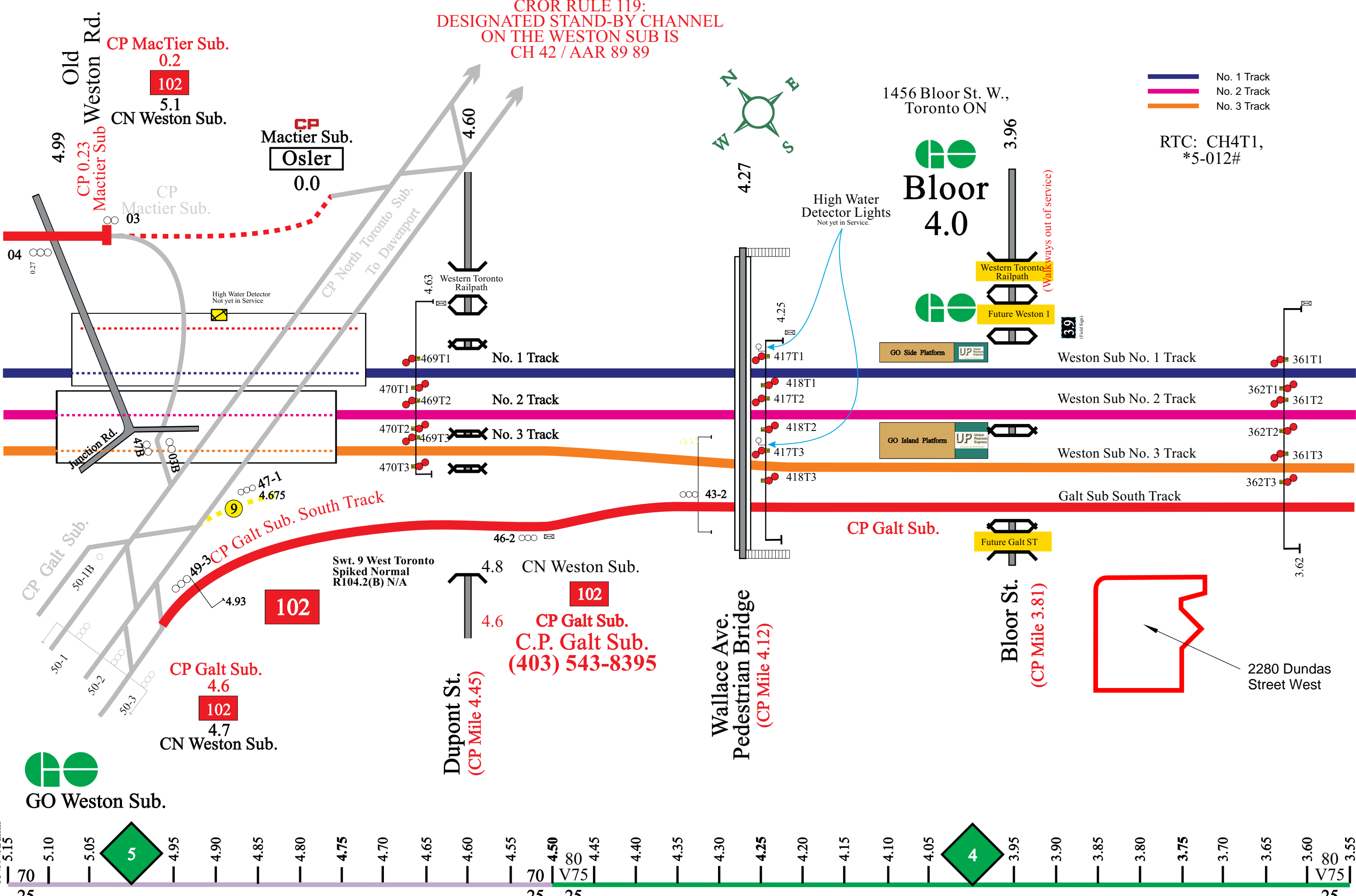
8.4 Appendix D: Rail Corridor Details

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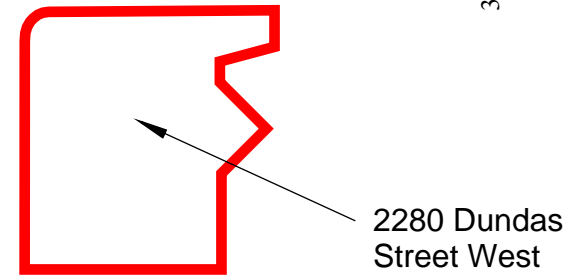
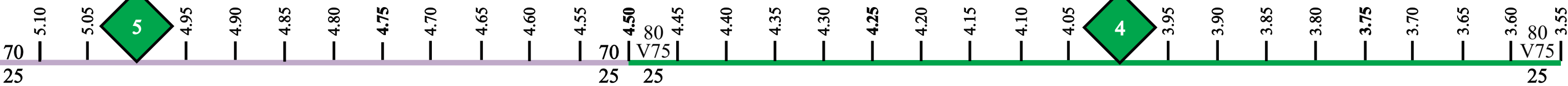
CROR RULE 119:
DESIGNATED STAND-BY CHANNEL
ON THE WESTON SUB IS
CH 42 / AAR 89 89

- No. 1 Track
- No. 2 Track
- No. 3 Track

RTC: CH4T1,
*5-012#



R21-3-55-5.10
Weston Sub.
15/09/02dmm



2280 Dundas
Street West

Kennedy, Jamie

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: May 23, 2022 9:58 PM
To: Kennedy, Jamie
Cc: Austin-Igbuku, Oghenemaro; Dawson, Jenna
Subject: RE: Mile 4.0 - Weston Subdivision

**** CAUTION: This email originated outside Hatch. Do not click links or open attachments unless you can authenticate the sender and the content**

Hi Jamie,

Further to your request dated May 17, 2022, the subject lands (2280 Dundas Street West) are located within 300 metres of the Metrolinx Weston Subdivision (which carries Kitchener and UP Express rail service) and Metrolinx Lower Galt Subdivision (which carries Milton GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel and electric trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 524 trains. The planned detailed trip breakdown is listed below:

Weston Subdivision (which carries Kitchener GO rail service)

	1 Diesel Locomotive	2 Diesel Locomotives		1 Diesel Locomotive	2 Diesel Locomotives
Day (0700-2300)	92	36	Night (2300-0700)	22	2

Metrolinx Lower Galt Subdivision

	1 Diesel Locomotive		1 Diesel Locomotive
Day (0700-2300)	38	Night (2300-0700)	6

It's anticipated that UP Express rail service at this location will be electrified and comprised of up to three (3) passenger cars. The planned detailed trip breakdown is listed below:

	1 Electric Locomotive		1 Electric Locomotive
Day (0700-2300)	256	Night (2300-0700)	72

The current track design speed near the subject lands is 75 mph (121 km/h).

There are no *anti-whistling by-laws* in affect near the subject lands.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase.

Options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams are currently completing the bids that will close in 2021. GO Expansion construction will get underway in 2022.

However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel-track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.

Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

Regards,

Tara Kamal Ahmadi

Junior Analyst

Third Party Projects Review, Capital Projects Group

Metrolinx | 20 Bay Street | Suite 600 | Toronto | Ontario | M5J 2W3



From: Kennedy, Jamie <jamie.kennedy@hatch.com>

Sent: May 17, 2022 1:33 PM

To: Rail Data Requests <RailDataRequests@metrolinx.com>

Cc: Austin-Igbuku, Oghenemaro <oghenemaro.austin-igbuku@hatch.com>; Dawson, Jenna <jenna.dawson@hatch.com>

Subject: Mile 4.0 - Weston Subdivision

EXTERNAL SENDER: Do not click any links or open any attachments unless you trust the sender and know the content is safe.
EXPÉDITEUR EXTERNE: Ne cliquez sur aucun lien et n'ouvrez aucune pièce jointe à moins qu'ils ne proviennent d'un expéditeur fiable, ou que vous ayez l'assurance que le contenu provient d'une source sûre.

Hello, good afternoon.

I'm preparing a rail safety assessment for a new development that is proposed at 2280 Dundas Street West, located between Mile 3.7-4.0 of the Weston/Galt Subdivisions.

The landowner is in the process of preparing a formal planning application for a large-scale mixed use residential development.

The reason for my email is that I was hoping to obtain a few additional details about the rail corridor. We were hoping you could share the following:

1. Rail corridor speeds (on both the Galt Subdivision and Weston Subdivision)
2. Future rail traffic volumes (for the Milton, Kitchener and UP Express lines)
3. Rail corridor expansion plans (these have previously been shared as part of the developments at 150 Sterling Road and 72 Perth Avenue but I was wondering if updated corridor expansion plans were available that could be shared. This will help us a). determine the location of the future track on the Galt Subdivision and b). design

the crash wall in accordance with the AECOM Guidelines, which relies on the distance from the centreline of the closest track, which in this case would be the future track).

4. The noise wall within the rail corridor at this location is not continuous – there is a 45 metre gap in the noise wall on the west side of the rail corridor – out of curiosity, does Metrolinx intend on closing that gap?

We have applied a very conservative approach to meeting Metrolinx's and the City of Toronto's adjacent development guidelines (including a crash wall + 25m horizontal setback to the closest building). If we were proposing a more aggressive scheme, I would recommend a quick call with the TPPR team but I do not think it is warranted in this instance. If you would like some additional details of the development please feel free to reach out and we can schedule a time to discuss.

If you are able to share these details that would be very helpful. If there are any questions, please let me know.

Thank you.

Best,
Jamie

Jamie Kennedy

Project Manager

Office: +1 289 326 1506

Mobile: +1 647 400 0476

HATCH

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8.5 Appendix E: Risk Assessment

				Future Residual Risks with Future Protective Measures Applied (with Crash Wall, Security Fencing, Design Considerations Applied)					
No.	Hazard	Context	Potential Consequence	Future Condition	Tracks	Frequency	Severity	Future Residual Risk Level	Future Risk Classification
				Future Overall Corridor Risk Classification at 2280 Dundas Street West, Toronto					
				Low					
1	Passenger Train Derailment (at speed)	Derailment of passenger train within the Galt Subdivision rail corridor, at the maximum allowable speed of 50mph. Derailment of passenger train within the Weston Subdivision rail corridor, at the maximum allowable speed of 80mph.	Passenger train travelling towards the development lands, potentially resulting in environmental contamination or loss of life.	While a Passenger Train derailment on the main line at speed is possible, no events of this type have been recorded by the Transportation Safety Board between 2001 and 2021 within the Weston and/or Galt Subdivision rail corridors between Mile 0 and Mile 10. Bloor GO Station is located approximately 200 m north of the site meaning that many trains are not operating at full speed through the station but instead are accelerating and decelerating to serve the station and passengers. Some trains will bypass at full speed but the risk profile of the corridor is lower due to the Site's proximity to a station. The development lands are separated from the Weston and Lower Galt Subdivision rail corridors by the adjacent ditch. The Metrolinx Lower Galt and Weston Subdivisions are separated from the development lands at 2280 Dundas Street West by approximately 11.50 and 15.60 metres respectively. There is a 1 meter decrease in elevation in the ditch that runs adjacent to the development lands that indicates a slightly lower risk profile as a derailed train would be expected to fall into the ditch below if derailed. When we model a derailed train at the maximum allowable speeds, we find that passenger trains would lose all momentum prior to reaching any of the buildings on the property. This conclusion does not account for the loss of energy that would occur if the train first hit the crash wall. Furthermore, a 2.5-metre-high crash wall will be constructed along the rail corridor property line to prevent a derailed train from encroaching the site. Under all derailment scenarios, no impact with the building is expected.	All	1	3	3	Acceptable
2	Passenger Train Derailment (above maximum allowable speed)	Derailment of passenger train within the Galt Subdivision rail corridor, at a speed higher than the maximum allowable speed of 50mph. Derailment of passenger train within the Weston Subdivision rail corridor, at a speed higher than the maximum allowable speed of 80mph.	Passenger train travelling towards the development lands at higher than normal speed, potentially resulting in environmental contamination or loss of life.	While a Passenger Train derailment on the main line above the maximum allowable speed is possible, no events of this type have been recorded by Metrolinx or the Transportation Safety Board between 2001 and 2021 within the Galt or Weston Subdivision rail corridors between Mile 0 and Mile 10. In the event of a derailed passenger train travelling towards the site at greater than maximum allowable speeds, the separation distance between the tracks and the development mean that a derailed train would lose all momentum before reaching the building. The future crash wall (to be designed by professional engineer), and non-sensitive uses adjacent to the rail corridor (public road and greenspace) separate the rail corridor activities from the sensitive use, occupied spaces within the development. Due to the increase speeds, the risk of loss of life or environmental contamination is higher, however, the proposed crash wall will minimize any impact to the occupants within the proposed development at 2280 Dundas Street West. The crash wall is considered to provide better resistance and protection against a derailed train than the standard measure of an earthen berm.	All	1	4	4	Acceptable
3	Freight Train Derailment (at speed)	Derailment of freight train north or south of the property, or alongside the site boundary, at the maximum allowable 50mph (Galt) and 25mph (Weston) speed limit. No hazardous materials or dangerous goods	Spilling of materials / freight into rail corridor or hydro corridor adjacent to the site resulting in potential environmental contamination or loss of life.	While a main line derailment of a freight train travelling at speed from north or south of the development, travelling towards the development is possible, it is considered an unlikely event given a number of factors including the fact that freight is not currently scheduled on either the Galt or Weston Subdivisions. The presence of the GO station and the lower operating speeds associated with freight traffic in urban areas also contributes to a low risk to the future development. A review of the TSB data from 2001 to 2021 within a 10 miles of the site along the Galt and Weston Subdivision rail corridors, there have been 0 incidents of main line freight train derailments recorded. While the TSB has recorded over 60 non-main line track derailments, the majority of these derailments have been within a yard setting, and none of the recorded incidents have resulted in fatalities, injuries, fires, explosions or the release of dangerous goods. The provision of a crash wall and 25-metre horizontal setback is considered to mitigate the life safety risks associated with freight trains. While environmental contamination is possible, in most scenarios, the damage would be contained within the rail corridor.	All	1	3	3	Acceptable
4	Freight Train Derailment (above maximum allowable speed)	Derailment of freight train north or south of the property, or alongside the site boundary, at a speed higher than the maximum allowable 50mph (Galt) and 25mph (Weston) speed limit. No hazardous materials or dangerous goods	Spilling of materials / freight into rail corridor or hydro corridor adjacent to the site resulting in potential environmental contamination or loss of life.	While a main line derailment of a freight train travelling above the posted speed limit travelling towards the development is possible, it is considered an unlikely event given the alignment of the tracks within the rail corridor, the area-specific operating requirements and the separation distance between the rail corridor and the development lands. A review of the TSB data from 2001 to 2021 within 10 miles of the site along the Galt and Weston Subdivision rail corridors, there have been 0 incidents of main line freight train derailments recorded. While the TSB has recorded over 60 non-main line track derailments, the majority of these derailments have been within a yard setting, and none of the recorded incidents have resulted in fatalities, injuries, fires, explosions or the release of dangerous goods. In the event of a derailed freight train travelling towards the site at greater than maximum allowable speeds, the separation distance between the tracks and the development mean that a derailed train would lose all momentum before reaching the building. The future crash wall (to be designed by professional engineer), and non-sensitive uses adjacent to the rail corridor (parkland) separate the rail corridor activities from the sensitive use, occupied spaces within the development. Bloor Avenue West (located to the north of the development site) is grade separated. This typically indicates a slightly lower risk profile as a derailed train would be expected to fall into the road way below if travelling in the direction of the site (this is of course really only applicable for southbound trains).	All	1	4	4	Acceptable
5	Freight Train Derailment (Explosive) - at maximum allowable speed	Derailment of freight train carrying flammable or hazardous materials alongside the site boundary, at the maximum allowable speed. Note: The operating speed for hazardous goods is reduced to 25mph on the Galt track, which is the maximum allowable speed for freight traffic within the Weston Subdivision.	Upon derailment rail cars with flammable/hazardous materials ignite, explode or are released adjacent to the building.	While a main line derailment of a freight train carrying dangerous goods or hazardous materials is possible, it is considered an unlikely event given the alignment of the track, the area-specific operating requirements and the separation distance between the rail corridor and the development lands. A review of the TSB data from 2001 to 2021 within 10 miles of the site along the Galt and Weston Subdivision rail corridors, there have been 0 incidents involving explosions. Two fires were reported along the CP Galt subdivision in 2016 and 2012 but they were not attributed to a train derailment but rather (1) train caught fire in the caboose, 4 of its gondolas, and some ties in the Cooksville steel spur and (2) a multilevel car caught fire and its load of automobiles was destroyed. No injuries, fatalities or other adverse impacts were reported by the TSB in this incident. An explosion or spill of dangerous, hazardous or flammable materials would certainly result in environmental damage - the extent of the damage and the impact would depend on the extent and severity of the incident. Loss of life and environmental damage could occur in this scenario, even if impacts to the building are not anticipated. In this scenario, the risks are not only to the development but the entire local area. However, given that freight trains are required to reduce their speed to 25mph when transporting dangerous goods / hazardous materials through this section of track, the severity of this event would depend on the nature of the derailment.	All	1	5	5	Acceptable
6	Train Derailment Through a Curve	Derailment of passenger train at speed OR above speed through a curve	Train travelling towards the development on the outside of a curve or tipping	A review of the TSB data between 2001 and 2021 reveals that no incident of this type has been recorded. That is not to say that it cannot happen but rather that the risk of occurrence is acceptably low. Given the current track alignment, the closest curve is approximately 770M from the development site, further south at Dundas Street West. If a derailment of a passenger train were to occur through the curve south of the site, the development lands would not be affected. As Metrolinx trains are typically 250-300 metres long, the derailed train would be far enough away to limit any risk to the occupants at the site.	All	1	1	1	Acceptable
7	Dangerous Goods Leak/Release	Release of dangerous goods from a loaded freight train due to a failure of or damage to the railcar carrying said goods.	Risk to human health and/or life from the dangerous goods release into the local area environment.	Through 2001 - 2021, there was no incident of dangerous goods leaking recorded by the TSB. In the event of dangerous goods release within the rail corridor adjacent to the development lands, minimal impacts to the building occupants is anticipated. Furthermore, Transport Canada requires trains carrying dangerous goods and hazardous materials through this section of track to reduce their speeds to 25mph. If a train were to derail at the maximum allowable speed of 25mph, it would theoretically lose all momentum before reaching the property. The nature of the goods released would dictate the response from the City, first responders, and rail operator. Due to the provision of a crash wall, a derailed train carrying dangerous goods would be prevented from encroaching the development lands, minimizing the direct impact to occupants of the site.	All	1	4	4	Acceptable
8	Top level of sea-can (double stack intermodal) freight car becomes airborne in a derailment	Top level of sea-can (double stack intermodal) freight car becomes airborne in a derailment. Tipping included in this scenario.	Airborne freight container that has left the railcar collides with a development and any nearby structures.	A review of the TSB data between 2001 and 2021 reveals that no incident of this type has been recorded. That is not to say that it cannot happen but rather that the risk of occurrence is acceptably low. Given the allowable speeds for freight, it is considered unlikely for a train to derail with enough velocity for a stacked freight car to become airborne with enough momentum to travel towards the development with significant force. However, this risk has been considered and accounted for through the provision of a crash wall, which would provide protection from resulting flying debris, and the separation distance between the tracks and the rail corridor is consistent with standard best practices, which act as a buffer to the railway and minimizes any exposure to airborne components of train cars. If a stacked car were to tip in a derailment, the setback of the building is considered to adequately address this risk. The centreline of the track is far enough from the rail corridor property line that a tipping event would likely be wholly contained within the right-of-way, with no impact to the development lands. In the event a freight car is airborne or tips, the crash wall will act as the primary, first line of defense. In the unlikely event a rail car were to travel over the crash wall, the public roadway within the setback area provides an area for the train car to come to rest before reaching the buildings.	All	1	2	2	Acceptable
9	Crew Member Incapacitated	Controller of the train loses consciousness or ability to use train controls while train is in motion.	Collision with another train or track object, derailment or loss of control due to incapacitated crew member.	An incapacitated crew member is a rare occurrence. No incidents of this type were recorded by the TSB within 10 miles of the site along the Galt or Weston subdivision rail corridors between 2001 - 2021. This event is assessed as lower risk score as trains operate with several crew members aboard and follow specific protocols for incapacitated crew members. Additionally, typically CP Railway requires multiple engineers on board to operate trains, improving safeguards were this type of event to occur. The introduction of a safety barrier (in the form of a crash wall and earthen berm) is thought to mitigate any risk associated with this type of event. While this event is unlikely, this risk is closely related to the health and well-being of the operator, rather than the physical operations of the train. As such, it is considered possible, even likely, that this event could arise through the lifecycle of the rail system. The severity of this event would vary depending on the duration of time incapacitated, and whether other crew members were available on board to continue operating the vehicle.	All	2	2	4	Acceptable
10	Runaway Rolling Stock - Explosive	Unattended railcar(s) loaded with dangerous goods begin moving by gravity without an active prime mover.	Uncontrolled movement takes place with no ability to respond to signal indications, could collide with other trains on the line or derail due to excessive speed, causing an explosion.	Severity is less intensive if the rolling stock is not derailed. A review of the TSB data between 2001 - 2021 revealed that this incident type has not occurred. Even if a rail car were to travel through the adjacent corridor unattended without a primary mover, the alignment of the tracks is generally straight and the rail corridor is wide enough that if a runaway car were to derail, there would be sufficient room for it to come to a complete stop without there being a risk to any buildings or members of the public being in harms way. There are a variety of operating equipment within the corridor that could be impacted if this type of event / derailment were to occur, however, the impact to the development lands at 2280 Dundas Street are considered to be limited. If a train car were to derail as a "runaway car", the crash wall would prevent encroachment into the development site. If the car were to derail and release the dangerous goods / hazardous materials or ignite, the severity would depend on the specific material. However, as freight is not transported through this corridor at this time, this risk is considered to be unlikely.	All	1	4	4	Acceptable
11	Runaway Rolling Stock - Freight / Intermodal	Unattended railcars, unloaded or loaded with goods that are non-hazardous begin moving by gravity without an active prime mover.	Uncontrolled move takes place with no ability to respond to signal indications, could collide with other trains on the line or derail due to excessive speed.	Severity is less intensive if the rolling stock is not derailed. A review of the TSB data between 2001 - 2021 revealed that this incident type has not occurred. Even if a rail car were to travel through the adjacent corridor unattended without a primary mover, the alignment of the tracks is generally straight and the rail corridor is wide enough that if a runaway car were to derail, there would be sufficient room for it to come to a complete stop without there being a risk to any buildings or members of the public being in harms way. There are a variety of operating equipment within the corridor that could be impacted if this type of event / derailment were to occur, however, the impact to the development lands at 2280 Dundas Street are considered to be limited. If a train car were to derail as a "runaway car", the crash wall would prevent encroachment into the development site. If the car were to derail and release the freight / intermodal goods, the severity would depend on the specific material. However, as freight is not transported through this corridor at this time, this risk is considered to be unlikely.	All	1	3	3	Acceptable
12	Movement Exceeds Limits of Authority	Unauthorized movement by a train placing the train in a position that could be struck by another train. *This incident category captures a wide range of events, including Track & Engineering (T&E) employees who are outside their limits of authority	Collision between two trains, potentially at higher than track speeds, or a diverging route turnout may be taken at excessive speed, derailing the train.	Trains exceeding the limits of authority are anticipated to continue in the future. However, these types of events can encompass a variety of scenarios - as such, the severity of this type of event varies depending on the specific incident recorded. A review of the TSB data between 2001-2021 within 10 miles along the Weston and Galt subdivision, 2 incidents were recorded of this type. Given that the ownership structure of this rail corridor has changed, the likelihood of this event occurring in the future is limited, as Metrolinx now owns the rail corridor. Due to the separation distance between the proposed development and the provision of a crash wall safety barrier, the development is considered to be protected from nearby rail operations.	All	2	2	4	Acceptable
13	Trespassing onto railroad	Trespassing onto railroad within or nearby the site boundary	Interference with railway operations and danger to life safety to the trespasser(s) from moving trains.	According to the TSB data from 2001, 4 occurrences of trespassing occurred within 10 miles of the site along the Weston and Galt subdivisions. All recorded trespassing events resulted in fatalities, though informally the number of trespassing events is thought to be much higher (unobserved and unrecorded). Trespassing opportunities from within the development lands will be significantly reduced by the presence of a 5-metre-high noise wall within the Metrolinx rail corridor along the property line. In addition to the noise wall, the crash wall will also act as a physical barrier and deterrent to trespassing. Where the crash wall and earthen berm do not prevent access to the noise wall, a chain-link fence will be provided to secure the perimeter of the site and limit access to the Metrolinx lands.	All	2	4	8	Tolerable
14	Vandalism, graffiti or damage to rail corridor infrastructure	Damage due to trespassing, graffiti or vandalism of any type resulting in	Interference with railway operations, vandalism, damage to rail equipment or infrastructure (posts, walls, signals, track, etc)	A review of google earth reveals evidence of graffiti along the noise wall although according to the TSB data from 2001 to 20021, there have been no occurrences of damage to the rail corridor infrastructure, interference with railway operations or damage to rail equipment besides the noise wall.	All	2	2	4	Acceptable