



Construction Staging and Implementation Report – Part A

Date: Tuesday, March 07, 2023

Project: Lakeshore Transportation Studies

To: City of Mississauga – Gino Dela Cruz

From: HDR

Subject: Construction Staging and Implementation Report – Part A

Overview

The purpose of this memo is to present the construction staging and implementation plan for the Lakeshore Transportation Studies and outline any constructability constraints and mitigations required.

The implementation of the recommended improvements to Lakeshore Road between East Avenue and Etobicoke Creek (Part A) will entail:

- Permits and environmental approvals;
- Property acquisition and easements (if required);
- Utility relocations (dry and wet utilities);
- Removals;
- Roadworks;
- Overhead Lighting;
- Transit facilities construction;
- Traffic control and signaling work, and;
- Landscaping and/or streetscaping.

In addition to the construction methodology discussion, this document will detail the review of the continuous access issue in the project area and propose strategies for access management. The purpose of this exercise is to minimize the adverse impacts of continuous curb cuts along the private property frontages on proposed boulevard improvements such as sidewalks and cycle tracks.

Permits and environmental approvals are documented in Chapter 8 of the Environmental Project Report.



Construction Approach

Roadworks

The construction approach is envisioned to occur similar to a typical road widening project. Construction staging will likely proceed as follows:

- Relocate underground and surface utilities as required. This will include relocation of illumination poles and above ground utility poles, relocation of traffic signals and provision for temporary traffic signals where required. Relocation of underground utilities that fall on property to be acquired by the City will need to occur after the agreements have been signed for the proposed transfer of property.
- Reconstruct the curb line on the south side of the roadway and provide continuous traffic lanes on the existing roadway. The reconstruction will include rebuilding the curb lines, gutters, catch basins, etc. It should be noted that the reconstruction of the curb line may potentially occur simultaneously during utility relocations.
- Reconstruct the north side of the roadway after the south side is completed. Traffic lanes in each direction will be maintained where feasible. A minimum of one lane in each direction will be provided at all times. Access to adjacent developments will also be maintained at all times.
- Construct new bus facilities, including bus laybys, stops, shelters, lane markings, signage, and other finishes.
- Construct streetscaping and urban design elements and provide active transportation improvements on both sides of the roadway where applicable.

Utility Relocations

The utility relocation plan submitted under separate cover under Appendix K outlines the strategy as it pertains to changes and updates to utility infrastructure. In summary, there are several utilities which have been identified to be in conflict with the proposed works which will need to be relocated in advance of construction. The following sections discuss the identified conflicts and outlines the anticipated approach to relocation prior to construction.

Alectra (Hydro)

Currently the hydro (electrical) transmission and associated servicing lines fall on the north side of Lakeshore Road from the west limit of Part A to Meredith Avenue, where they transition to the south side of the road and continue on the south side to the east limit of Part A. There are several attachments to each pole, generally consisting of nine (9) primary attachments, 2-3 third party attachments, transformers (at select locations), overhead lighting (including associated power supplies), and pole anchors (at select locations). In addition, there are a variety of underground connections to adjacent developments that are currently in place.

All existing hydro poles and a portion of the underground service connections conflict with the proposed work and will need to be relocated. As the relocation needs to be completed before construction commences, it is recommended that the entire hydro pole network be relocated to the south side of the road where there is sufficient available property between the existing road



and the adjacent development to relocate while the existing network remains in service. The existing lighting should remain until the reconstruction begins by ‘cutting off’ the tops of the poles after the new hydro line has been constructed. This will permit lighting levels of the existing road to remain until the new lighting has been installed and activated. Clearing of trees will be needed in advance of the installation of the hydro poles to provide the work zone necessary for the hydro relocation work. Additional coordination with Alectra will be required to confirm the specifics of the relocation works, including cost sharing agreements and relocation schedule. Construction duration for the hydro relocation works is expected to take a minimum of 6-8 months.

Bell/Rogers

Both Bell and Rogers are largely expected to remain at their existing locations, however relocation of several above ground facilities (such as pedestals and boxes) will be required. In addition, any maintenance holes or similar that fall within the proposed travelled way will need to be reviewed to determine if they can withstand traffic loading.

Similar to Alectra, relocation should be scheduled to occur prior to commencement of construction. Additionally, a joint use corridor has been identified under the cycle track / sidewalk on the south side of the road for any future expansion of either Bell or Rogers. The specifics of the joint use corridor should be confirmed as early as possible in the next phase of design. Additional details specific to the Bell/Rogers relocation works (such as site preparation, cost sharing, and schedule) should be confirmed. Construction duration for Bell/Rogers is expected to take a minimum of 4-6 months.

Enbridge

There are several Enbridge gas lines located within the study area, which generally follow the north and south property lines. It is anticipated that, except for a few isolated locations, the existing Enbridge lines on the north side will not be in conflict with the proposed works. The existing gas line on the south side will need to be relocated to permit space for the proposed tree planting as per the landscaping plan. Exact elevations of the gas lines in relation to the proposed work (in particular the proposed storm sewer) should be evaluated in detail as part of the next phase of design.

Watermain

There are a variety of existing watermain and servicing throughout the study corridor. Relocation of watermain is not anticipated as part of this project. However, there are several conflicts identified with the access points to the various underground chambers. Access points will need to be adjusted to accommodate any grade changes. Additionally, there are several hydrants that conflict with the proposed widening which will need to be relocated. Peel Region has jurisdiction over the watermain network and will need to be consulted on the specifics of the proposed access point adjustments and hydrant relocation as part of the next phase of design.



Sanitary Sewers

Similar to the watermain, there are several sanitary sewers that run along Lakeshore Road. The existing sanitary sewer network is not in conflict with the proposed work and will remain in place. However, several of the existing maintenance holes are in conflict with the proposed work and adjustments will be needed to accommodate the proposed grade changes. Peel Region has jurisdiction over the sanitary sewer system and will need to be consulted on the specifics of the proposed adjustments as part of the next phase of design.

Overhead Lighting

The overhead lighting in the study area is largely provided by luminaires attached to the hydro poles and is further supplemented by stand-alone lighting. The portions of the existing hydro poles that support the overhead lighting should be maintained after the relocation of the existing poles is completed as existing lighting levels will need to be maintained at all times during construction. The proposed improvements shall be phased such that the new lighting can be installed while the existing lighting fixtures remain in operation. For situations where the existing lighting cannot be maintained until the new fixtures are installed and operating, temporary lighting will be required and should be factored into the design and associated contract package.

Transit Facilities

Throughout the study area, there are existing curbside stops and shelters which provide service for the 23 – Lakeshore route. The existing stops will need to be temporarily removed or relocated to facilitate construction. A phasing plan will need to be completed in consultation with MiWay representatives to determine if the existing stops can be shifted temporarily to alternate locations on a short-term basis, or alternatively, if service can be shifted to a nearby parallel road for the duration of construction. Shelters will need to be dismantled by MiWay in advance of construction and put in storage or salvaged for future works.

Traffic Control and Signaling

The existing traffic signals and associated controls are in conflict with the proposed work and will need to be removed to facilitate construction. Additionally, it is expected that lane realignment will be needed at several points during construction which will require adjustment of the traffic signal heads to align with the various lane configuration. Given this, it is anticipated that temporary traffic signals will be needed at all intersections where an existing traffic signal is in place. The temporary traffic signals will need to be positioned such that they are not in conflict with all phases of construction, and that the signal heads can be adjusted easily to facilitate the various construction phases. Pedestrian signal heads should also be designed such that they can be easily moved or adjusted by placing them on temporary supports that are not fixed to the ground.

Pedestrian and Cyclist Traffic

On both sides of Lakeshore Road, there are existing pedestrian and cycling facilities in place. Additionally, there are several connections to adjacent parks and the associated Waterfront Trail network. Given this, construction should be staged in such a way as to facilitate pedestrian and



cyclist movements at all times through the construction zone. Signage should be placed to identify crossing points at signalized intersections well in advance of where the existing sidewalk is closed for construction. Additionally, temporary ramping should be installed at all locations to provide a smooth transition between works under construction and where cyclists and pedestrians are directed to use (i.e. at vertical transitions between concrete curb and base course asphalt). Hard surfaces should also be provided with temporary asphalt (or similar) where these modes are directed to travel. Construction vehicles, material, and equipment should also not be placed to block these paths during construction.

Landscaping / Streetscaping

A critical component to this assignment is to install a variety of landscaping and streetscaping measures within the boulevards and medians. These elements should be identified for installation after all other major construction activities have been completed. A monitoring program should be included in the design for a minimum of one (1) year after construction to ensure all elements of the landscaping have taken root and are in active growth. Any specialized streetscaping items (such as ornamental lighting, benches, etc.) should be identified early in the design phase by both internal and external stakeholders to allow full implementation of these elements during the design phase and to avoid rework once constructed.

Access Management

Access management is the planning and implementation of strategies and guidance for the type, design, location, and frequency of driveways, intersecting streets, and other points of vehicular access to public roads.

For the Lakeshore Transportation Studies, it is a means of balancing Lakeshore Road’s ability to provide access to property while optimizing traffic flow, limiting points where conflicts often occur and improving safety and experience for all road users.

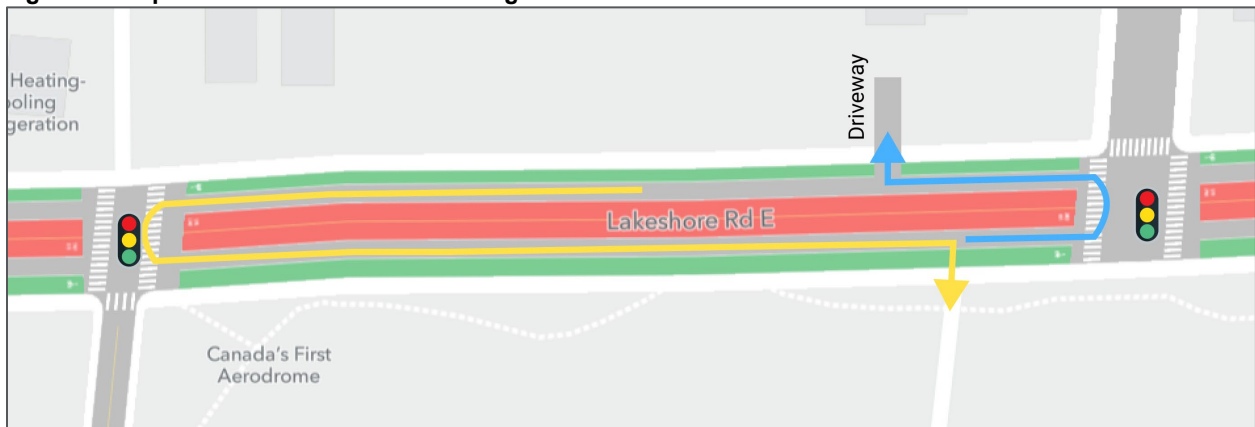
Access Restrictions

Between East Avenue and Etobicoke Creek, the existing Lakeshore Road configuration includes a centre, two-way left-turn lane to facilitate access to adjacent properties and crossing streets with unsignalized intersections at Lakeshore Road.

The implementation of the median BRT will preclude the ability for drivers to make mid-block left-turns; general traffic crossing of the median BRT guideway will be permitted only at signalized intersections for safety purposes. Rather, all left-turn movements will be relocated to the signalized intersections, where they can occur on a protected left-turn phase.

U-turns will be allowed on protected left-turn phases to accommodate displaced mid-block left-turn movements. Figure 1 illustrates the proposed operation for existing mid-block left-turn movements.

Figure 1: Proposed Mid-Block Left-Turn Mitigation

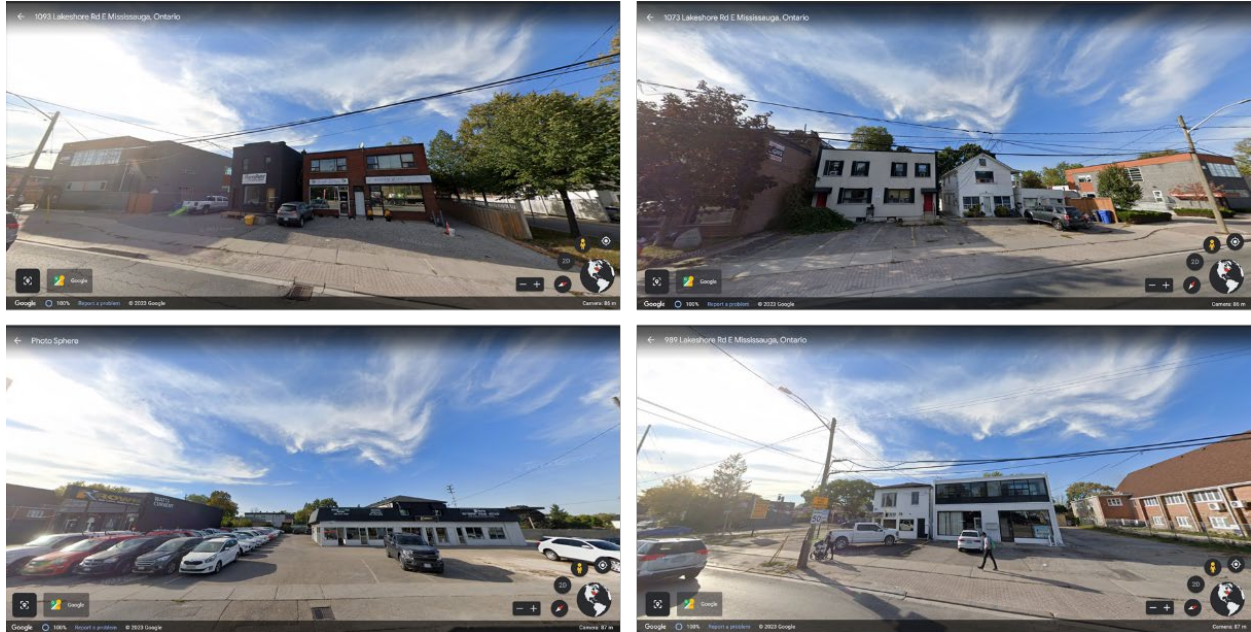


Existing and future mid-block accesses and crossing streets will only permit right-in and right-out turns.

Lack of Driveway Definition

The existing industrial and commercial land uses along Lakeshore Road, especially on its north side, are generally set back from the property line and provide front-facing surface parking for their patrons. These commercial / retail plazas lack defined driveway access to their businesses due to the continuous curb cuts that extend along the entire frontage of the properties. The minimal demarcation between the roadway, boulevard and parking creates conflicts between vehicles, pedestrians on the sidewalks and future cyclists, as seen in Figure 2.

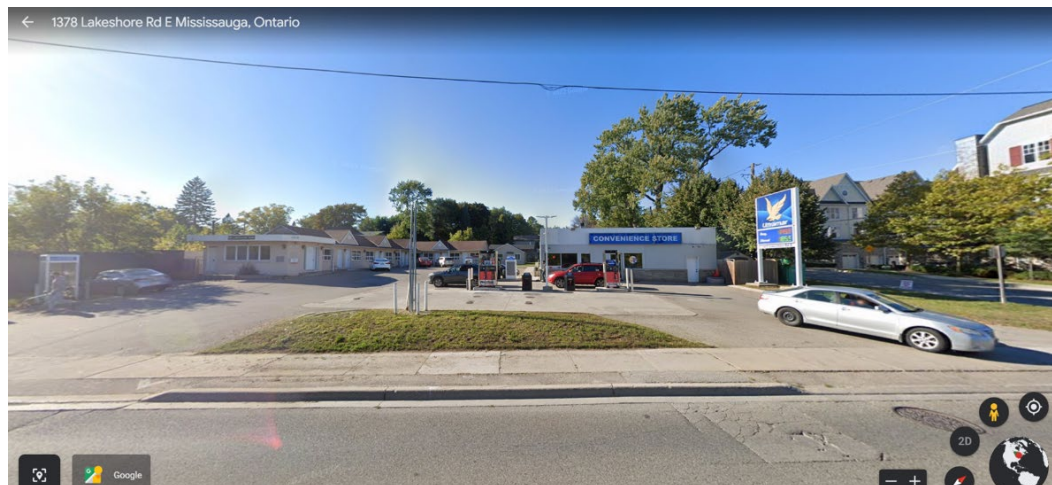
Figure 2: Continuous Private Property Driveway Accesses



Source: Google Earth

The existing accesses are also characterized by numerous, closely spaced ingress/egress points, in addition to the wide undefined driveways along Lakeshore Road as seen in Figure 3.

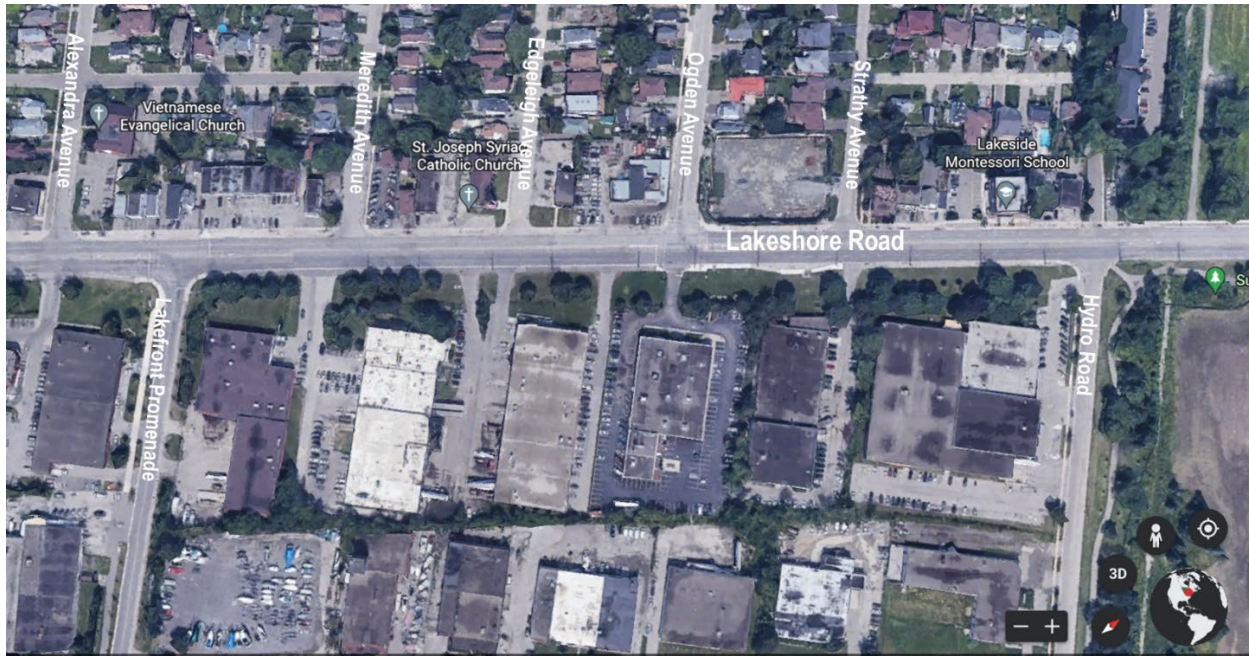
Figure 3: Closely Spaced Ingress / Egress Points (1378 Lakeshore Road East)



Source: Google Earth

Frontages of concern are more frequently located on the north side of Lakeshore Road where the smaller lot sizes result in less coordination between properties and an overall uncontrolled approach to access and parking. Conversely, properties on the south side are consolidated into large retail warehouses, manufacturing centres and storage depots, with limited and well-defined driveways per block. Buildings on the south side are set back behind wide grass boulevards with each building's surface parking tending to be situated behind or to the side, away from the street.

Figure 4: Difference in Site Typology on the North and South Side of Lakeshore Road

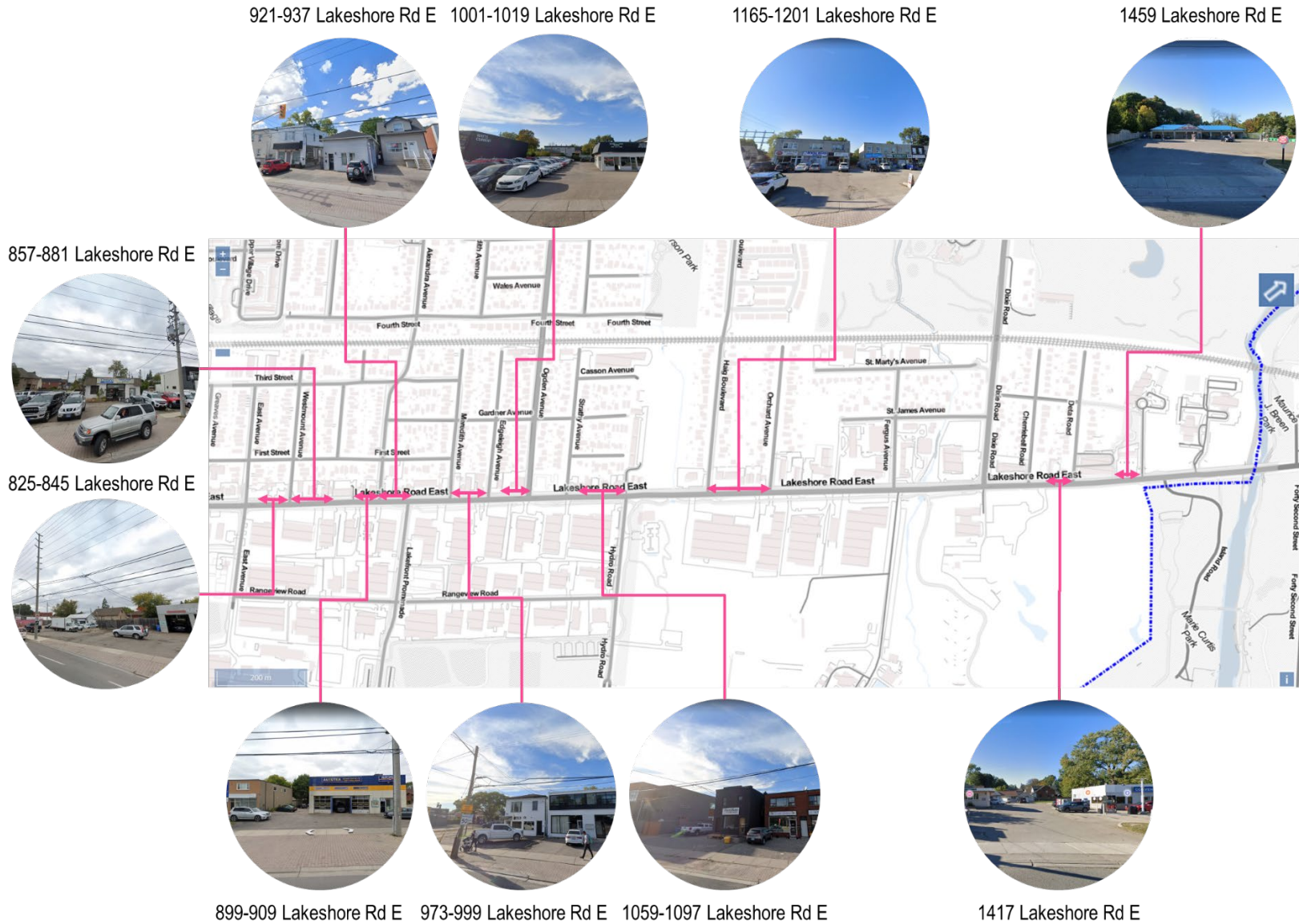


Source: Google Earth

Frontages along Lakeshore Road where access management improvements are to be considered have been identified in Figure 5.



Figure 5: Frontages with Potential for Access Management Improvements



Development Applications and Opportunities for Access Consolidation

The ideal scenario to address the lack of driveway definition, continuous curb cuts, and closely spaced driveways would be to make access improvements through redevelopment. Through site plan review and land use controls, the City of Mississauga can ensure that future development of parcels meets its Complete Street objectives on Lakeshore Road.

Site development best practices which improve access management, reduce intermodal conflicts and enhance the active transportation experience are outlined as follows:

1. Considering the Block and Lot Layout
 - The entire parcel or block should be considered when reviewing a particular site development plan, rather than simply the project under application.
 - If the parcel has frontage on a secondary road, access points should be placed there instead of on the major arterial (Lakeshore Road).
 - Providing lot access through driveways should also be prioritized where possible.
 - Performing traffic impact studies (TIS) to understand the implications on the immediate areas traffic
2. Designing and Locating Parking
 - Development proposals should locate commercial buildings closer to the road with parking areas in the rear.
 - Provisions should be made at the back of lots for secondary roads or parking areas that connect to other nearby properties.
 - Landscaping should be used to establish visual and physical boundaries between parking lots and roads.
 - It is recommended that the City of Mississauga require shared parking where appropriate and plan for future reserved rights-of-way and reciprocal easements.
 - At a City-wide level, shared parking standards can be developed to reduce the amount of parking required for individual developments.
3. Designing and Locating Driveways
 - The number of curb cuts should be restricted to a combined entrance and exit driveway no wider than 7.0 m unless justification for a wider driveway can be provided by the developer.
 - Formalizing driveways where excessive accesses exist by install curbing to limit access to one or two locations. This can be done under applications for expansions, redevelopments, or change of use.
 - Shared driveways should be included between two parcels, at the property line and encouraged to minimize the number of access points.
4. Designing and Locating Pedestrian and Cycling Connections
 - Accommodate sidewalks and cycling connections along Lakeshore Road and between buildings and parking areas.
 - Provide for pedestrian crosswalks at regular intervals

The opportunity to consolidate access and implement the best practices noted above can facilitate the successful implementation of active transportation facilities along Lakeshore Road.

Active development applications along Lakeshore Road have been identified and reviewed using the City of Mississauga data hub and have been summarized in Table 1. Each application’s status has also been listed to better understand the timeframe for corridor improvements.

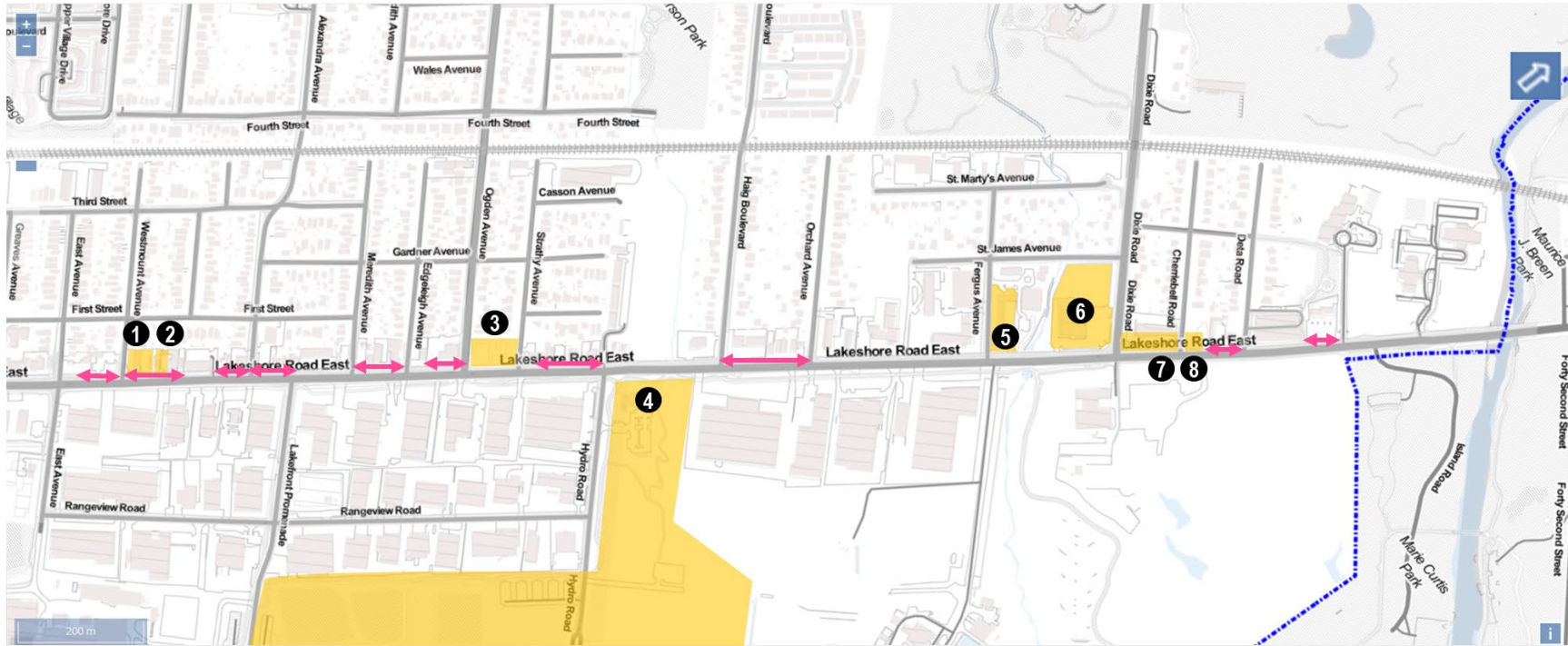
Table 1: Active Development Application Details

| ID | Address | Description | Status |
|----|--|--|------------------------|
| 1 | 857 & 859 Lakeshore Road E | Application to permit a 4-storey mixed use building | Under Review |
| 2 | 863 & 865 Lakeshore Road E | Application to permit three-storey mixed use commercial building and mutual driveway easement with the neighbouring property at 865 Lakeshore Rd. E | Under Review |
| 3 | 1041 Lakeshore Road E / 1005 Ogden Ave | Application to permit a 10-storey apartment building with ground floor commercial space | Approved |
| 4 | 1082 Lakeshore Road E / 800 and 985 Hydro Road | Application to develop a mixed-use, multi-phase development with townhouses, mid-rise and high-rise buildings, retail, employment cultural and parkland uses on the 177-acre property formerly occupied by the Lakeview Power Generating Station | Approved |
| 5 | 1303 Lakeshore Road E | Application to permit a 10-storey apartment building with underground parking | Under Review |
| 6 | 1345 Lakeshore Road E | Application to permit 4 to 12-storey apartment buildings with floor commercial facing Lakeshore Road East and Dixie Road | Approved / In progress |
| 7 | 1381 Lakeshore Road E | Application to permit an 8 and 15-storey residential building including retail | Under Review |
| 8 | 1407 Lakeshore Road E | Application to permit a 9-storey apartment building with ground floor commercial space | Under Review |

The location of active developments relative to frontages identified for improvement are shown in Figure 6.



Figure 6: Location of Active Development Applications and Frontages with Continuous Curb Cuts



Active Development Applications (2022)

Frontages with Continuous Curb Cuts

① 857-859 Lakeshore Rd E

③ 1041 Lakeshore Rd E

⑤ 1303 Lakeshore Rd E

⑦ 1381 Lakeshore Rd E

② 863-865 Lakeshore Rd E

④ 1082 Lakeshore Rd E

⑥ 1345 Lakeshore Rd E

⑧ 1407 Lakeshore Rd E

Though opportunities for access management improvements exist as part of the development applications above, only two applications coincide with properties whose frontages have existing continuous curb cuts and who were noted to pose access concerns (857-859 and 863 Lakeshore Road E). For the most part, properties slated for development already have defined driveways facilitating access to their buildings.

Given most applications are under review or recently approved, developments completion is expected in the medium to long term (5 years +). In this timeframe, Lakeshore Road will see improvements to its built form as most of these developments are implementing street-facing retail and frontages that interact better with active modes. At locations 1 and 2 in Figure 6 (857-859 and 863 Lakeshore Road E) where existing frontages are of concern, it should be assumed that driveway accesses are reconfigured per the proposed development application.

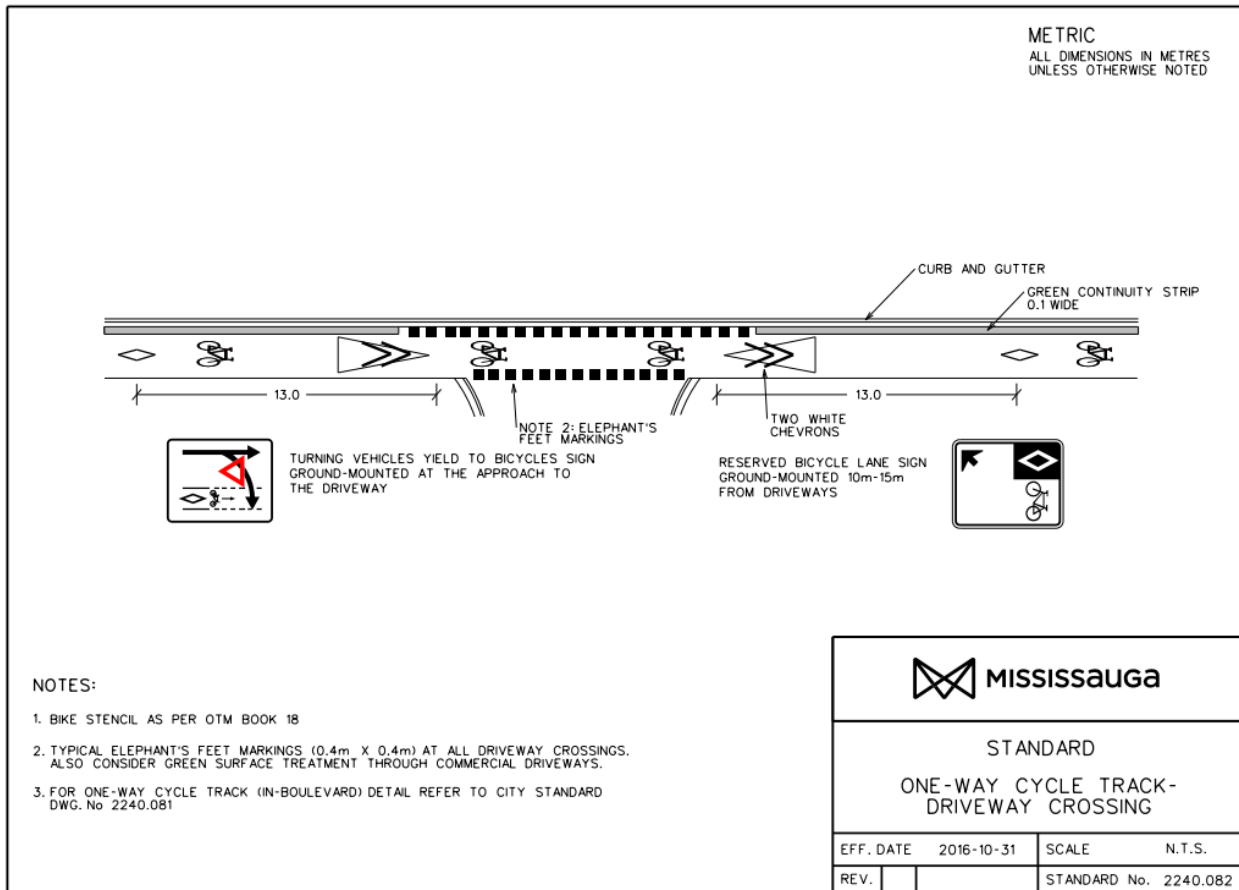
However, for the remaining frontages of concern where no development application is filed for the abutting property, it may be longer before improvements are made and before the City can influence their design to favour a complete street. Therefore, site development strategies are a long-term approach that must work in tandem with the City's vision for Lakeshore Road. The City can incentivize the redevelopment of properties through various tools to expedite timelines and ensure a coherent, consistent experience for users of the street.

Implementation and Phasing Options

Understanding that many of the locations of concern identified in Figure 5 are not planned to be redeveloped in time for the construction of the BRT, alternative phasing and implementation options have been identified for the City to consider during future phases of design (i.e. detail design). Where limited change can be instigated to private property access, the design of boulevards along Lakeshore Road will need to agree with the adjacent continuous access conditions. Different strategies for mitigating the existing condition have been outlined below that could be explored individually or together to address the areas of concern.

Strategy 1: Install Planned Cycling Facilities and Mitigate via Pavement Markings, Signage, and Flexible Bollards

There are many locations within the City where a cycling facility crosses a driveway or other major access point. As such, a detail has been developed by the City to delineate the crossing point and to minimize conflicts between cyclists and vehicles as much as possible. This detail, known as the 'one-way cycle track driveway crossing' is provided below for quick reference. This detail can be modified such that the entire length of the continuous driveway access includes the various signs and pavement markings shown on the detail. In addition, the pavement markings and signage can be supplemented by flexible bollards, concrete curbs, and other measures to further delineate the zone where cyclists will cross the access point. The additional measures can also be placed in such a way as to focus vehicles to enter at select locations rather than along the entire frontage. The measures selected can be removed once the consolidation of access points occurs with development or other improvements within the boulevard zone.



Strategy 2: Multi-Use Path – Shared Boulevard Facilities

Multi-use paths are off-street pathways that are physically separated from motor vehicle traffic and can be used by any nonmotorized user such as pedestrians, cyclists, roller-skaters, scooter users and other active modes. Shared multi-use paths could be provided in lieu of sidewalks and cycle tracks as a concession to accommodate all active users seeking to travel along frontages where continuous curb cuts are present and / or where defined driveways are not identified.

Incoming vehicles will continue to create ad-hoc conflict with boulevard users under this approach. However, it consolidates the boulevard space for all users and may reduce potential for conflict as drivers will need to focus their attention only on the shared pathway. The cycling experience is marginally better than having no cycling facility as a facility is provided over accepting a gap in the network.

Because multi-use paths are typically bi-directional, special consideration should be given to confirm the appropriateness of installing them adjacent to Lakeshore Road which has two-way motor vehicle traffic and higher motor vehicle speeds and volumes, and numerous intersections, alleyways, and driveways. Note that since the BRT restricts mid-block left turns, this issue would only be present at intersections.



Strategy 3: No Dedicated Cycling Facilities – Accept the Gap in Network

Cycle tracks will not be provided along the north side of Lakeshore Road. Accepting the gap in the cycling network may be preferred in this scenario to avoid attributing a greater degree of safety than can be reasonably expected from dedicated cycle tracks. Incoming vehicles will continue to create ad-hoc conflicts with boulevard users, resulting in poor walking and cycling experiences.

It must be noted that any gaps in the cycling network on the north side of Lakeshore Road between Hydro Road and Fergus Avenue will be mitigated by the proposed two-way cycle track on the south side in this section. This bi-directional facility will provide interim two-way access while connecting the east and west portions of the Waterfront Trail.