

Lake Shore Boulevard East Public Realm



Vision, Phasing and Implementation Plan



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Executive Summary

Toronto's Downtown and Central Waterfront are experiencing significant growth. The Lake Shore East corridor is home to planned precincts such as Lower Yonge, East Bayfront, Keating and South of Eastern, which will place additional demand for public realm in the district. This growth highlights the importance of public streets and open spaces in the city's quality of life and the need for better and safer connectivity.

In 2015 and 2016, Council confirmed the need to rebalance the modes of travel in the corridor to enable cycling and walking, and to improve connectivity across the barrier formed by the rail corridor and the Gardiner Expressway. This Lake Shore Boulevard East Public Realm Phasing and Implementation Plan (the "Plan") has been prepared by Dillon Consulting Ltd. and West 8 Urban Design and Landscape Architecture on behalf of the City of Toronto and Waterfront Toronto (WT) to address Council direction and EA approval conditions related to the Gardiner and Lake Shore Boulevard East Environmental Assessment ("Gardiner East EA"). The plan specifically satisfies condition #8 in the November 2017 EA approval by the Ministry of Environment and Climate Change, now Ministry of Environment, Conservation and Parks. The Plan provides for a corridor-wide design vision from Jarvis St. to Logan Avenue that responds to the varying conditions of the 2.4-kilometre site. The proposed public realm improvements are consistent with City and Vision Zero best practices with respect to road reconstruction projects and comprise:

- 30% to 60% designs of Lake Shore Boulevard corridor from Jarvis St. to Cherry St.;
- 10% design of corridor Cherry St. to Logan Ave; and
- A series of quick start projects for near-term implementation, including 100% design of a pilot project along the Lake Shore Blvd. frontage of 12 Bonnycastle to be completed in 2020 by Waterfront Toronto.

Key features of the plan include traffic calming measures, streetscape improvements, separated cycling and pedestrian paths in a planted linear open space, and a stormwater management strategy which includes temporary storage and low impact development (LIDs) to manage flows from the boulevard and partial flows from the overhead Gardiner Expressway. Vehicular speeds will be reduced and lane

widths narrowed to provide additional planting and boulevard space on both the north and south sides of the Lake Shore Boulevard East corridor. Intersections will also be enhanced and made more legible for all users to improve comfort and safety. The Plan also provides for maintaining access for Gardiner inspection and rehabilitation.

Led by Waterfront Toronto and the City's Waterfront Secretariat and Transportation Services Division, development of the Public Realm Plan has involved consultation with many stakeholders, including members of the public, private developers, public agencies, as well as numerous City of Toronto Divisions. Comments from the Stakeholder Advisory Committee and WT Design Review Panel, among others, have stressed the need for: integration of public realm efforts with Metrolinx USRC East Enhancements and private developments; east-west and north-south intersection improvements on a priority basis; as well as areas to accommodate future programming needs. City divisions, public stakeholders and public agencies have reviewed the design submissions as well as the 100% pilot project designs.

The City is anticipated to advance to a 100% design drawing package following the completion of Gardiner rehabilitation work between Jarvis St. and Cherry St. in 2024, and Gardiner reconfiguration east of Cherry St. in 2027.

Project Coordination

This public realm plan will act as a guiding framework to City divisions and other public and private agencies over the decade of full implementation. The improvements will be phased to complement other planned infrastructure and development projects in the area, as detailed in Section 4.0 of this report. Components of the plan will be delivered by both public and private entities in association with key projects such as: the City of Toronto's Gardiner Strategic Rehabilitation Program; other City capital projects such as the Port Lands Flood Protection Project, Toronto Waterfront Sanitary Servicing Master Plan, Don River and Central Waterfront Wet Weather Flow System and Connected Projects, Lake Shore-Don River bridge crossing; the capital projects of public agencies such as Metrolinx USRC and TRCA sediment management facility; and private developers adjacent to the corridor. For example, private developers and other public agencies may implement the public realm through streetscaping of the development block frontage, and the creation of new streets and parks in the area.

Implementation of this Plan will be tied to east Gardiner works expected to take place between 2020 and 2027, either concurrently or as part of a separate contract. Key public realm elements that may be delivered through the expressway improvements include:

- Lake Shore Blvd. lane width narrowing and curb relocations;
- Grade-separated pedestrian and cycling paths;
- Permanent intersection improvements at Jarvis, Parliament, Sherbourne, Cherry Streets and Don Roadway;
- Armourstone, planting and landscape features; and
- Stormwater management features.

Completion of the project design prior to implementation will require close coordination with the Port Lands Flood Protection project, the Gardiner Hybrid 3 Design, the Unilever Precinct Plan and South of Eastern developments, major utility relocation, and any planned sewer upgrades. As well, close coordination with Metrolinx will be required as USRC plans influence the amount of public realm available, the edge condition of rail embankment, and the character and length of north-south street underpasses.

Implementation and Funding

In 2016, a high-level conceptual estimate for a public realm plan of \$60 million in 2013 dollars (+/-20%) was reported to City Council as part of the Gardiner East Environmental Assessment. A revised cost estimate of \$90 million (+/-20%) has been prepared by Altus Group. This estimate is based on the recent 60% and 30% public realm design work completed for the south and north corridors respectively from Jarvis St. to Cherry St., and 10% design work east of Cherry St., as well as stormwater management facilities. It also accounts for inflation escalation to reflect the staged approach to implementation over ten years, the inclusion of contingencies, and the stormwater management strategy, which was not part of the original estimate. This updated cost estimate is consistent with the original \$60 million in 2013 dollars, which amounts to approximately \$84 million in 2020 dollars. Actual costs will be confirmed closer to implementation, once designs are further refined.

The bulk of public realm works within the Plan will be funded through the City's Gardiner Strategic Rehabilitation Program. Additional reporting through the City's Budget Committee will be undertaken when necessary, following completion of 100% designs for those components of the Plan to be implemented by the City of Toronto.

Given the long-range implementation schedule of the Plan, opportunities to introduce representative public realm improvements or "Quick Starts" have been identified. They include intersection improvements, plantings, and a pilot project at the 12 Bonnycastle private development to test planting irrigation measures, streetscape and landscape treatments along the south sidewalk of Lake Shore Blvd. The pilot project will be monitored by Toronto Region Conservation's Sustainable Technologies Evaluation Program (STEP) to broaden understanding of green infrastructure implementation in constrained and challenging public rights-of-way across the City.

Conclusion

Quality public spaces and improved connections between the City and Lake Ontario are critical components of waterfront revitalization. The Plan will bring the corridor into line with recent City best practices for road reconstruction projects. Implementation of the "Hybrid 3" – the preferred alternative in the Gardiner East Environmental Assessment – and the associated Gardiner-Lake Shore East Public Realm Plan will provide an improved public realm between Lower Jarvis St. and Logan Avenue in keeping with the new urban development emerging on the eastern waterfront.

Implementation of the Plan between Jarvis St. and Cherry St. will be phased in concert with scheduled east Gardiner rehabilitation from 2019 to 2024. It will also be coordinated with major public and private projects in the area. East of Cherry St., the improvements will be phased with implementation of the Gardiner Hybrid 3 project. Over time, the public will see dramatic improvements to the Lake Shore East corridor: a better-connected waterfront, improved active transportation modes with new linear open space and pedestrian-cycling facilities, reduced speed limits and narrower traffic lanes, and enhanced, illuminated intersections featuring public art.

1. Context and History

1.1. Study Overview

This report describes the work undertaken to prepare a design for public realm improvements along Lake Shore Boulevard between Lower Jarvis St. and Logan Avenue. This work was directed by Council at the March 16, 2016 meeting in relation to decisions regarding the Gardiner Expressway and Lake Shore Boulevard East Reconfiguration Environmental Assessment (EA) and Integrated Urban Design Study. Council directed staff to develop a Phasing and Implementation Strategy for public realm improvements along the Gardiner-Lake Shore Boulevard East corridor.

The Gardiner East EA was approved in November 2017 by the Ministry of Environment and Climate Change (MECC), now Ministry of Environment Conservation and Parks (MECP). Conditions of approval require the co-proponents the City of Toronto and Waterfront Toronto to submit a Public Realm Phasing and Implementation Plan to the MECC Approvals Branch Director. This Lake Shore Boulevard East Public Realm Phasing and Implementation Plan (the "Plan") specifically satisfies condition #8 in the November 2017 EA approval by the Ministry of Environment and Climate Change, now Ministry of Environment, Conservation and Parks. The Ministry also requested that the Plan address stormwater management in the corridor.

The Public Realm Plan includes the development of:

1. A conceptual level Public Realm Vision, Phasing and Implementation Plan for the entire length of the Lake Shore Boulevard East corridor between Lower Jarvis St. and Logan Ave that addresses stormwater management in the corridor;
2. A 60% design development of south-side public realm from Lower Jarvis St. to Cherry St. including the intersections; and 100% construction drawings for a Pilot Project between Bonnycastle St. and Sherbourne Common; and
3. A 30% design development of the north-side public realm from Lower Jarvis St. to Cherry St., including the medians.

The study area and above study sections are illustrated in **Figure 1.1 Lake Shore Boulevard East Public Realm Plan Study Area** The study area is referred to as “LSB East Corridor” in the remainder of this report.

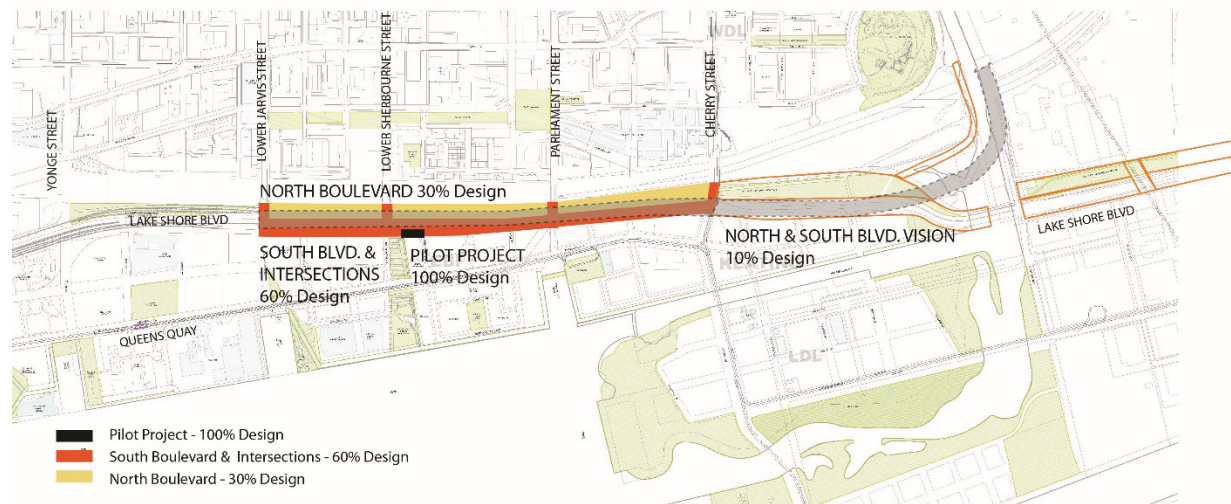


Figure 1.1 Lake Shore Boulevard East Public Realm Plan Study Area

The public realm for the LSB East Corridor was developed through a consulting design team consisting of Dillon Consulting Limited, West 8 Landscape Architecture and Urban Design, the Altus Group for project costing plus others for geotechnical and underground utility locate work.

The remainder of this report provides information in regards to:

1. Study Context
2. Public Realm Vision
3. Recommendations for Enabling Infrastructure
4. Project Implementation Phasing
5. Proposed “Quick Starts”
6. Project Costing and Funding
7. Next Steps
8. Conclusion

1.2. Study Context

Planning and design for the LSB East Corridor has followed a multi-year comprehensive EA and integrated urban design study process. This process has examined the feasibility, impacts, opportunities, and costs of potential reconfiguration and urban design options for the elevated Gardiner Expressway and Lake Shore Boulevard east of Jarvis St. The progress and results of the study process have been presented to Council at various key points in the process for critical decision making. This includes the final endorsement of the EA and urban design study by City Council in 2016 and Provincial Environmental Assessment approval in November 2017.

The Gardiner and Lake Shore Boulevard East EA and Integrated Urban Design Study identified a series of issues and opportunities that need to be addressed in the study area through infrastructure reconfiguration and public realm intervention. These include:

- A deteriorated expressway that needs major repairs;
- A waterfront that is disconnected from the city (physically and psychologically due to the barrier presented to pedestrians of the elevated expressway, Lake Shore Boulevard and the Rail Corridor); and
- Revitalization opportunities through new buildings, connections and public realm enhancements.

The reconfiguration and urban design options that were developed over the course of the EA and urban design study were evaluated in terms of how they impact: (i) Transportation and Infrastructure; (ii) Urban Design; (iii) Environment, and (iv) Economics. This work was completed between 2009 and 2016 and included a highly consultative process with multiple opportunities for public and stakeholder input and involvement. Key feedback from the consultations stressed the importance of:

- Balancing modes of transportation (road capacity, travel time, infrastructure costs);
- Providing for enhanced waterfront connectivity and new development opportunities;
- Providing new transportation infrastructure including transit and active transportation (particularly pedestrian and cycling connections throughout the area);
- Ensuring transit projects identified in the modelling are prioritized and funded; and

- Enhancing the public realm (particularly along Lake Shore Boulevard and along the north-south streets that intersect the corridor and connect the waterfront with the city).

The approved EA establishes the reconfiguration concept for the Gardiner, east of Jarvis St., as a “Hybrid 3” reconfiguration. This includes recommendations for public realm improvements along Lake Shore Boulevard. City Council endorsement of the EA and recommended design in 2016 included confirmation of the need to prepare detailed plans for public realm opportunities. This included detailed plans for the safe accommodation of pedestrians and cyclists along the corridor and at intersections where north-south connections can be improved. The EA specifically included mitigation commitments towards the creation of new public realm space, contributing to the creation of a better connected waterfront, improved pedestrian and cycling experience, in a manner that complements other major projects such as the Don Mouth Naturalization and Port Lands Flood Protection Project. The EA and City Council decisions direct the City and Waterfront Toronto to advance a Public Realm Plan for Lake Shore Boulevard East of Jarvis St. that may be considered in concert with the Gardiner East reconfiguration.

The need for public realm improvements and better pedestrian and cyclist connection along and across the corridor will continue to grow as the waterfront further develops in the coming years. East Bayfront is a key new neighborhood on Toronto’s waterfront. Located east of Jarvis St. and south of Lake Shore Boulevard, this 23-hectare (55-acre) precinct is currently under construction, and once completed, it will contain approximately 6,000 residential units and 3 million square feet of commercial space, and create approximately 8,000 new jobs. To the east is the Keating Channel neighbourhood, which extends to the Don River and will feature a variety of built forms and architecture that support a diversity of experiences and uses. Once complete, the Keating neighbourhood is planned to contain more than 4,000 residential units. Finally, just east of the Don River is the East Harbour/Unilever Precinct, which is bounded to the south by Lake Shore Boulevard, north by Eastern Avenue and west by Booth Avenue. This 25-hectare (62-acre) precinct is currently planned to provide a broad variety of non-residential land uses that would create employment opportunities for as many as 50,000 workers. The landscape improvements along Lake Shore Boulevard East will serve all these new communities providing the armature for a vibrant public realm.

As part of this undertaking it will also be important to explore opportunities for enhanced stormwater management along the corridor. The MECC (now MECP) conditions of approval for the Gardiner-Lake Shore Boulevard East EA includes the need to consider innovative stormwater management and enhanced removal of sediment prior to discharge. This is to include the management of stormwater coming from the elevated Gardiner Expressway between Jarvis St. and Cherry St. Under existing and planned future conditions, particularly west of Cherry St. where the existing structure is to remain, Gardiner storm flows are directed to the ground surface below and adjacent to the structure which results in standing water and localized flooding during high-flow events. Gardiner downspouts were disconnected from sewers many years ago. With planned improvements to the public realm below and along the elevated Gardiner, better stormwater management controls are required to enable the space below and adjacent to the expressway to be used by pedestrians and cyclists.

Since receipt of Gardiner and Lake Shore Boulevard East EA and Urban Design Study approval from Council in 2016 and the MECC (now MECP) in 2017, the focus of work has been on preparing public realm plans for Lake Shore Boulevard to be implemented along with the Gardiner Expressway deck rehabilitation efforts between Lower Jarvis St. and Cherry St. and the design and implementation of the Gardiner Hybrid 3 concept located east of Cherry St.

These planned improvements to the public realm along Lake Shore Boulevard are fully consistent with City of Toronto policies, plans and best practices including the *Central Waterfront Secondary Plan*, the various precincts plans along the corridor, the City's *Complete Streets Guideline* and the City's *Green Streets Technical Guide*.

1.3. Coordination with Other Projects

Many projects are planned for the Gardiner-LSB East corridor. These include projects to be implemented by the City, other public entities and the private sector. These other projects, as well as the planned public realm projects, are illustrated in **Figure 1.2**.

Numerous coordination meetings were held during the public realm design period with various agencies involved in development and infrastructure projects along the study corridor. Of these projects, the two which have the greatest impact on the public realm design are Metrolinx's USRC project and the Port

Lands Flood Protection (PLFP) project, explained in further detail in this report. East of the Don River, the team has also coordinated with the Unilever Precinct to ensure alignment between the future vision for Lake Shore Boulevard and precinct plan objectives.

Coordination with adjacent developments on the south side of Lake Shore Blvd. from Jarvis to Cherry St. is ongoing through the City of Toronto's Site Plan Approval process. Development submissions are being reviewed and CAD drawings of this Public Realm Plan provided to developers to provide for a cohesive design of Lake Shore frontage throughout the corridor. Developments coordinated to date include: 55 Lake Shore Blvd. East, 143-177 Lake Shore Blvd. East and 215 Lake Shore Blvd. East.

Coordination with the Gardiner Hybrid 3 project, currently being designed to 30%, will also be important as the Hybrid project realigns both the Gardiner Expressway and Lake Shore Boulevard east of Cherry St.

LAKE SHORE BLVD. PUBLIC REALM COMPONENTS

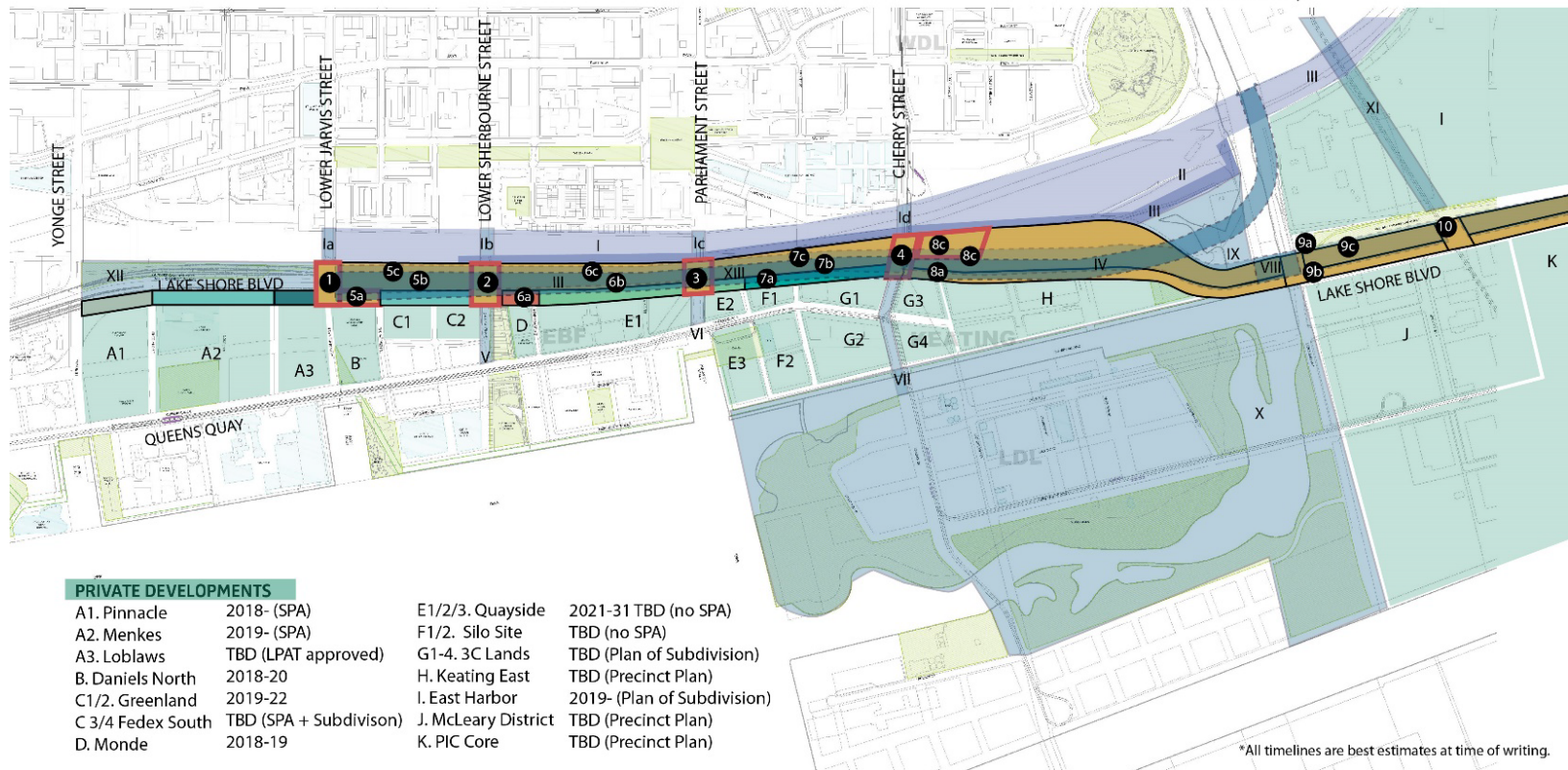
	Quick Starts	Ultimate
1. Jarvis Intersection	2020-22,	2025+
2. Sherbourne Intersection	2020-22,	2025+
3. Parliament Intersection	2020-22,	2025+
4. Cherry Intersection	2020-22,	2025+
5 a.b.c. Jarvis to Sherbourne (South curb, Median, North)		2025+
6 a.b.c. Sherbourne to Parliament (South curb, Median, North)	2020,	2025+
7 a.b.c. Parliament to Cherry (South curb, Median, North)	2020,	2025+
8 a.b. Cherry to Don River (South, Median, North)		2027+
9 a.b. Don River to Logan Ave (South, Median, North)		2027+
10. Broadview Intersection		2027+

METROLINX INFRASTRUCTURE PROJECTS:

I. USRC East Enhancements	2020-23
la. Jarvis Underpass Extension	2020-23
lb. Sherbourne Underpass Ext. & HONI bridge	2020-23
lc. Parliament Underpass - HONI bridge	2020-23
ld. Cherry Underpass - HONI Bridge	2020-23
II. Wilson Rail Yard	2020-22
III. HONI relocations & USRC electrification	2020-23

CITY INFRASTRUCTURE PROJECTS:

III. Gardiner Redecking (Jarvis to Cherry)	2019-21
IV. Gardiner Expressway Hybrid 3 & LSB	2025-27
V. Sherbourne St. Realignment	2021
VI. Parliament St. Realignment	2023
VII. Cherry St. Realignment & Bridge	2020-21
VIII. Lake Shore Bridge	2021-23
IX. Sediment Basin	2021-23
X. Port Lands Flood Protection	2018-2023
XI. Broadview Extension	TBD
XII. Lower Yonge	2023-24
XIII. Lake Shore Reconstruction (Jarvis to Cherry)	2025+



PRIVATE DEVELOPMENTS

A1. Pinnacle	2018- (SPA)	E1/2/3. Quayside	2021-31 TBD (no SPA)
A2. Menkes	2019- (SPA)	F1/2. Silo Site	TBD (no SPA)
A3. Loblaws	TBD (LPAT approved)	G1-4. 3C Lands	TBD (Plan of Subdivision)
B. Daniels North	2018-20	H. Keating East	TBD (Precinct Plan)
C1/2. Greenland	2019-22	I. East Harbor	2019- (Plan of Subdivision)
C 3/4 Fedex South	TBD (SPA + Subdivision)	J. McLeary District	TBD (Precinct Plan)
D. Monde	2018-19	K. PIC Core	TBD (Precinct Plan)

*All timelines are best estimates at time of writing.

Figure 1.2 Location of Projects in the Study Corridor

1.3.1. Metrolinx Union Station Rail Corridor (USRC) Project

To accommodate the planned electrification of the Go Transit Rail facility, modifications to the Union Station Rail Corridor from Union Station to the Don River are required. There is also potential to route a section of the Ontario Line transit facility through a portion of the USRC. Some of the required work has the potential to influence the LSB East Public Realm Plan as outlined below:

A. Underpass Extensions

To facilitate rail track expansion to support the Go Transit electrification project, Metrolinx is proposing to extend the Jarvis St. and Sherbourne St. underpasses to the south by roughly 9.5m. Through many discussions with Metrolinx



during the Public Realm plan study period, efforts have been made to coordinate the Plan with the USRC changes. It has been assumed that these underpass extensions, including the wing walls, will be completed in a manner that matches the character of the public realm improvements proposed for these areas. Also of note are the associated plans to bury the existing above-ground Hydro One transmission line along the south edge of the USRC, which may require the construction of additional bridge works along the south edge of the Sherbourne St. and Parliament St. underpasses to support the power cable. This will require future City review and coordination with Metrolinx to protect for the LSB public realm.

It is noted that Metrolinx has funded a separate parallel **Pedestrian & Cycling Connectivity Study (PCCS)** to establish opportunities for new and improved connections across the rail corridor. This study is being done in consultation with the City and Waterfront Toronto, and local community stakeholders. The outcomes of this study will have to continue to be coordinated with the LSB public realm to ensure that the recommended teamways and tunnels are compatible with this plan.

B. Wilson Yard Expansion

Similar to the USRC underpass extensions, Metrolinx has indicated its plans to expand the USRC south onto City-owned lands just east of the Don River. Metrolinx's proposal was considered in the development of the Public Realm Plan for the corridor east of Cherry St. The USRC expansion results in less land being available to connect the Martin Goodman trail bike path with the Don Valley trail system, as well as for potential programmed spaces.

C. Union Station Rail Corridor (USRC) South-Side Integration

The USRC East project may include some public realm improvements along the rail corridor, particularly related to the required bridge extension works and associated wing walls. Along the south side, coordination of retaining wall and/or fencing will be required to accommodate north-side trails through constrained areas near the east side of Sherbourne St. and west side of Cherry St., as further defined in this report. These constraints will need to be considered in the preparation of the public realm detailed design for the south edge.

1.3.2. Port Lands Flood Protection and Enabling Infrastructure Project

Several infrastructure improvements are required between Cherry St. and the Don River and north of the Keating Channel to facilitate the Port Lands Flood Protection Project, which will provide for a new river mouth extension south of the LSB East Corridor. These improvements include creation of the Sediment and Debris Management Area (SDMA), the expanded Lake Shore Boulevard bridge, and Cherry St. and Don Roadway intersection improvements. These projects were considered in the development of the vision for the study corridor east of Cherry St., and will need to be considered in future advancement of the Public Realm Plan through this section of the corridor.

A. Cherry St. and Lake Shore Boulevard Intersection

Cherry St., south of LSB, is being realigned to a more westerly alignment that also includes a new crossing of the Keating Channel. The realignment of Cherry St. is to occur early in the Port Lands project development phasing and will result in an interim intersection connection with LSB, prior to the Gardiner-LSB realignment being implemented. The PLFP is to deliver an interim intersection condition while the Gardiner Public Realm Plan will complete the ultimate condition when Lake Shore Blvd. East of

Cherry St. is realigned. The Public Realm Plan includes an interim improvement to the new Cherry St.-LSB intersection as documented further in this report.

B. Sediment Management Area and Lower Don Trail connection

The Port Lands Flood Protection Project requires the development of a sediment and debris management facility that is to be located on the west side of the Don River, north of LSB (see **Figure 1.3**). This facility will also require an access road that is proposed to extend north of the future LSB and Muniton St. intersection. The Public Realm Plan for the LSB East Corridor accommodates this facility. As part of future public realm design work it will be important to coordinate fence locations, grading, and the planting palette. The alignment of the Lower Don Trail connection to the LSB bike path will also need to be coordinated, including how the trail is to cross the future sediment facility access road as well as the Harbour Lead rail line and associated fencing.

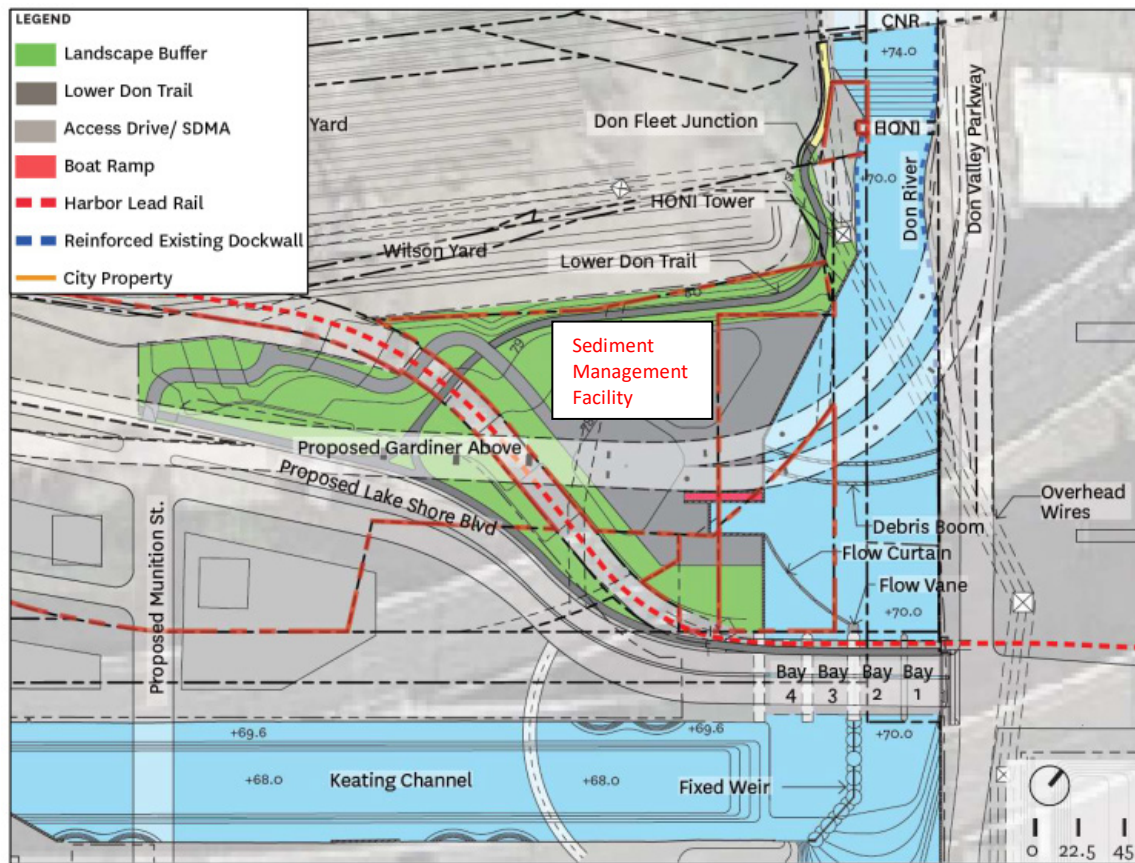


Figure 1.3 Port Lands Flood Protection Sediment Management Facility

C. Don Roadway and LSB Intersection

Don Roadway is to be redesigned to accommodate the Gardiner realignment as well as the planned flood protection works that are to extend along the eastside of the Don Roadway. Furthermore the LSB and Don Roadway intersection will need to be designed to accommodate the planned new LSB bridge over the Don River. This intersection design will require further work once the Don Roadway design is further advanced.

1.4. Community and Stakeholder Engagement

A number of internal and external stakeholder meetings have been held throughout the course of developing the Lake Shore East Public Realm Plan. These include four meetings with each of the Stakeholder and Technical Advisory Committees, four Waterfront Toronto Design Review Panel submissions, as well as numerous meetings with City divisional experts in traffic and road operations, cycling, green streets implementation, urban forestry, engineering and stormwater infrastructure management throughout the design process.

Interest in the development of the public realm along Lake Shore Boulevard was expressed during the study process for the Gardiner East EA. A number of concerns were expressed regarding the state of the corridor in regards to pedestrian and cyclist travel and public safety, as well as the overall character of the corridor. These comments have been documented in the Gardiner East EA report and considered in the advancement of the Public Realm Plan for the corridor.

Specific to this design exercise, stakeholders were engaged to provide input and inspiration into the design of the corridor as described below.

Public Engagement

Meetings have been held with a Gardiner East EA Stakeholder Advisory Committee (SAC) that includes representatives of the West Don Lands Committee, the St. Lawrence Neighbourhood Association and BIA, the Corktown Residents Association, Cycle Toronto and the Gooderham & Worts Neighbourhood Association. Comments from the SAC reflected the need for improved intersection design and safer crossings, particularly those linking neighbourhoods and the waterfront across the rail corridor,

separated cycling and pedestrian trails, as well as future programming needs, such as skateboard parks and off-leash dog parks.

Meetings held include:

- Summer 2017: the initial corridor vision concept and initial design of the south side of Lake Shore Boulevard from Lower Jarvis St. to Cherry St.);
- February 2017: an update to the corridor Public Realm Plan;
- July 2018: 60% design of the south side of Lake Shore Boulevard and the proposed intersection improvements; and
- March 2019: 30% design of north-side boulevard, updates to the intersection design, and vision for east of Cherry St.

Members of the SAC sub-group have expressed support for the public realm improvement design and have offered several suggestions which included the following key points:

- Need for improved intersection design and safer crossings especially North-South between existing neighborhoods and the Waterfront across Rail Corridor & Gardiner;
- Aspirations for programming elements (i.e., off-leash dog park);
- A preference for separated bike and pedestrian trails over multi-use trails; and
- The importance of coordination with Metrolinx to ensure their program of public transit expansion and electrification would build upon City efforts to improve corridor conditions.

Waterfront Toronto Design Review Panel (DRP)

The design and vision work has been presented to the Waterfront Toronto Design Review Panel (DRP) on four occasions. The first was in Summer 2017 as an issues identification meeting where the high level vision was presented along with initial design for the south side of Lake Shore Boulevard. In February 2018, a second DRP presentation was made to present an updated vision of the corridor. A third DRP presentation was held in May 2018 to present the south-side Lake Shore Boulevard 60% design and intersections design. The final project design, including the north-side landscaped trails and vision east of Cherry St., was presented to DRP in April 2019. The panel provided full support for the design as a positive, simple but significantly transformational vision for the corridor. The panel supported the Quick

Starts proposals and Pilot Project at 12 Bonnycastle, stressing the importance of early implementation of parts of the Public Realm Plan and identifying intersection improvements as a first priority. Additionally there was support to encode the south sidewalk public realm vision into the City's streetscape manual to guide developers in extending the vision to areas beyond the Jarvis St. to Logan Avenue study corridor.

City of Toronto Staff

Meetings were held throughout the study with numerous City of Toronto divisions including: Transportation Services, Toronto Water, City Planning, and Engineering Construction Services (EC&S). Draft documentation and designs were also circulated to City staff for their review and input during the course of the design study.

Presentations on draft project designs were also made to the City's Technical Advisory Committee (TAC) on four occasions including: July 2017, February 2018, April 2018, and March 2019. Additional more detailed smaller group reviews were held with Traffic Operations, Cycling and Pedestrian projects in Feb. and March 2019, as well as with Toronto Water, Transportation and ECS on the stormwater strategy in early 2018 and 2019.

Key input received from City staff and incorporated into the project designs included:

- Separated bike and pedestrian trails wherever possible, short sections of multi-use trail acceptable at areas of constraint, without dismount crossings;
- Traffic analysis needed for intersection modifications and signal changes;
- Unimpeded inspection access for underside of Gardiner structure;
- Gardiner stormwater management requirements to be accommodated;
- Low Impact Development (LID) stormwater management measures to be promoted;
- Swales cannot compromise Gardiner support columns; and
- Selected vegetation and tree species needs to consider growing condition in corridor as well as tree canopy to not encroach on elevated expressway.

2. Vision and Design

2.1. Lake Shore Boulevard East Corridor Vision

Public realm improvements to the Gardiner and Lake Shore Boulevard East corridor are essential to Toronto's aspirations for a great waterfront. As the northern edge of the waterfront, Lake Shore Boulevard is the threshold between established neighborhoods to the north and new development to the south. The changes proposed in this Plan present a unique opportunity to create a welcoming gateway to the waterfront. The Gardiner-LSB corridor has long been perceived as a barrier, particularly on the east side where it is immediately adjacent to the rail berm. The existing condition of the corridor is inhospitable to pedestrians and cyclists, prioritizes vehicular movement and results in conflicts at crossings. The great expanses of asphalt and concrete in this challenging landscape are prone to flooding and contribute large volumes of untreated stormwater to the lake. As new development intensifies in the area, there is an urgent need to enhance the experience for all users in a manner conducive to active transportation, urban activation, and economic vitality.

Redesigning the Gardiner and Lake Shore Boulevard East corridor as an urban waterfront avenue is aligned with one of the main guiding principles of the *Central Waterfront Secondary Plan: Removing Barriers and Making Connections*. Strengthening the north-south connector streets (see **Figure 2.1**) with high-quality urban design and transforming the rail underpasses and Lake Shore Boulevard crossings to create pedestrian-friendly corridors are other key priorities to this end. Promoting a Clean and Green Environment is another guiding principle which calls for safe, attractive, comfortable and generously landscaped pedestrian and cycling routes. In addition, the MECC approval of the Gardiner EA calls for innovative stormwater management and enhanced sediment removal for the Gardiner corridor, to alleviate its environmental impacts on the surrounding area. The scope of this project fulfills many of these policy objectives.

The eastern waterfront is an area of significant growth and development undergoing rapid changes led by significant investments in public infrastructure such as the Port Lands Flood Protection and Enabling Infrastructure (PLFP), the Metrolinx SmartTrack Regional Express Rail (RER), and the City's Wet Weather Flow Master Plan (WWFMP). The Gardiner and Lake Shore Boulevard East corridor is an important infrastructural backbone to the vehicular transportation system of this area. Investment in the

reconfiguration and public realm improvement of the Gardiner corridor will be key to facilitating its conversion to a multimodal transportation corridor that can accommodate future population growth in the area.

CONNECTING COMMUNITIES TO THE WATERFRONT

INVEST IN FOUR KEY INTERSECTIONS

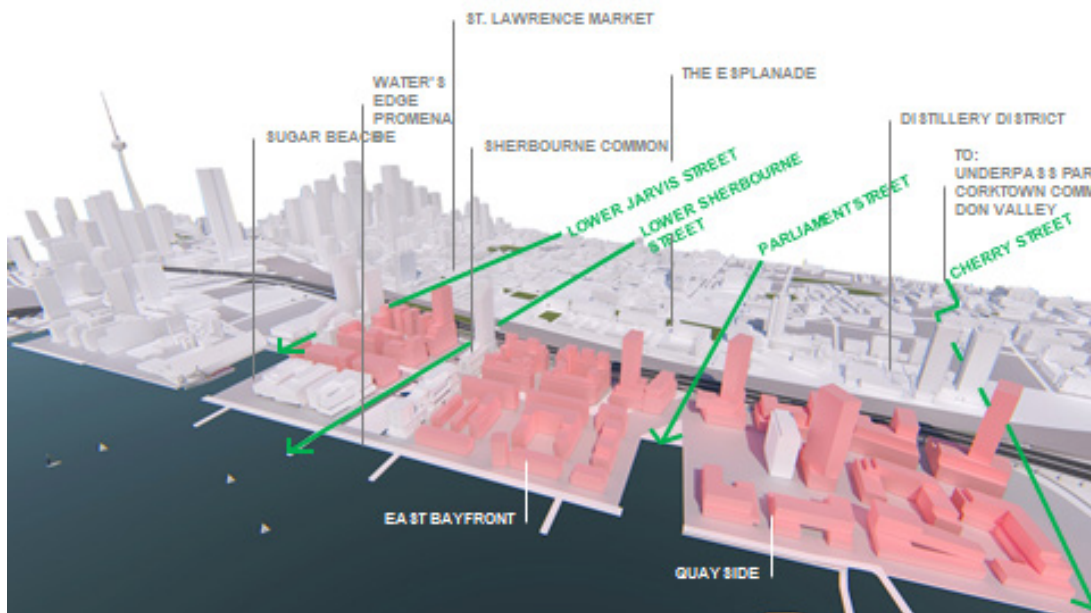


Figure 2.1 Lake Shore Blvd. North-South Connecting Streets

The Lake Shore Public Realm project aspires to transform the Gardiner-Lake Shore Boulevard corridor in a manner consistent with the objectives of the Gardiner East EA by:

1. Creating a strong landscape identity as an urban boulevard that evokes its lakeshore history, with distinctive north-south intersections that connect it back to the city;
2. Balancing multiple modes of transportation and creating safe, comfortable, and enhanced experiences for pedestrians, cyclists, and drivers; and
3. Integrating engineered and landscape strategies for improved stormwater management, reduced urban flooding, enhanced water quality, and sustainable operations & maintenance.

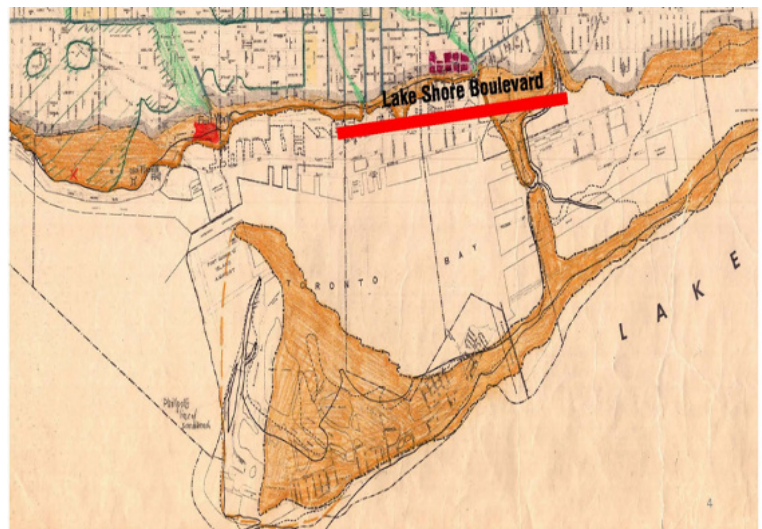
In order to achieve the design intent and ambitions of this vision, the project requires a rigorous iterative design process and collaboration with City staff and other agencies to establish a new and improved streetscape.

The following presents the public realm vision developed for the Lake Shore Boulevard corridor between Jarvis St. and Logan Avenue. The purpose of the vision is to establish a coherent streetscape plan for the Lake Shore Boulevard East corridor, for adjacent projects and developments to follow in future years as the corridor further develops.

LSB Vision: A Continuous and Unified Landscape

The vision aims to create a continuous and unifying landscape identity along the full length of the Gardiner-Lake Shore Boulevard East corridor by using a consistent material and planting palette and definition of space through grade-separation and armorstone edges. There will be variation in this linear landscape as the character of the various corridor sections changes from west to east: from gritty under the Gardiner deck (from Lower Jarvis St. to Cherry St.), to natural as it crosses the Don River, to urban through the new developments planned east of Don River. The presence of the overhead Gardiner Expressway, associated support columns and bents and general limitations in boulevard space, from Lower Jarvis St. to Cherry St. make this segment the most challenging, particularly the most eastern section between Bonnycastle and Cherry St. where the boulevard space is the narrowest.

The key theme driving the public realm character is that of the “forgotten lakeshore”. The site of Lake Shore Boulevard (LSB) was once the city’s natural lakefront, even though it is now well removed from the Lake Ontario shoreline as a result of historical landfilling. Considering its namesake, the LSB design seeks to evoke the character of the historical shoreline and record the memory of incremental lake filling. This is



to be achieved through the introduction and use of natural materials such as stone, trees, grasses and the occasional presence of water in swales. The character of places such as the Toronto Islands, the Scarborough Bluffs and the Eastern Beaches provide references for inspiration.

To accommodate the public realm improvements through this corridor section, changes are proposed for LSB from Jarvis St. to Cherry St. that include minor narrowing of roadway lanes (from 4.0 m to 3.5 m curb lanes and 3.1 m typical lanes) to create more boulevard space. This lane narrowing will also help to slow traffic down and better balance the various modes of travel that are to be accommodated through the corridor (See **Figure 2.2**). This is to be accompanied by a reduction in the posted speed limit from 60km/h to 50km/h as in other parts of Lake Shore Blvd. further west. It is proposed that these reduced lane widths and speed limit reduction would continue east of Cherry St., once LSB is realigned.

The vision for the entire corridor is presented in **Figure 2.3**. More detailed images of the vision for corridor sections are presented in **Figures 2.3a to 2.3c**.

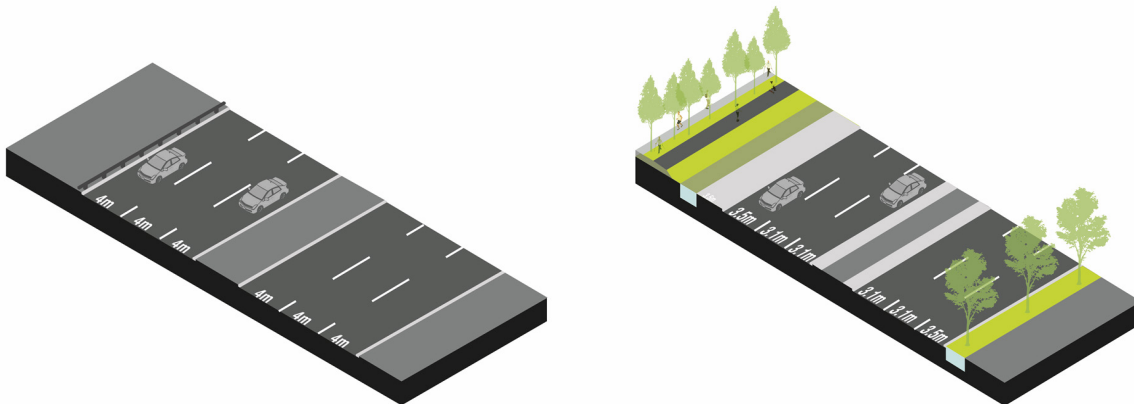


Figure 2.2 Lake Shore Blvd. Roadway Lane Narrowing Illustration



Figure 2.3 Corridor-Wide Lake Shore Boulevard East Vision

Note: See Figures 2.3a to 2.3c for more details on this vision drawing



Figure 2.3a Lower Jarvis St. to Cherry St. Lake Shore Boulevard East Vision



Figure 2.3b Cherry St. to Don River Lake Shore Boulevard East Vision



Figure 2.3c Don River to Logan Ave. Lake Shore Boulevard East Vision

2.1.1. Jarvis St. to Cherry St. Streetscape

The streetscape design for the Jarvis to Cherry St. section of Lake Shore Boulevard has been advanced to 30% design development for the north side and medians, and 60% for the south side and intersections. The following provides a description of the planned improvements.

A. LSB Jarvis St. to Cherry St. Intersections

Intersection improvements proposed as part of the public realm improvements include new wider and bolder pedestrian and cycling pavement markings, new surface treatments of the intersection corners and the medians where crossed by pedestrians, improved lighting, de-cluttering and painting of the lower sections of the Gardiner columns with reflective paint (“socks”). Future public art installations are also proposed in the vicinity of the intersections. **Figure 2.4** presents an illustration of the proposed changes to the Jarvis St. intersection.

The project does not include major structural changes to the Jarvis, Sherbourne or Parliament St. intersections. As part of this design study, the potential to make alterations to the Jarvis St. intersection, in addition to those proposed as part of the Lower Yonge Precinct design, was explored. Multiple

intersection redesign options were explored including alterations to the south-to-west right-channel turn for Gardiner westbound on-ramp access and different signal phasing to better accommodate pedestrian and cyclist north-south crossing. Through this work it was determined that due to the complexity of this intersection and the high volume multi-directional vehicle demands, other designs would result in an overall benefit to intersection users.

The Cherry St. intersection is to be modified to accommodate the Cherry St. realignment and LSB realignment that are being undertaken through separate projects.



Figure 2.4 Jarvis St. and Lake Shore Boulevard Intersection

B. LSB Jarvis St. to Cherry St. South Side

The LSB south-side boulevard improvements are to include a new pedestrian walkway with a planted area (bio-planters) between the sidewalk and the edge of roadway (see **Figure 2.5**). Where possible due to the presence of a Toronto Hydro power line duct, salt tolerant species such as birch trees and/or low lying plants would grow in the planted area. The design includes the installation of soil cells beneath a sidewalk of porous paving stones to support the trees and aid stormwater management, particularly through the section east of Bonnycastle St. where the boulevard is most narrow.



Figure 2.5 Jarvis St. and Lake Shore Boulevard Intersection

C. LSB Jarvis St. to Cherry St. Centre Medians

Modest surface treatment changes are proposed to the centre medians of LSB. The presence of significant utilities under the medians, the need for use of the medians for Gardiner maintenance access, and their narrow width east of Parliament St. limit the amount of intervention possible. The median surface will be replaced with new aggregate materials and an edge treatment. Guardrails would be removed or replaced with suitable bollards in areas where protection of Gardiner columns is required. This will need to be determined through future study.

D. LSB Jarvis St. to Cherry St. North Side

On the north side of the corridor, the vision proposes to raise the grade of the boulevard between the roadway and Metrolinx rail corridor to facilitate a continuous bike path and pedestrian walkway. The grade-separation from the roadway improves user experience and safety, and reduces the risk of water ponding as a result of Gardiner run-off. The area would be planted with birch trees and other low-growing plants of salt- and shade-tolerant species. Bin and retaining walls would be painted red to enliven the corridor and contrast with white birches (see **Figure 2.6**). Other key changes include the development of stormwater management swale that would extend from Jarvis St. to just west of Sherbourne St. between the raised pathways and the LSB westbound lanes. The swale would receive water from the Gardiner and reduce the potential for surface ponding in the area of public realm improvement. Stormwater management at the eastern end of this corridor section, where there is not enough space for a swale, includes the use of Permavoid beneath the bike path and walkway to hold run-off from the boulevard only. A layby lane would be developed along the north side of the LSB westbound lanes to provide access for Gardiner underside inspection and maintenance.

The combination of the south side, median and north-side improvements as described above are illustrated as section drawings in **Figures 2.7 and 2.8** below.



Figure 2.6 Lake Shore Blvd. North-Side Improvements

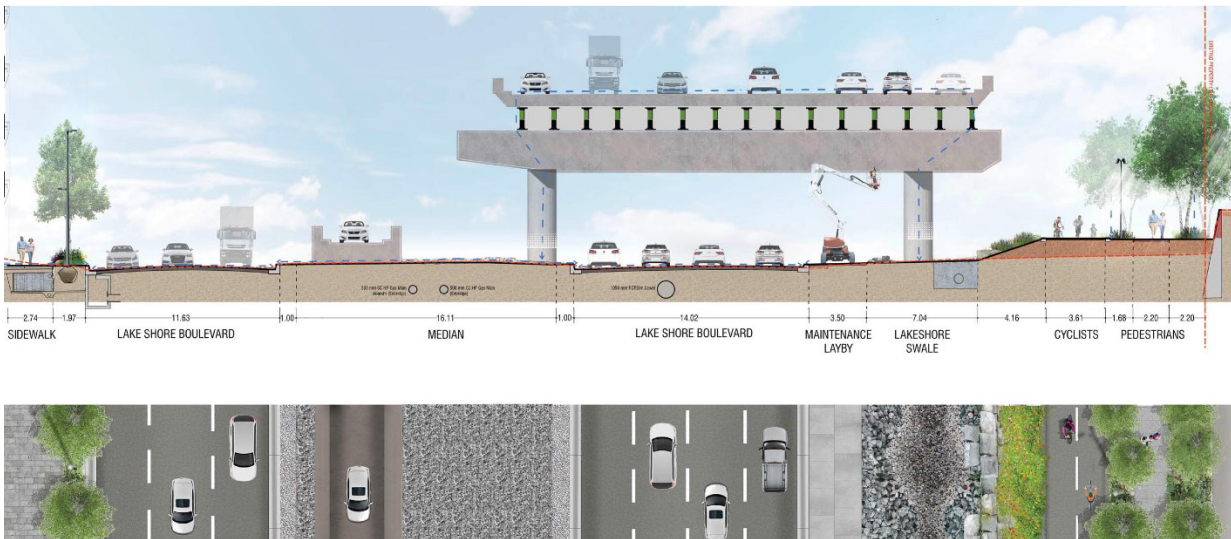


Figure 2.7 Jarvis St. to Sherbourne St. Section Drawing

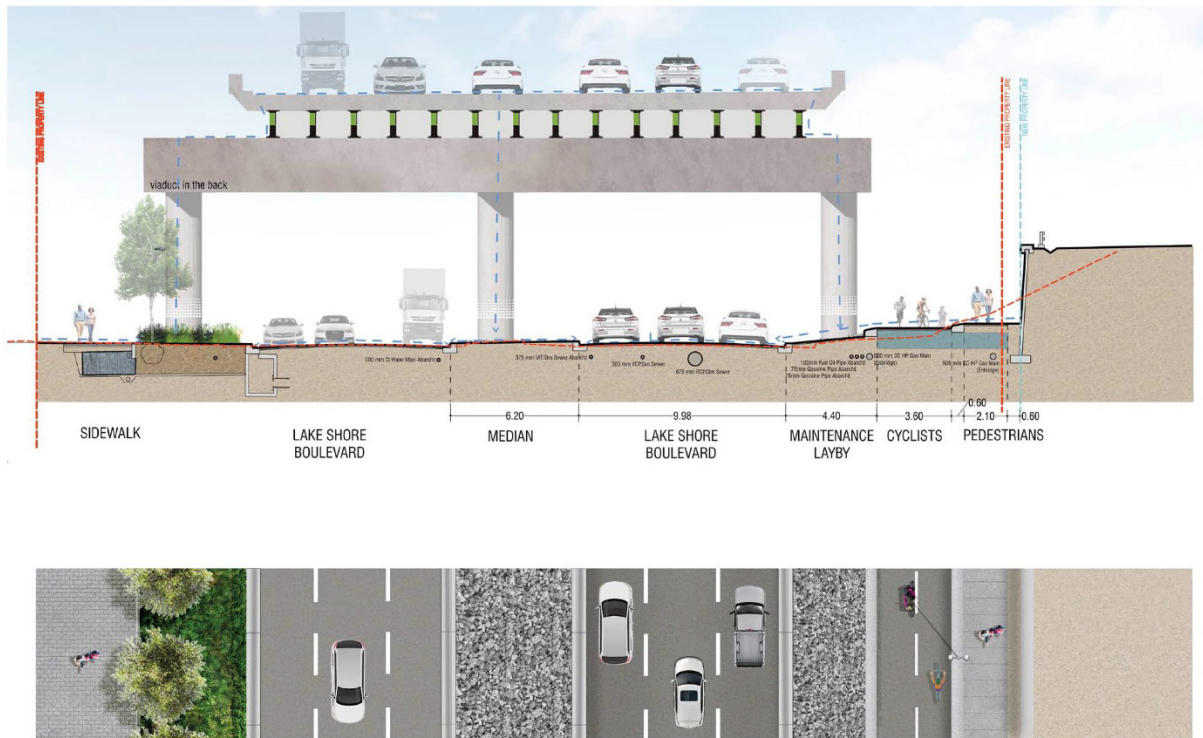


Figure 2.8 Parliament St. to Cherry St. Section Drawing

2.1.2. Cherry St. to Don River

East of Cherry St., the planned public realm improvements are to complement the realignment of the Gardiner and LSB. Through this section, the corridor opens up and more space is available. The public realm has been developed to a vision scale only and will require further development that needs to be coordinated with other area projects including the Keating Channel Precinct Plan. The character of this corridor section is to be consistent with that west of Cherry St., which includes generous plantings on both sides of LSB and within the roadway medians. The lands to the north of Lake Shore Boulevard through the Keating Channel Precinct will be landscaped as open space to facilitate the passage of the Martin Goodman Trail. This north-side property will also accommodate a stormwater treatment facility beneath the realigned elevated Gardiner Expressway. It also opens the possibility for open space programming, such as an off-leash dog park west of the future Muniton St. Extension (See **Figure 2.9**). Also of note, the proposed design accommodates an access road to the Don River Sediment Management Facility and Metrolinx Rail Yard.

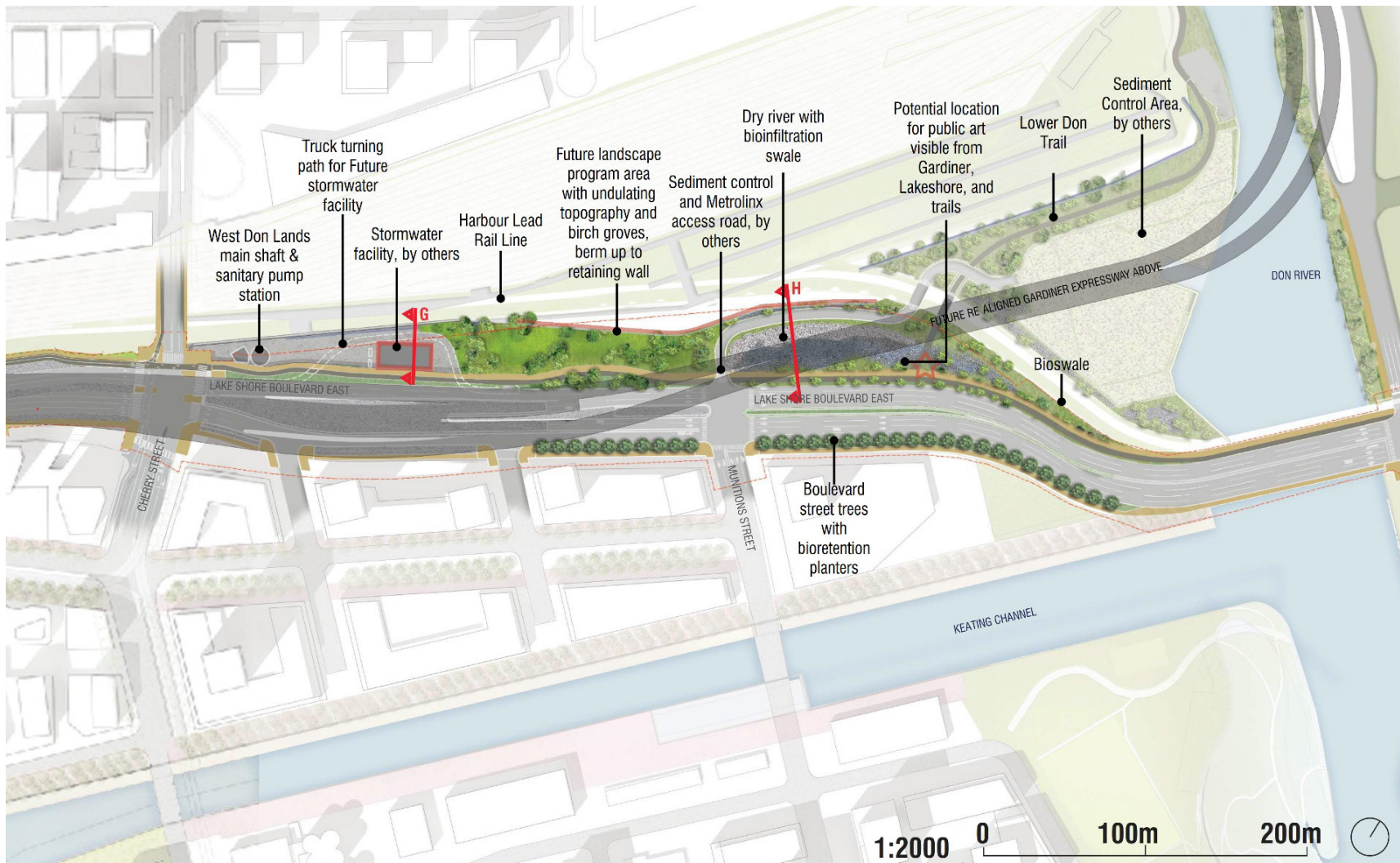


Figure 2.9 Plan of Lake Shore Boulevard Public Realm between Cherry St. and the Don River

Note: For Section G see Figure 2.10 and for Section H see Figure 2.11

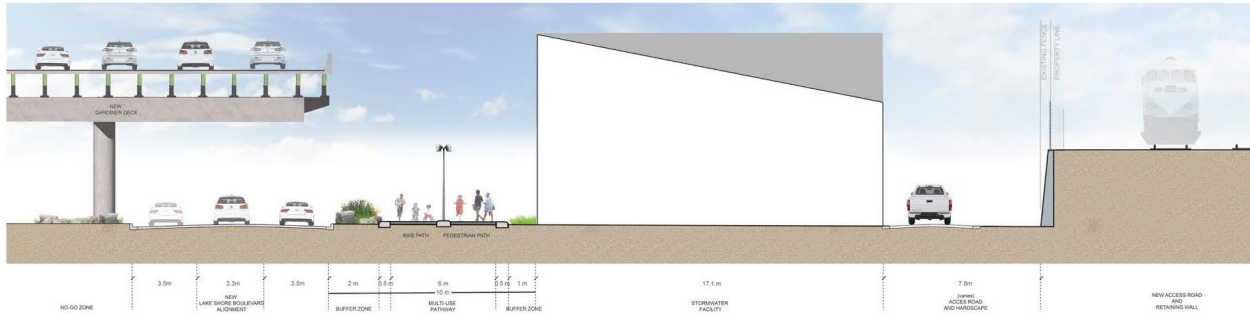


Figure 2.10 Section between Lake Shore Blvd. East and Cherry St. Stormwater Facility

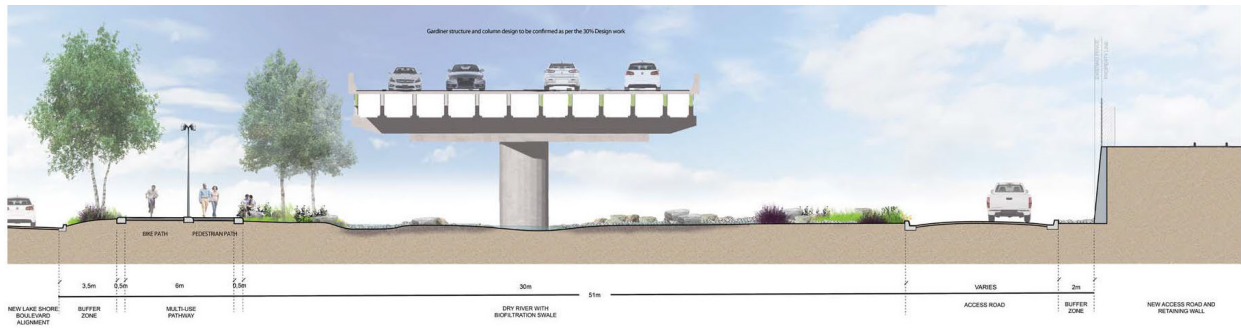


Figure 2.11 Section between Lake Shore Blvd. East and Wilson Yard

2.1.3. Don River to Logan Avenue

East of the Don River, a vision scale concept has been developed for the streetscape which complements the planned removal of the overhead Gardiner Logan ramps as per the Gardiner EA design. The vision assumes the current roadway right-of-width. LSB eastbound and westbound lanes will be consolidated and a planted centre median developed as is illustrated in **Figure 2.12 and Figure 2.13**. The future Broadview Avenue extension would extend through LSB in this section. This future intersection is to be designed under a separate EA design process but coordinated with the vision design for LSB. Streetscape improvements through this section are to complement the East Harbour development to the north and tie into the existing cycle pathway that extends along the north side of LSB. The vision includes a generous planting program along both sides of the corridor and within the centre median. Proposed stormwater management treatment includes the use of bio-planters to run alongside the roadway edge and the use of Permavoid under the pathways, to be connected to storm sewers.

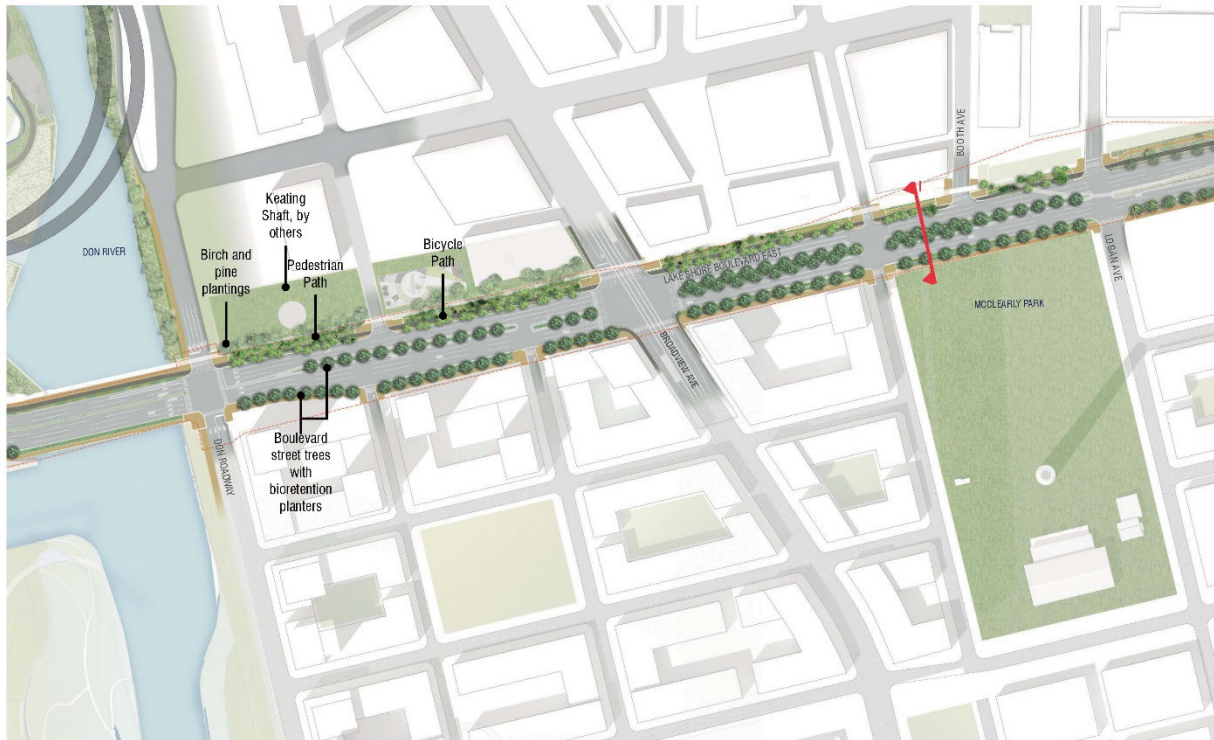


Figure 2.12 Lake Shore Blvd. East – Don River to Logan Avenue – Plan View

Note: for Section I see Figure 2.13



Figure 2.13 Lake Shore Boulevard East – Don River to Logan Avenue – Section View

E. Public Art

Public art is an integral part of a compelling public realm. This plan proposes the creation of impactful public art projects beneath the Gardiner Expressway, particularly at intersections which function as key pathways to and from the City to the waterfront. The north-side trail will tie together the variety of experiences along the corridor in concert with a series of public art projects at key intersections. By

means of signage, lighting, and reflective paint along the route, the trail will create a continuous experience punctuated by a variety of public art experiences and installations. As it crosses the river, the new trail leads into the Lower Don Park and into the Villiers Island art trail further south to continue the journey toward Lake Ontario.

2.2. Intersection Design

Improvements to the existing north-south street connections to remove barriers between the waterfront and downtown Toronto are much needed in the corridor. As the waterfront precinct continues to develop, improving these connections will become even more critical. For the Lower Jarvis St., Sherbourne St., Parliament St., and Cherry St. intersections, pedestrian and cyclist safety is of critical importance and of key concern to public interest groups. The LSB east vision includes design improvements to these major intersections. Further east along the corridor, the Don Roadway and future Broadview Avenue extension intersections are to be designed through other study processes but should be consistent in this design philosophy.

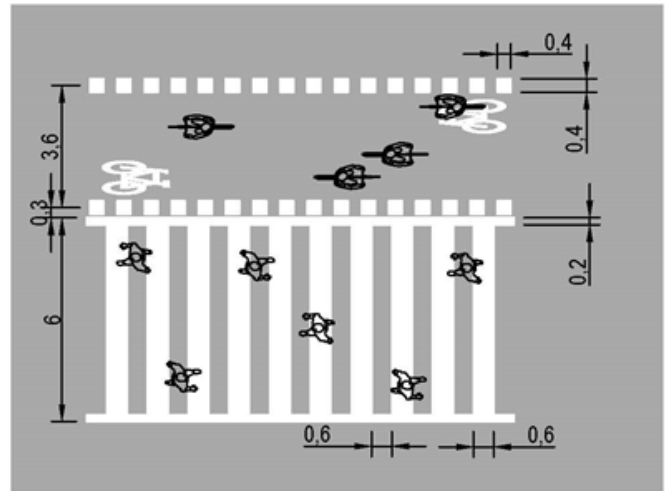
Both north-south and east-west crossings have been considered. With the proposal of a new continuous commuter-oriented cycle path along the north side of the corridor, provisions for the safe crossing of the north-south streets is of high importance. Also considered are the proposed lengthening of the USRC street crossing underpasses (Jarvis and Parliament) as part of the Metrolinx USRC East Enhancement Project. There is also potential to improve pedestrian passages through all the underpasses, which Metrolinx and Waterfront Toronto are exploring through a parallel study as previously noted. To inform this public realm study, discussions were held with the Metrolinx USRC study design team to ensure a coherent vision for the corridor.

Six intervention or improvement strategies are proposed for the intersections, as described below.

1. Improve Alignment and Graphic

Legibility

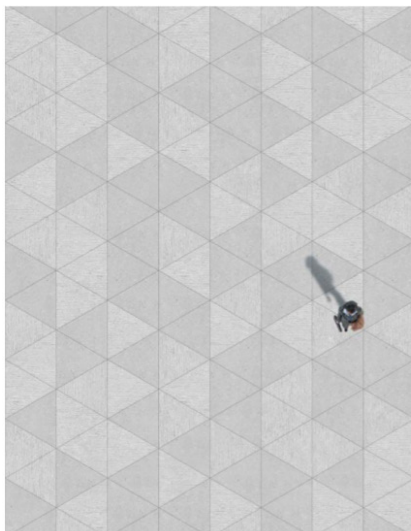
Pedestrian crossing markings are to be widened to 6 m from a typical 3 m and the bi-directional cycle crossing is to be widened to 3.6 m to improve visibility and enhance the perception of safety for pedestrians crossing Lake Shore under the Gardiner. Improved alignment and graphic legibility of pavement markings is also proposed to emphasize continuity along the north-south streets.



2. Special Pavement Corners

At all intersection corners apply improved and consistent use of hardscape materials as present in **Figure 2.14**. The proposed surface material for the median edges are pebbles in concrete.

DESIGN STRATEGY: SPECIAL PAVING FINISH AT CORNERS AND MEDIANS



LIGHT
SANDBLAST
FINISH



BROOM
FINISH ONE
DIRECTION
(CITY OF
TORONTO
STANDARD)



BROOM
FINISH
OPPOSITE
DIRECTION



Reference
Image: Yonge
Street, Stabilized
pebble edge
adjacent to
pedestrian
waiting areas at
medians

Figure 2.14 Corner and Median Surface Material

3. Gardiner Bent “Socks”

The base of the Gardiner support columns are to be painted with a reflective dot pattern, to delineate human scale on the large structure and enhance its visibility at night. The columns can also be numbered to provide a reference point of location along the corridor as presented in **Figure 2.15**.

DESIGN STRATEGY: BENT SOCKS AND NUMBERS



Figure 2.15 Gardiner Bent Socks

4. Light Temperature

The Public Realm Plan proposes the introduction of warmer street lighting in the vicinity of the intersections to facilitate a more pleasant pedestrian experience. Two types of lights are proposed at this point but others may be considered at time of implementation: 1) NXT series LED lights that would be supported by poles and 2) Eseta LED bent-mounted lights. Discussion with Toronto Hydro and the City would be required during detailed design to confirm the lights to be installed and the placement of the support poles and bent-mounted lights. **Figure 2.16** provides an illustration of the intersection lighting plan for the Jarvis St. intersection and lighting that is proposed for the north-side trail.

DESIGN STRATEGY: WARM COLOUR TEMPERATURE AT INTERSECTIONS

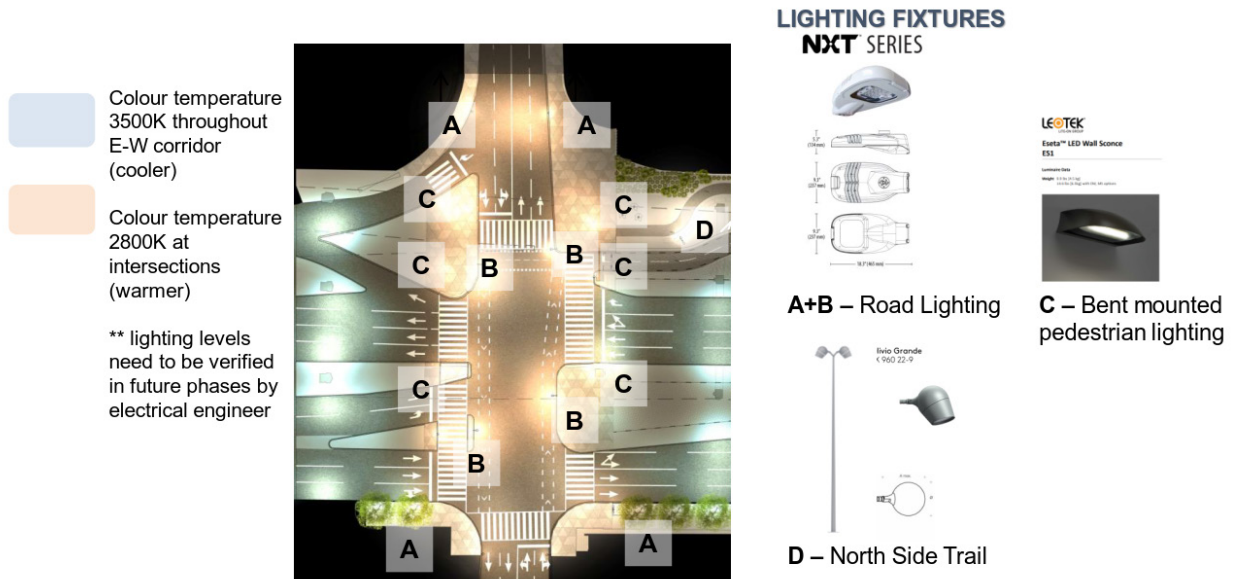


Figure 2.16 Proposed Intersection Lighting Plan at Jarvis St.

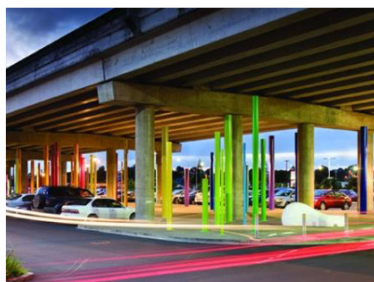
5. Portals and Public Art

It is proposed that opportunities for public art installations in the vicinity of the intersections be explored, as part of a family of installations that refer to the lakeshore history of the site and are tied together by the north-side trail.

REFERENCE IMAGES



Play on the idea of the lake shore, infrastructure, and spirit of the place
Beaufort 04, Daniel Buren



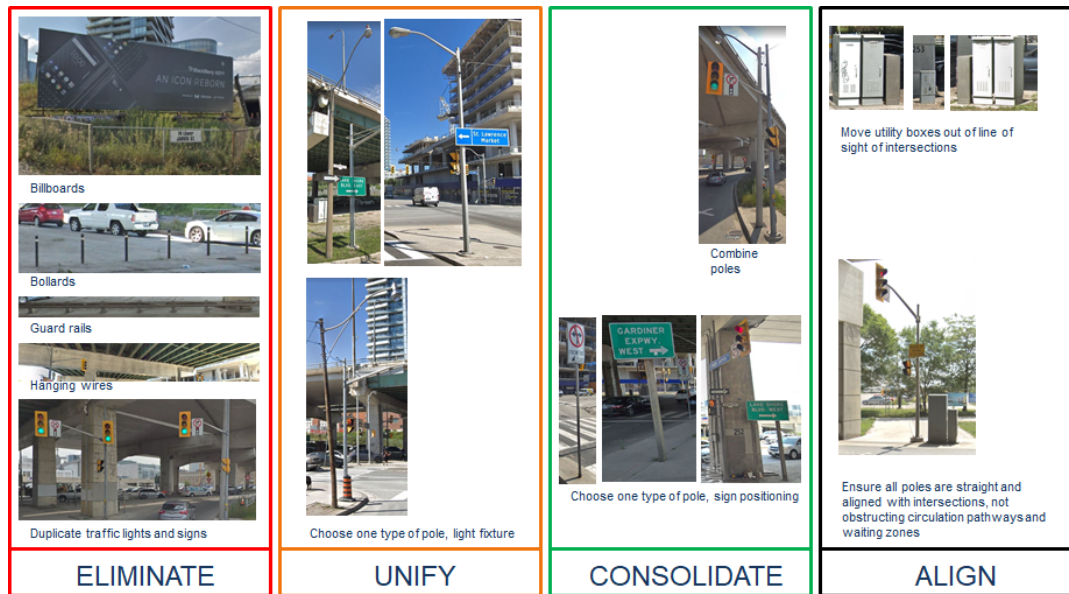
Create a step down in scale between the highway and the streetscape, independent of the structure
SEART Park, Auckland NZ



Human scale with opportunity for interaction, work during night and day
Marbles, Daan Roosegarde

6. Declutter

The existing intersections are cluttered with an excessive amount of street furniture, including traffic signals, lighting, telecommunication infrastructure, signage, etc. This clutter detracts from users being able to quickly orient themselves within the intersection. A plan for each intersection would be developed to reduce and unify needed infrastructure and release physical and visual space for pedestrians and cyclists. A strategy for decluttering is presented in the image below:



2.2.1. Jarvis St. Intersection Design

The Jarvis St. intersection will be improved as per the previous outlined strategies. This intersection is the current start/end of the planned north boulevard cycle and pedestrian pathways. It is noted that Metrolinx intends to lengthen the USRC underpass which will bring the underpass closer to the intersection. This intersection has some of the highest user volumes and has several complex turning movements for vehicles. The improvements to this intersection as illustrated in **Figure 2.17** include new bolder pedestrian and cyclist crossing markings, new surfaces at the intersection corners and the introduction of the north-side cycle path. The design also includes a widening of the east-side centre median (to the south) which would close off the most northern lane so that there is a balance of three vehicle lanes on each side of the intersection. The design is consistent with the planned changes to LSB to the west as per the Lower Yonge Precinct Plan.

As part of the design study, the Jarvis St. intersection was examined to determine whether changes could be made to better facilitate the movement of cyclists and pedestrians through the intersection. A number of configurations were conceptually developed and assessed including the potential to remove the south-to-west right-turn channel lane to access the Gardiner westbound on-ramp. It was determined that no major changes to the intersection are currently possible that would provide on balance, improvements to all users (vehicles, pedestrians and cyclists). Further analysis will be undertaken during future design work to determine the best course of action. For example, opportunities to improve operations will be reviewed as part of detailed design for Lower Yonge St. works. These works include reconstruction of Lake Shore Blvd. and Lower Jarvis, and removal of the Gardiner off-ramp. A 30% design for this work is expected to be complete in mid-2021.

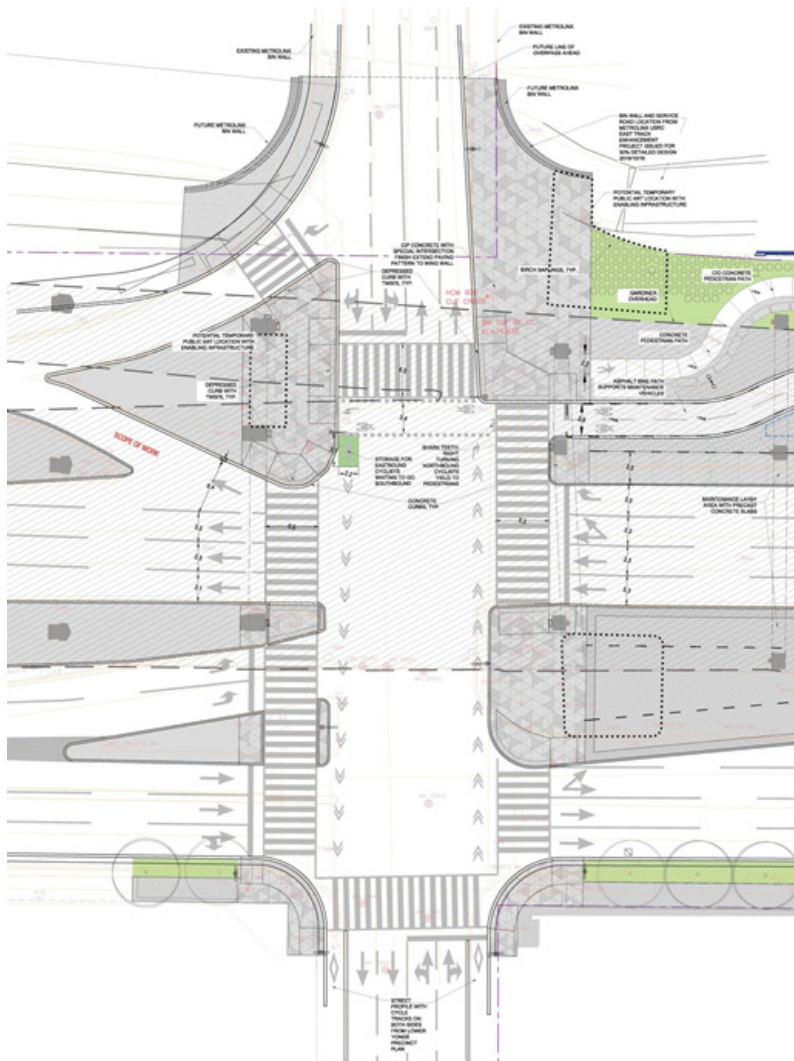


Figure 2.17 Jarvis St. Intersection Improvements

2.2.2. Sherbourne St. Intersection Design

The Sherbourne St. intersection will be improved as per the previous outlined strategies detailed in **Figure 2.18**. No major structural changes are proposed to this intersection. As previously noted, Metrolinx intends to lengthen the USRC underpass by about 9.5 m which will bring the underpass closer to the intersection.

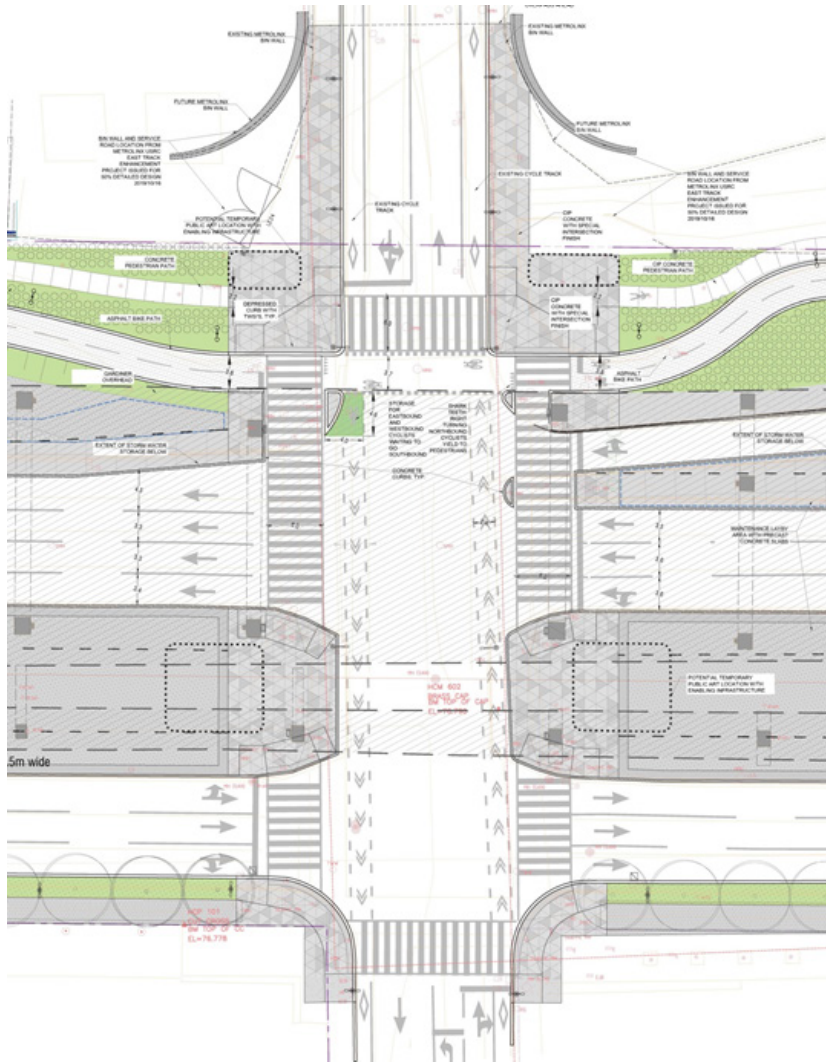


Figure 2.18 Sherbourne St. Intersection Improvements

2.2.3. Parliament St. Intersection Design

The Parliament St. intersection will be improved as per the previous outlined strategies and is illustrated in **Figure 2.19**. It is noted that the east side cycle path is pulled further into the intersection due to the north-south alignment of this intersection and the presence of a centre east-side Gardiner support column that requires the extension of the centre median.

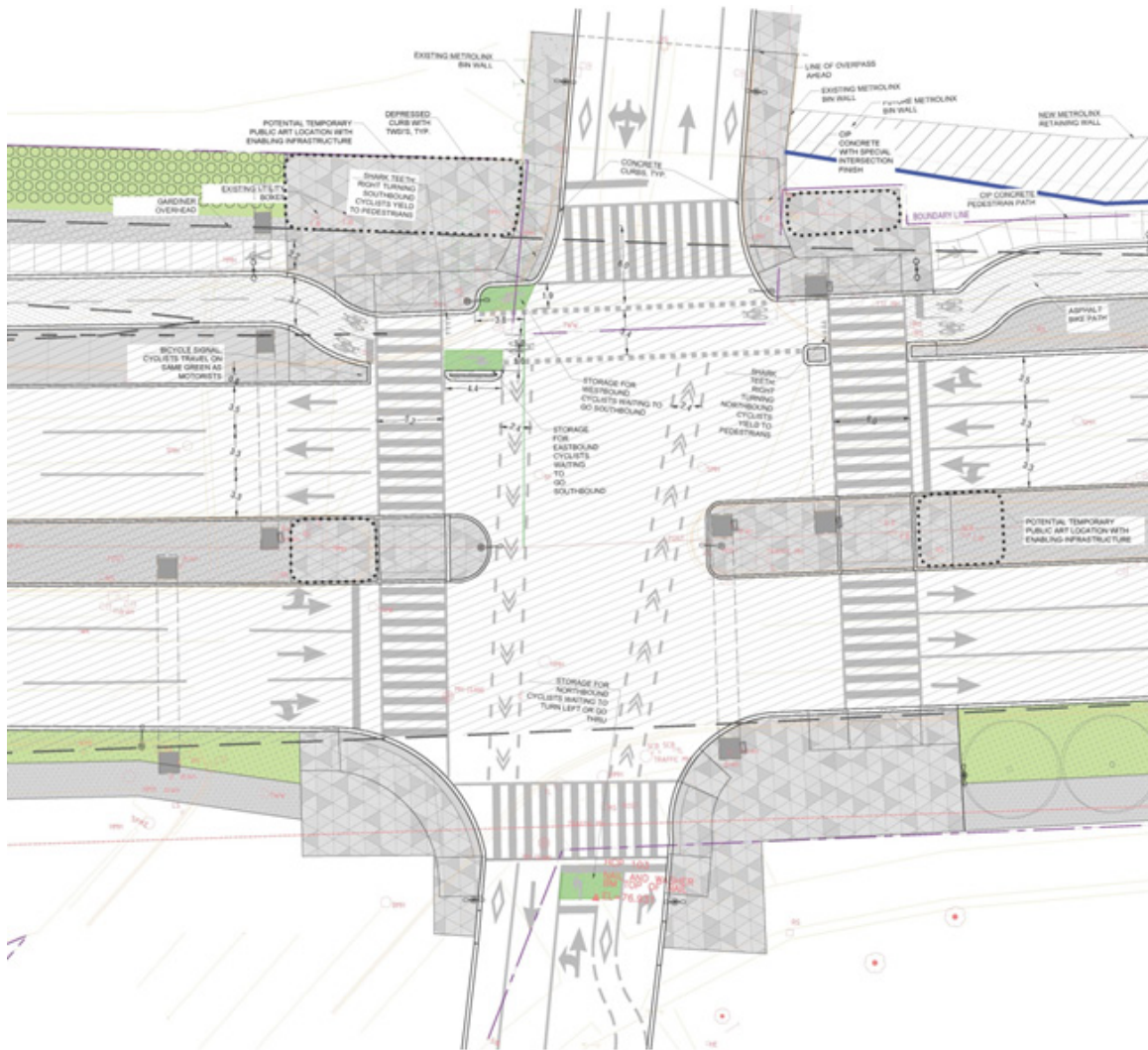


Figure 2.19 Parliament St. Intersection Improvements

2.2.4. Cherry St. Intersection Design

The Cherry St. intersection will be improved as per the previous outlined strategies and is illustrated in **Figure 2.20**. The Cherry St. intersection is to be modified significantly in the future to accommodate the realignment of Cherry St. to the south and the realignment of LSB to the east, in tandem with the Gardiner realignment. This intersection is important as it serves as a gateway to the Port Lands and will also accommodate the future Waterfront east LRT line. It is also noted that this intersection, unlike the others, includes a bi-directional north-south crossing for cyclists that is to be located along the west side of the intersection. Some revisions to this intersection design may be required or desirable pending the finalization of the new Gardiner support columns. This work is currently being advanced as part of the Gardiner 30% design study for Hybrid 3.

As the Cherry St. realignment to the south is not expected until 2020-21, and the realignment of LSB to the east is not expected until 2026 or later, some interim intersection improvements are proposed. These largely involve the introduction of new zebra crossings, a connection to the Martin Goodman trail along the north side of the intersection and the widening of the north-west corner of the intersection by bumping out the curb line to create more space for waiting cyclists and pedestrians.

An interim condition of this intersection is to be delivered as part of the Cherry St. realignment to tie the new Cherry St. into the existing intersection north of Lake Shore Boulevard. Elements of the ultimate design will be incorporated into this interim design for early implementation.



Figure 2.20 *Cherry St. Intersection Improvements*

2.3. South-Sidewalk Design

The south side of the boulevard will transform a patchwork of varying sidewalk conditions into a continuous civic boulevard with enhanced public realm, high-quality materials and plantings consistent with the development blocks to the south. **Figure 2.5** previously shown, illustrates the south boulevard design. The south boulevard will likely be the first part of the plan to be implemented since it is tied to private developments along Lake Shore Blvd.

The implementation of the south-side vision will be achieved in two stages, partially by private development and partially by the City. First, the sidewalk and planting zone will be delivered by each development block to the existing curb, depending on the location of existing utilities. Secondly, the City will reconstruct Lake Shore Boulevard, relocate the south curb 1.2m north, and fill the additional space with plantings.

To ensure consistency of public realm across multiple development blocks over time, the City will work with private developers through the Site Plan Approval review process to adapt the specific conditions of their site to the design principles, materials, planting palette, and integrated stormwater management approach of the Lake Shore Boulevard East Public Realm Plan.

2.3.1. Interim South Sidewalk

Prior to the relocation of the south curb, the sidewalk and part of the planting zone can be implemented. (See **Figure 2.21a**) Depending on the proximity of existing utilities at a given location, an interim condition without trees and soil cells may have to be implemented. Site verification will be necessary to determine the viability of soil cells and trees to ensure required soil volumes at each development's location. Where the presence of underground utilities does not preclude (i.e., between Jarvis St. and Sherbourne St.), soil cells and trees may be included in the interim condition as per the ultimate design, depending on the period of time available for their growth.

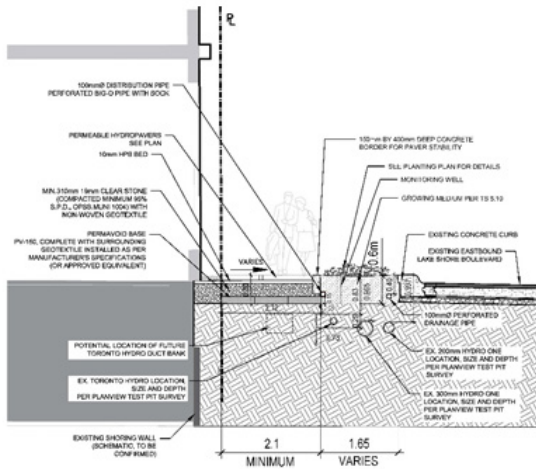


Figure 2.21a South Boulevard Design Illustration

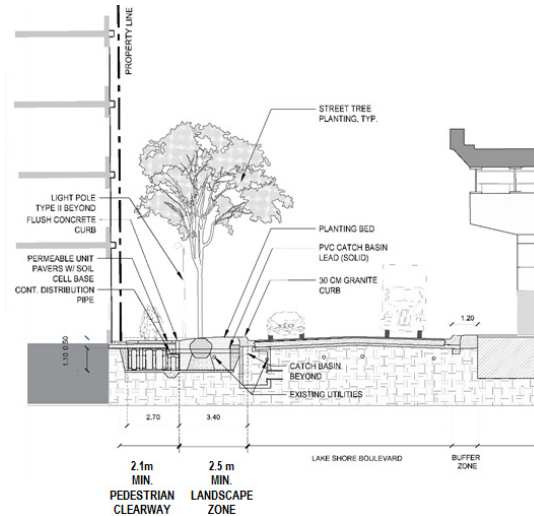


Figure 2.21b Ultimate South Sidewalk Design

2.3.2. Ultimate South Sidewalk

After relocation of the south curb by the City as part of the reconstruction of Lake Shore Boulevard, an additional 1.2m of planting area will be added to complete the south-sidewalk vision. In some locations this additional space will provide sufficient soil volume for the addition of street trees where they were not viable in the interim (see **Figure 2.21b**). New street lighting is proposed along the south boulevard using a combination of bent-mounted and pole lighting, depending on the proximity of Gardiner bents. The type, feasibility and location of the proposed lighting plan requires discussion with Toronto Hydro and the City as part of future detailed design work.

Based on existing utilities in the corridor, a study was undertaken to determine what trees would be in conflict. The study considered the City DEMOG data set as the SUE work completed for this Public Realm Plan. Of the 78 proposed trees along the corridor, approximately half would be in conflict with existing underground utilities. The most constrained areas are between Sherbourne St. and Bonnycastle St., and then east of Bonnycastle St., and then from Parliament St. to Cherry St. (see **Figure 2.22** – orange “circles” in the Figure note conflicted proposed tree locations).

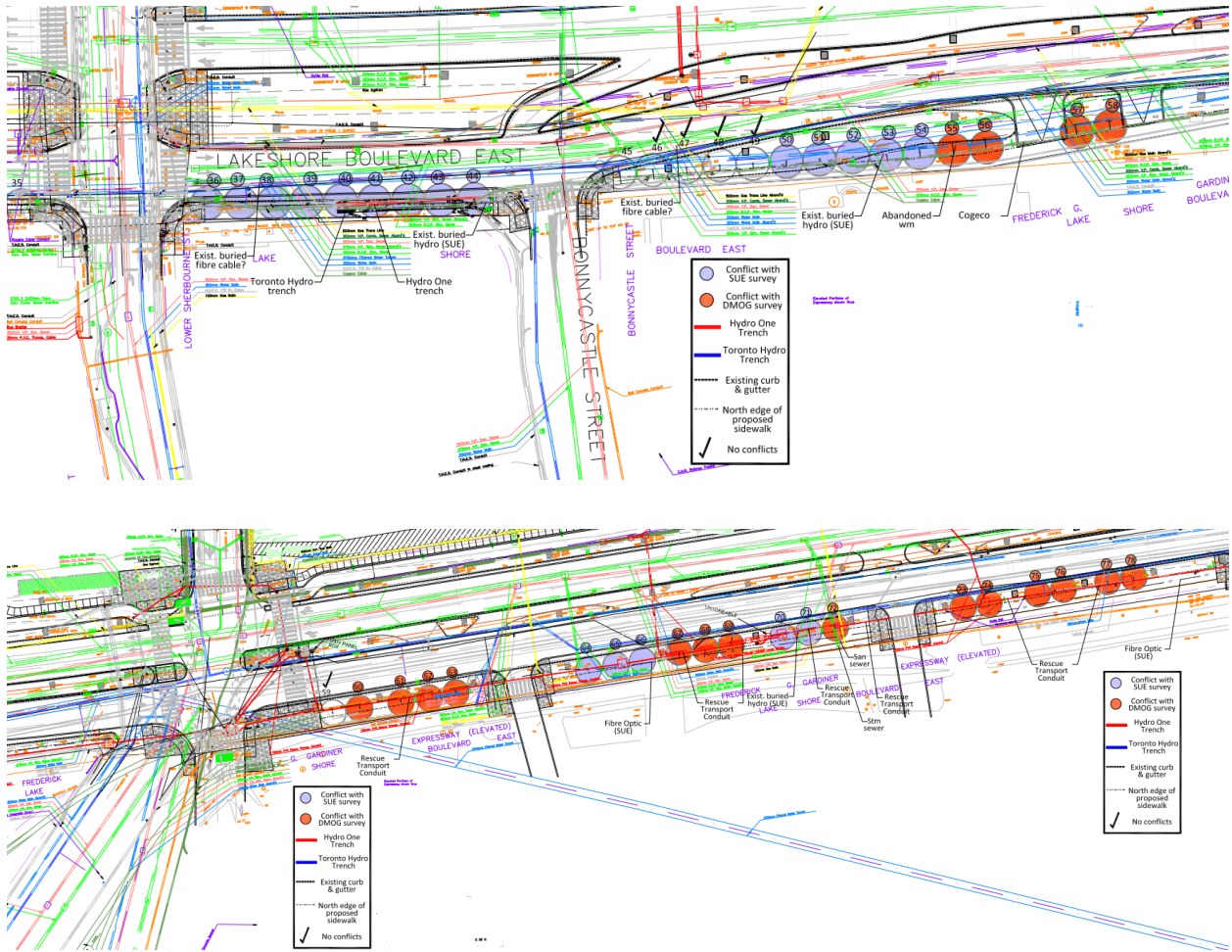


Figure 2.22 South Boulevard Tree Conflicts with Underground Utilities

The following provides further details regarding the south-side boulevard improvements:

A. Proposed Vehicle Laybys

Also examined as part of the south boulevard design was the potential to introduce vehicle laybys near the Parliament St. intersection for passenger drop-off and pick-up. Design options (see **Figure 2.23a** and **2.23b**) were developed giving consideration to City design standards, Gardiner column locations and proximity to intersections. A layby width of 3 m is proposed to meet City design standards. Should there be interest in advancing this facility, further work would be required as part of future detailed design work.

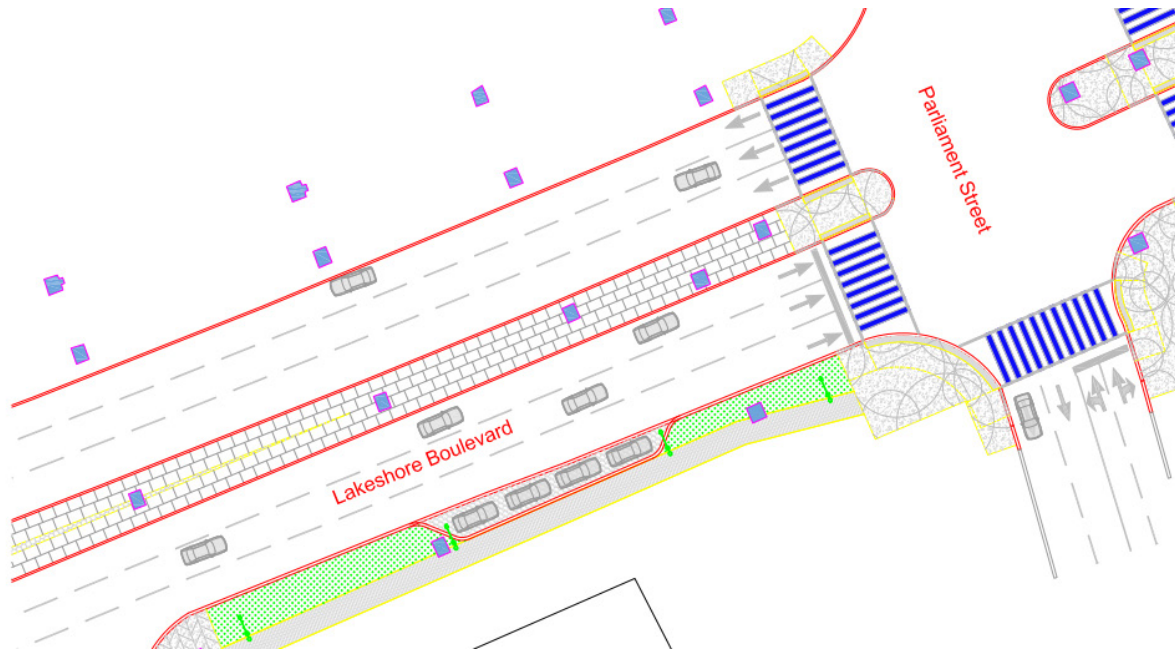


Figure 2.23a South Boulevard Layby Concept 1

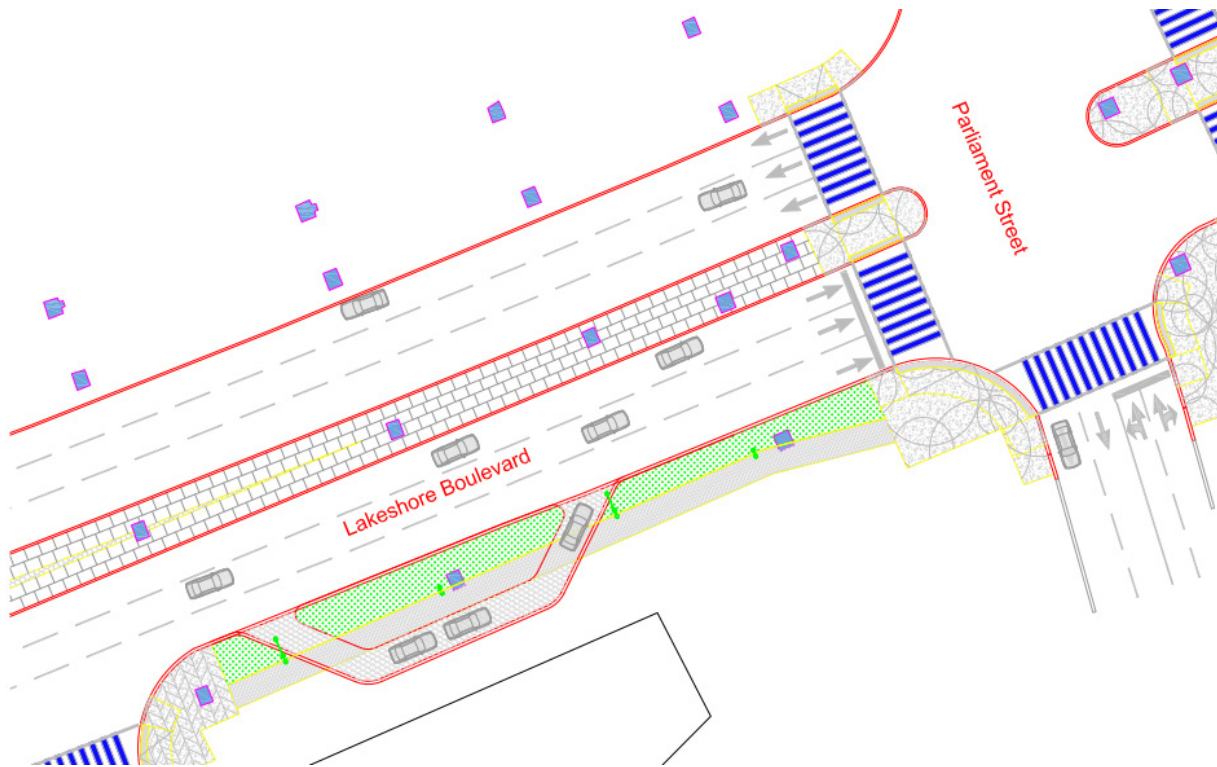


Figure 2.23b South Boulevard Layby Concept 2

B. Proposed Surface Materials

The south boulevard design includes high quality materials consistent with the new development sites along it and the civic boulevard character of the future Lake Shore corridor. This includes permeable unit pavers, granite curbs, and curbside plantings with street trees and resilient groundcover plantings as illustrated in **Figure 2.24**. The edges of the medians, which will contain rough natural stone aggregate, are to be defined with a stabilized stone band. This is an existing detail elsewhere in the corridor, and is intended to create a continuous coherent edge for the eastbound lanes.

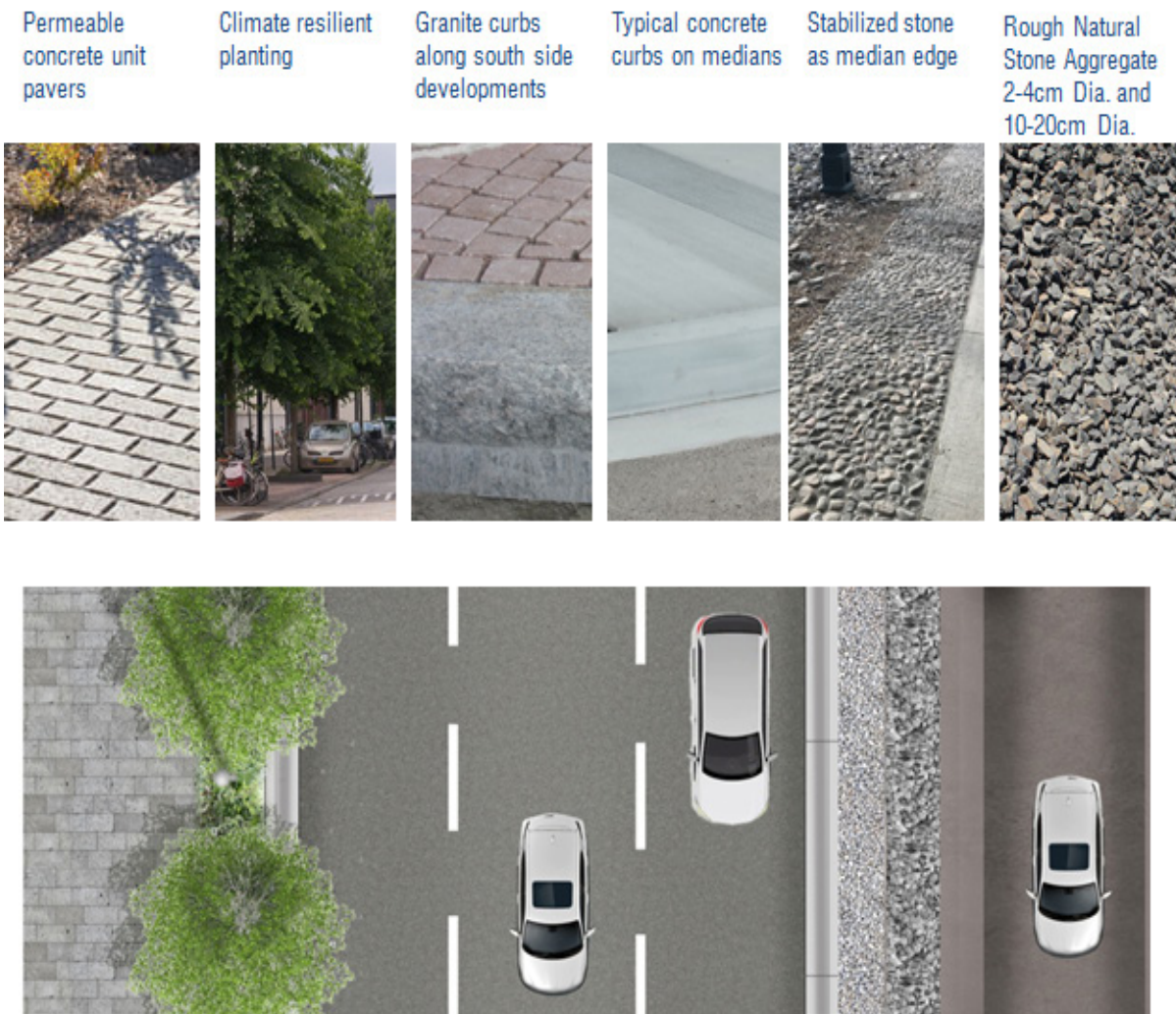


Figure 2.24 South Boulevard Surface Materials

C. Plantings and Vegetation

The Gardiner-LSB corridor poses challenging growing conditions for plants and trees. Development of the planting plan required careful consideration and discussions with City staff and urban forestry experts. The proposed plantings for the south-side boulevard consist of a mix of salt-, shade-, and flood-tolerant perennial groundcover plant species that can withstand the challenging conditions of the Lake Shore Blvd. corridor and survive with passive stormwater irrigation. The tree species palette is comprised mostly of shade and disease-tolerant varieties of Elms. A few additional species of Maples, Oaks, and Tulip tree are introduced near intersections to add diversity along the corridor and provide continuity with the trees along crossing North-South St. See Figure 2.25 for further details.

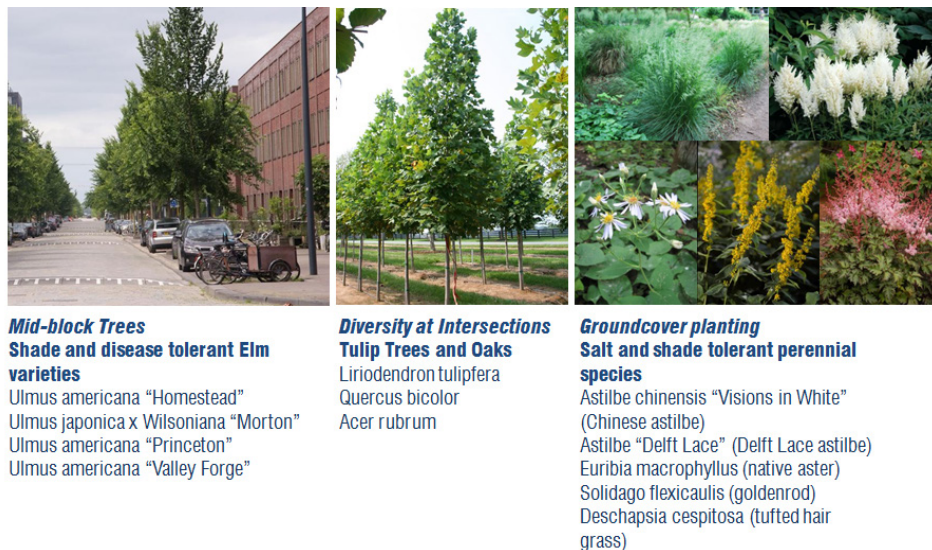


Figure 2.25 South Boulevard Planting Plan

D. Integrated Stormwater Management

The landscape design and planting strategy for the south-side boulevard is closely tied to the stormwater management approach. Stormwater management is integrated within the landscape design, capturing stormwater from the road and sidewalk through permeable paving, providing temporary storage in soil cells, and using it for passive irrigation of the plantings and trees. This is to reduce the amount of maintenance needed to sustain plantings in the ROW, while also detaining excess stormwater to avoid peak flows, and reducing the volumes ultimately drained to the sewer system. **Figure 2.26**

illustrates the proposed SWM system for the south side. Further details regarding the proposed stormwater management system is described in **Section 3.3**.

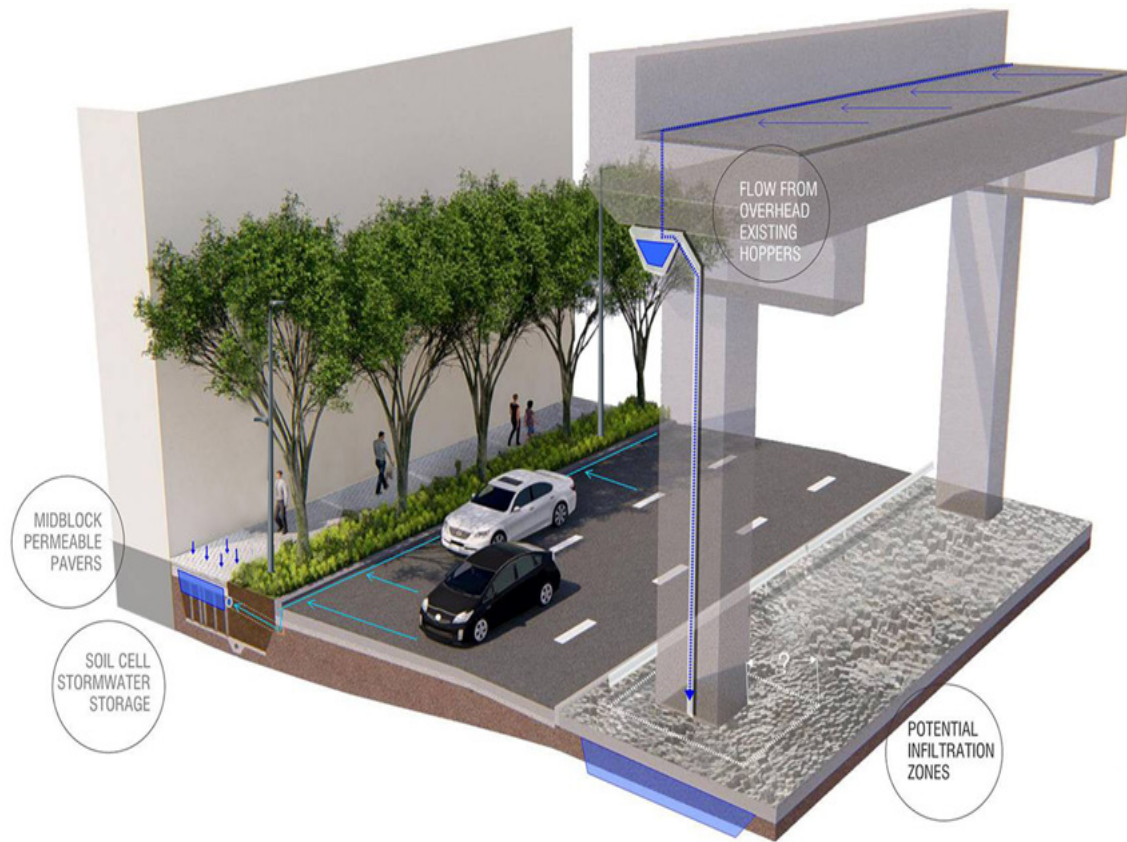


Figure 2.26 *Integrated Stormwater Management System and Planting Strategy*

2.4. North Landscaped Trail Design

The development of the north side of the boulevard from Jarvis St. to Cherry St. is a cornerstone of the Public Realm Plan for the corridor. The intent is to transform an empty and unused space into a new vibrant planted open space that includes a grade-separated pedestrian and cycle pathway system which connects with other active transportation facilities including the Martin Goodman Trail and the Don Valley Trail. The new cycle path between Cherry St. and Jarvis St. is envisioned as a commuter route considering the close proximity of the Martin Goodman Trail that runs along Queens Quay, located a short distance to the south.

2.4.1. Jarvis St. to Sherbourne St. North Boulevard

From Jarvis St. to Sherbourne St. where the boulevard space is widest the pathway would follow a slightly meandering route that will extend onto a raised section supported by a small retaining wall of armorstone. The raising of the pathways for pedestrians and cyclists is proposed to provide greater separation from road traffic and to reduce potential for surface water ponding along the trail from Gardiner overflow. The pathway would be brought back to existing grade for intersection crossings. Lighting of the pathway is proposed using pole-mounted Selux Olivio Grande LED lights. The proposed lighting plan would require approval from Toronto Hydro and the City. A section drawing showing this design is presented in **Figure 2.27** and a plan view of the trail is presented in **Figure 2.28**.

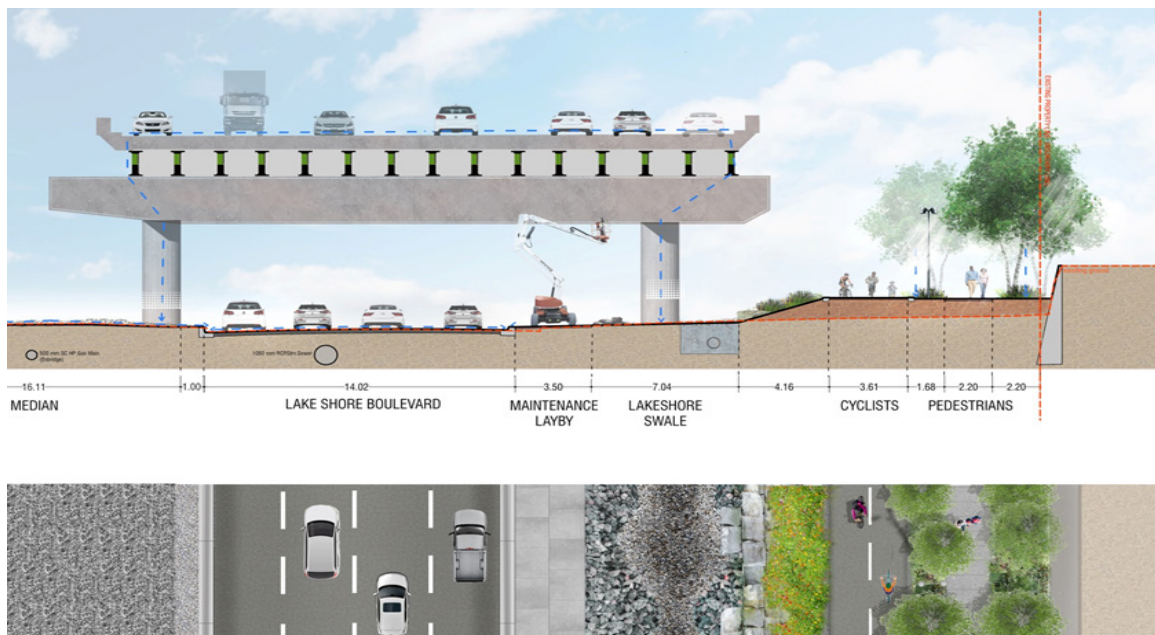


Figure 2.27 North Boulevard Section Drawing East of Jarvis St.

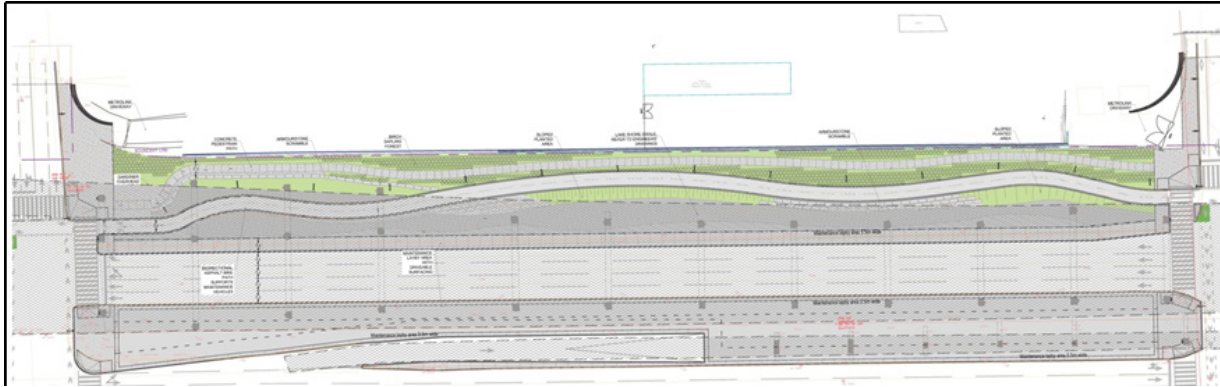


Figure 2.28 North Boulevard Plan Drawing of Pathways East of Jarvis St.

The linear open space is described as the “Pioneer Trail” as pioneer plant species are proposed for planting with birch trees as the predominant tree species. Two species of birches are proposed, white birch and grey birch. Understory or ground cover plantings are also proposed through this area consisting of a variety of Ontario native species. The planting strategy includes an over planting of birch saplings to be thinned over a period of 2-3 years as the trees mature to foster retention of the most healthy trees. **Figure 2.29a and b** illustrate the interim and long-term plantings, respectively, along the north-side boulevard.

The Metrolinx USRC bin wall that defines the northern edge of this linear open space is proposed to be painted a bold red colour to provide a contrast to birch trees and relief in the tightest parts of the corridor. Storm run-off from the boulevard would be directed to a swale that would extend between the cycling-pedestrian paths and the roadway (See **Section 3.3** below).

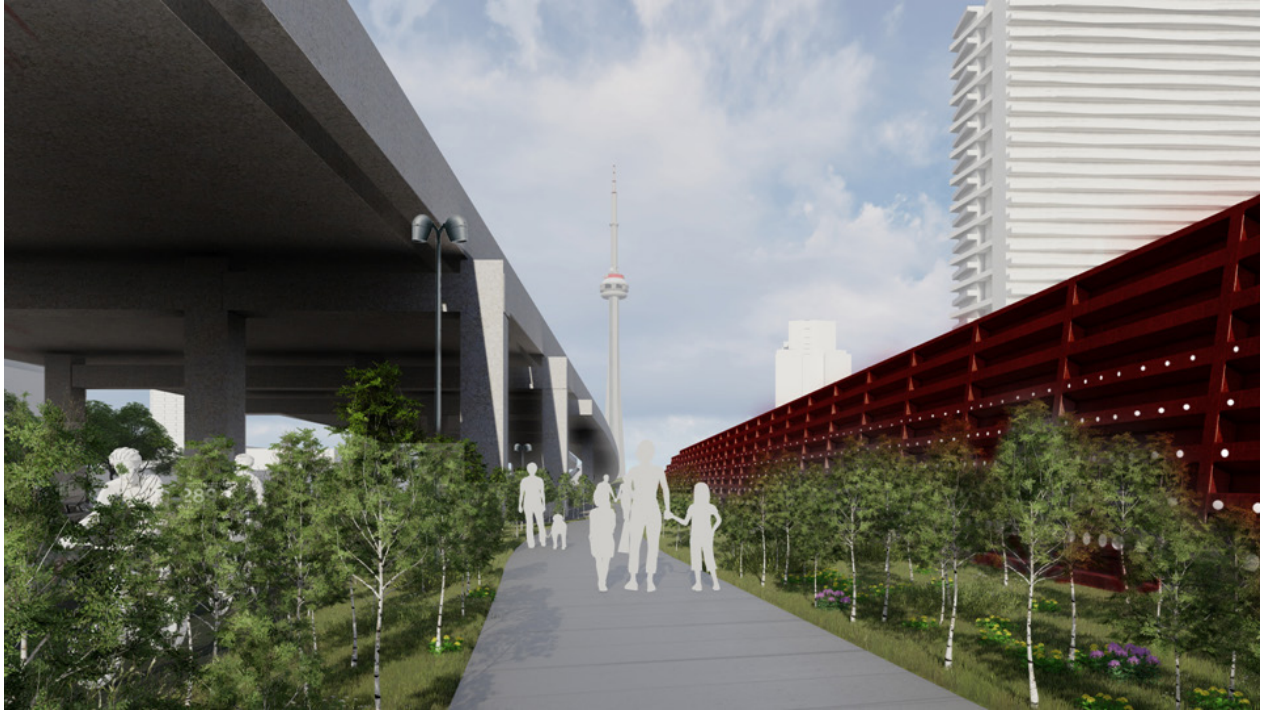


Figure 2.29a North Linear Park and Trail – Year 1



Figure 2.29b North Linear Park and Trail – Year 5

2.4.2. Sherbourne St. to Parliament St. North Boulevard

Through this block the north boulevard space becomes much narrower. Encroachment into the USRC corridor is required for the development of two separated pathways, particularly alongside the Sherbourne St. west-bound off-ramp. Planting of this section is limited to the area just to the east of Sherbourne St., which includes the proposed planting of the redundant section of the Sherbourne St. off-ramp which has been closed (see **Section 3. Recommendations for Enabling Works** below). Further to the east, plantings are proposed along the USRC north edge berm. Section drawings and plan view drawings illustrating the proposed design for this block are presented in **Figure 2.30** and **Figure 2.31**, respectively.

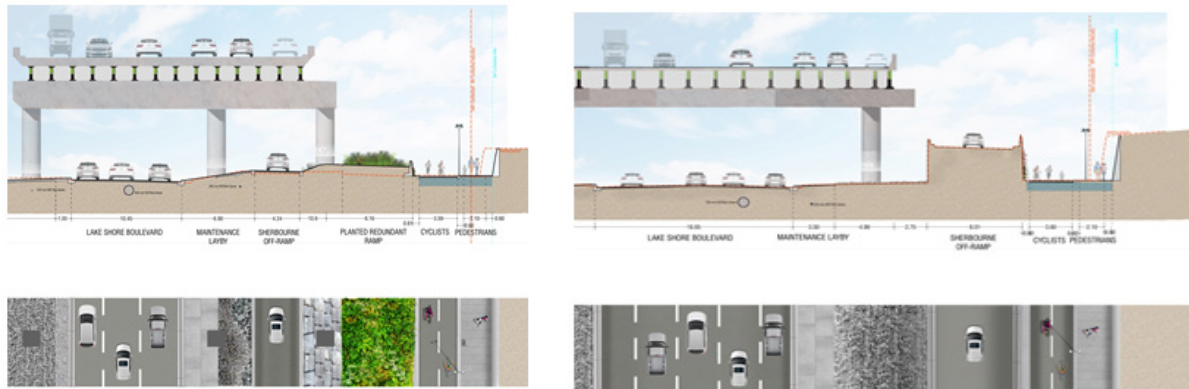


Figure 2.30 North Boulevard Section Drawing Sherbourne St. to Parliament St.

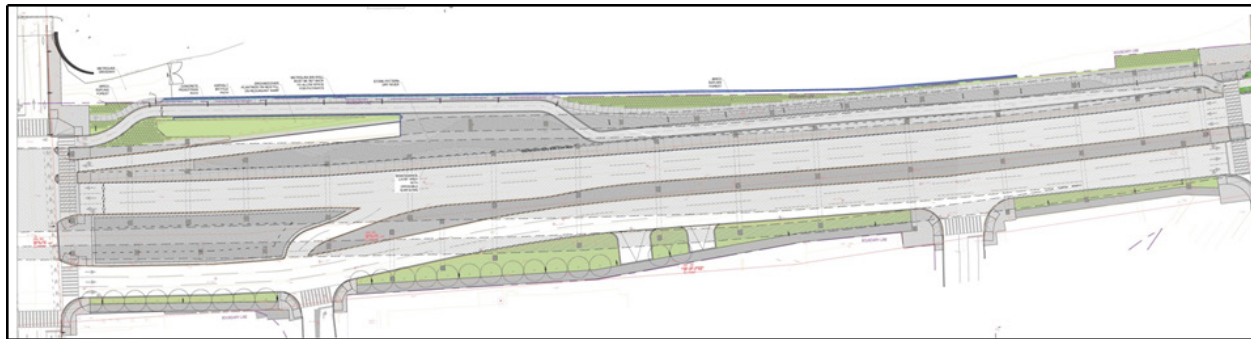


Figure 2.31 North Boulevard Plan Drawing Sherbourne St. to Parliament St.

2.4.3. Parliament St. to Cherry St. North Boulevard

This is the narrowest block in the corridor and therefore no plantings are proposed in this section. The separated pedestrian walkway and cycle path would be raised slightly above LSB grade to provide some separation from road traffic considering how close the roadway is to the boulevard. Encroachment into the USRC is required for this section as well towards Cherry St. The bin wall through this section is to be painted the same bold red colour. The pathway would be underlain by Permavoid which would provide temporary storage of runoff from the boulevard prior to discharge to the storm sewer. Sections drawings and plan view drawings illustrating the proposed design for this block is presented in **Figure 2.32** and **Figure 2.33**, respectively.

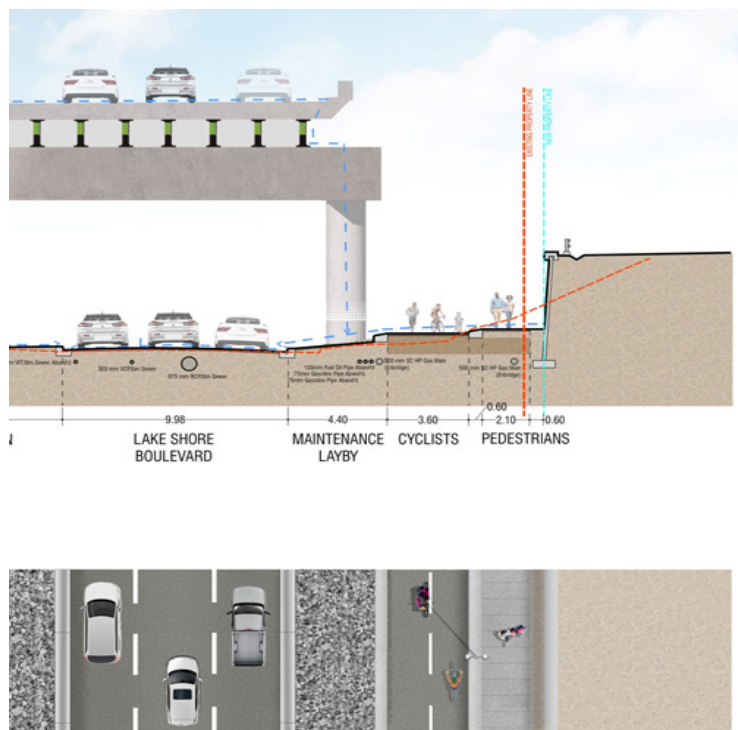


Figure 2.32 North Boulevard Section Drawing Parliament St. to Cherry St.

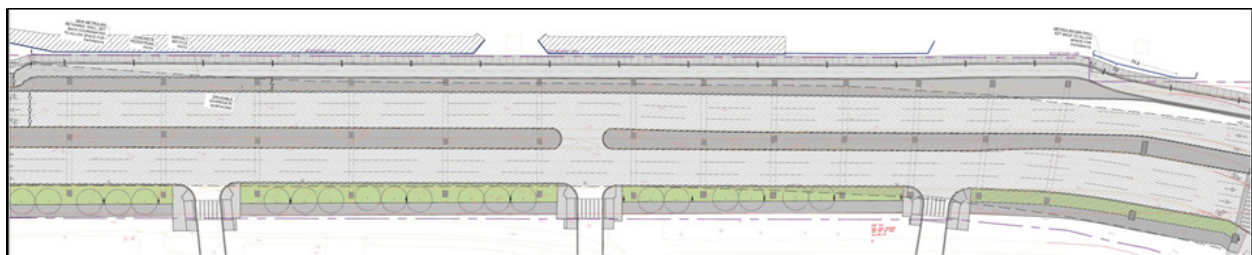


Figure 2.33 North Boulevard Section Drawing Parliament St. to Cherry St.

3. Recommendations for Enabling Works

Several enabling works need to be undertaken by the City prior to public realm implementation. This includes infrastructure upgrades that are beyond the scope of this public realm project. Assumptions made regarding implementation of enabling works are described below.

3.1. Roadway Design Speed and Guard Rails

Lake Shore Blvd. has a posted speed limit of 60 km/hr. east of Lower Jarvis St. while sections of LSB to the west of Yonge are posted at 50 km/hr. During peak travel periods, traffic generally travels at a lower speed than the posted limit while during non-peak periods vehicles tend to travel at higher than posted speed limits. Drivers are known to travel at excessive speeds along LSB, particularly those that have come from the overhead expressway and are used to a higher speed of travel. The current wide roadway lanes, straight nature of the roadway, traditional scarcity of pedestrians, and presence of guard rails along the roadway edge all contribute to these higher speeds and the sense of travelling on a freeway.

With the introduction of the public realm improvements and expected increase in the volume of pedestrian and cyclists on LSB, a speed limit reduction is proposed to improve safety and align with the character for the boulevard once the public realm improvements are in place. As such, that the plan proposes that the posted speed limit of LSB between Jarvis St. and Cherry St. be reduced to 50 km/hr from 60 km/hr. This is to accompany the reduction of lane widths from 4m to 3.1m and 3.5m for the curb lane. It is also recommended that the speed limit reduction be confirmed as part of future design studies for the area east of Cherry St.

The current use of guard rails along LSB is not consistent. For example, east of Sherbourne, the columns in the centre median are protected by guard rails while the columns along the north edge of the westbound lanes are not protected. West of Sherbourne, the use of guard rails is the reverse: there is no guard rail along the median and there is a guard rail along the north edge of the roadway. The distance of the Gardiner columns from the edge of the roadway does not seem to be appreciably different where a guard rail is or is not present. Other sections of LSB west of Yonge St. also have inconsistent use of guard rails.



Transportation Association of Canada (TAC) recommendations for protection are generally restricted to higher speed roads (above 70 km/h). There is no specific warrant for the installation of barriers on roadways such as LSB in the TAC guidelines. Providing a roadside barrier (e.g., guide rail in front of a deck support column) along a low speed urban road may be appropriate if there is some potential for vehicles to leave the road (e.g., sharp curves). LSB between Jarvis St. and Cherry St. is a straight section of road with no bends in the roadway. The conditions that warrant guard rails do not generally exist along this section of LSB. Further, with a reduced posted speed limit to 50 km/hr, the need for guard rails is further reduced.

With the planned public realm improvements along LSB, reinstating existing guardrails would diminish the benefits achieved regarding the character of the boulevard. Guard rails can contribute to drivers travelling at higher speeds as it supports the "highway feel" to the roadway. This plan recommends that in combination with a reduced posted speed limit and the narrowing of the roadway lanes, the existing guardrails be removed. If there are specific sections along the corridor that pose a higher risk for vehicles to leave the road and/or there are specific columns that warrant protection, further consideration may be required for applications of protective elements. This may depend on the importance and condition of the column, its distance from the road edge, roadway curb height, and column location with respect to roadway geometry (i.e., is it an area that has greater potential for cars to "jump the curb" and come into contact with the column).

It is recommended that the City confirm specific locations where guardrails are warranted. Where warranted, the City should explore the use of guard rails other than concrete jersey or steel beam barriers to ensure they are more in character with the public realm improvements.

3.2. Lake Shore Blvd. Roadway Reconstruction

It is anticipated that LSB from Jarvis St. to Cherry St. will require reconstruction in the foreseeable future and is to be implemented ahead of or in parallel to the public realm. This will occur after the major Gardiner reconstruction activities are completed. While not specifically required to support this public realm project, the LSB reconstruction will provide the opportunity to also relocate the south-side and north-side curbs and extend the catch basins. The curb relocation will result in narrower road lanes and allow for more space for planting and pedestrian and cycling trails. The need and nature of storm sewer improvements through the corridor from Jarvis St. to Cherry St. may also be considered during this period.

3.3. Stormwater Management

The management of roadway and adjacent property stormwater run-off in the corridor has been a key consideration that has influenced the public realm design. The Gardiner East EA MECC (now MECP) conditions of approval also require enhanced stormwater management and sediment removal measures.

The different sections of the corridor present different challenges. While the public realm project in itself will not be a generator of additional run-off volumes, it is

recognized that the overhead Gardiner is a major contributor to stormwater in the corridor.

Downspouts from the Gardiner are directed to splash pads sitting a ground level which can result in surface ponding and localized flooding including around the existing catch basins along Lake Shore



Boulevard. It is understood that the downspouts were at one time connected to the underground sewer but were disconnected due to concerns related to back flow and Gardiner surface flooding. While there are no details available on the capacity or condition of the storm sewers in the corridor, it is anticipated that, due to their age, inflow of surrounding groundwater into the sewer reduces their capacity to handle run-off. There is potential for these sewers to be reconditioned or relined in the future to increase their effectiveness. Gardiner run-off that outlets onto the splash pads flows overland on the boulevards to catch basins located along the edge of the LSB road lanes. There is minimal treatment of this stormwater. The Gardiner Expressway re-decking program from Jarvis St. to Cherry St. is not currently proposing changes to how Gardiner run-off is managed.

Public realm improvements proposed in this plan require enhancements to the existing stormwater management system in the corridor to handle excess water from the overhead Gardiner deck. Several recent guidance and policy documents, such as the City of Toronto Green Streets Technical Guideline, the Toronto Waterfront Sanitary Servicing Master Plan, as well as the MECC (now MECP) Low Impact Development Stormwater Management Manual promote the use of more sustainable stormwater management measures often referred to as Low Impact Development (LIDs) to re-establish the natural hydrologic cycle and improve quality of water flowing out to the lake.



Options to manage corridor flows were therefore examined and integrated into the overall Public Realm Plan. The objective of the design exercise was not to manage the entire Gardiner run-off volumes, as this would be unreasonable given the scope of this public realm project, but to explore the extent to which some SWM solutions could be integrated with public realm design.

Stormwater management options examined included use of LIDs, temporary storage (above and below ground), and possible upgrades to the sewer system. The limited physical space in the corridor, and the presence of compacted soils, low infiltration rates, high groundwater table, contaminated soil, concentrated outflow locations (downspouts), and underground utilities presented significant

challenges in the development of SWM system improvements in the corridor. The intent of the design was to retain as much water from the Gardiner as possible during high-flow events in the available space. Considering the site conditions and constraints an evaluation of possible LIDs was undertaken to determine which would be most appropriate.

East of Cherry St., where the Gardiner Expressway and LSB are to be realigned to the north, more options would be available for stormwater management. Those options are predicated on the final alignment of the Hybrid 3, which is currently being designed to 30%. The tie-in with the Don River Mouth Project is critical to reduce direct flow of roadway run-off to the Don River.

To aid in the design of the stormwater management system, run-off volume modelling work was undertaken for the Jarvis St. to Cherry St. section that is described in **Appendix A**. The following provides a summary of the recommended stormwater management system for the various sections of the Public Realm Plan.

3.3.1. Jarvis St. to Cherry St. South-Side Boulevard

There are varying conditions along the south side of the roadway corridor. For the western half, the Gardiner is generally well removed from the south-side boulevard and Gardiner run-off does not impact it. As one moves further east the edge of the overhead Gardiner approaches and eventually flanks the northern edge of LSB Boulevard. A key challenge for the south side is the lack of available boulevard space for SWM measures. As such, the main recommended SWM measures along the south side include bio-retention planters and soil cells, or Permavoid, beneath a permeable sidewalk area. Permavoid is a specific product that is a modular interlocking polypropylene “crate” system which allows for the creation of below-grade voids that provide temporary storage of infiltrated stormwater. The use of soil cells or Permavoid under the sidewalk would depend on the presence and depth of utilities in the boulevard area. Both Hydro One and Toronto Hydro ducts lie below sections of the south-side boulevard as previously described in this report. Location of the ducts will be confirmed as part of future 100% detailed design.

3.3.2. Jarvis St. to Cherry St. North-Side Boulevard

The proposed SWM features proposed for the north-side boulevard vary by section and are primarily a function of the available space along the boulevard. From the widest area between Jarvis St. to just east of Sherbourne St. A swale is proposed for the northern edge of the Gardiner between the layby lane and the pedestrian and cycle paths. A concept design for the swale is illustrated below in **Figure 3.1** and **Figure 3.2** presents a section drawing illustrating the swale. The swale will require further detailing as part of future design work. The swale will require a liner to prevent the infiltration and movement of contaminated groundwater. The swale location and design needs to be sensitive to the Gardiner support columns. Based on available space, the swale from Jarvis St. to Sherbourne St. would be able to manage 100% of the boulevard area and 50% of the Gardiner deck (north side) up to a 10-year storm and meet allowable release rate criteria. From Sherbourne St. to Bonnycastle St., the swale is expected to manage 100% of the boulevard area and 100% of the Gardiner deck (north side) up to the 10-year storm.

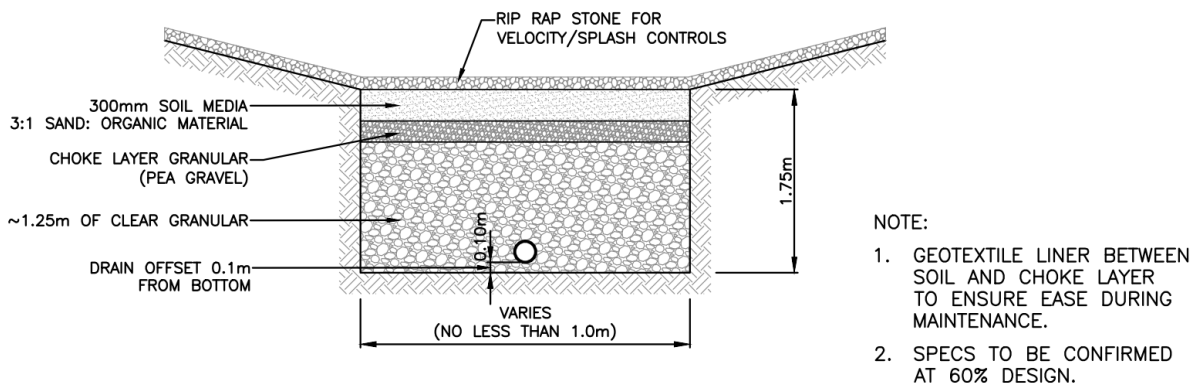


Figure 3.1 Biofiltration Swale

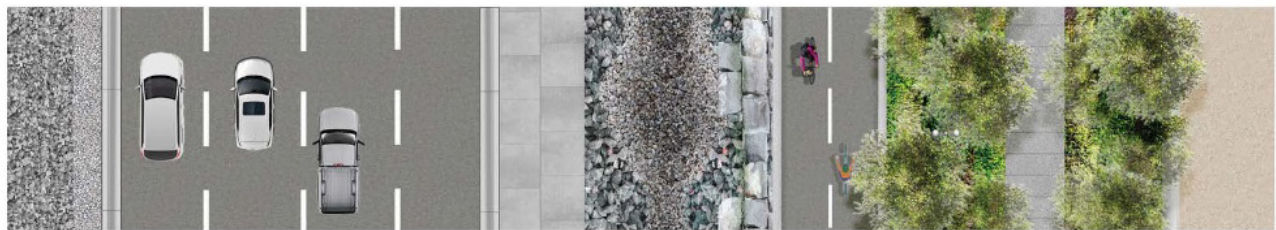
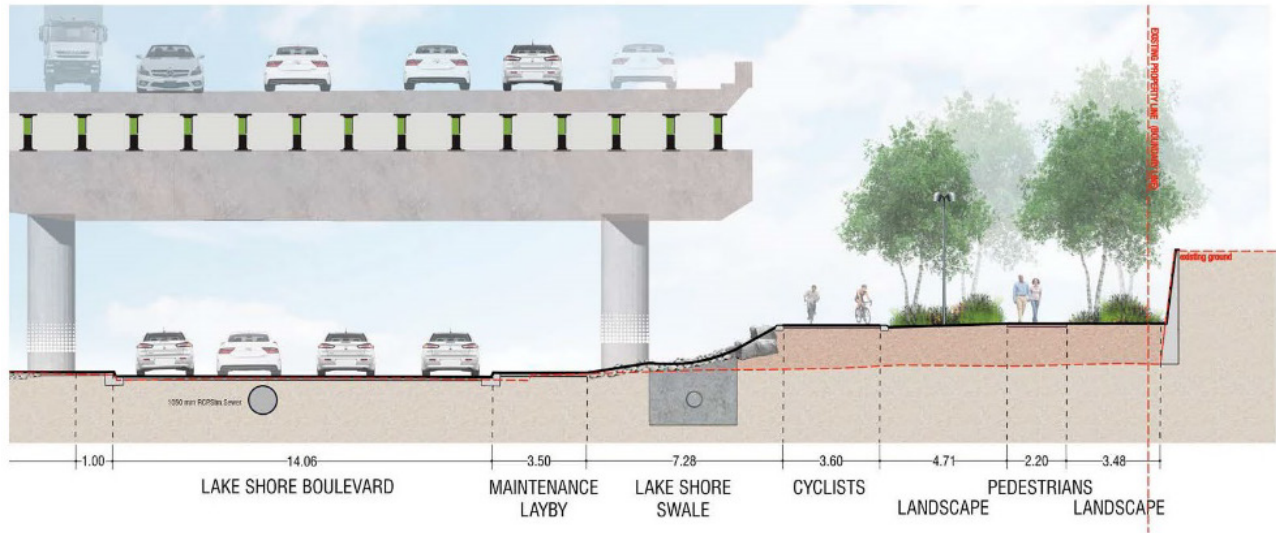


Figure 3.2 Jarvis St. to Sherbourne St. North-Side Swale

East of Bonnycastle St. to Cherry St. there is not enough room in the boulevard to accommodate a swale. As such, the recommended SWM measures include the use of the stormwater storage cell system such as Permavoid, as previously described above, beneath the cycle path and pedestrian pathway to provide temporary storage but not quality treatment (See **Figure 3.3**). This system is expected to be able to manage runoff from the boulevard area only, not excess runoff from the overhead Gardiner. The Gardiner run-off volumes in this section of the corridor would need to be directed to the storm sewer which may require reconditioning or replacement. It is understood that these works would be done during future LSB reconstruction ahead of or in parallel to public realm implementation.

As there is not enough space in this section of the corridor to treat excess runoff from the Gardiner through landscaped swales, there may be opportunities to direct water for treatment to the Cherry St. Stormwater Facility, if adequate storage can be provided to keep discharge rates within allowable limits.

This would require further study to assess if these additional volumes can be managed within the facility’s capacity. Therefore storage and detention systems below the roadway and maintenance layby should be considered to manage the excess water from the Gardiner which is beyond the scope of the public realm work.

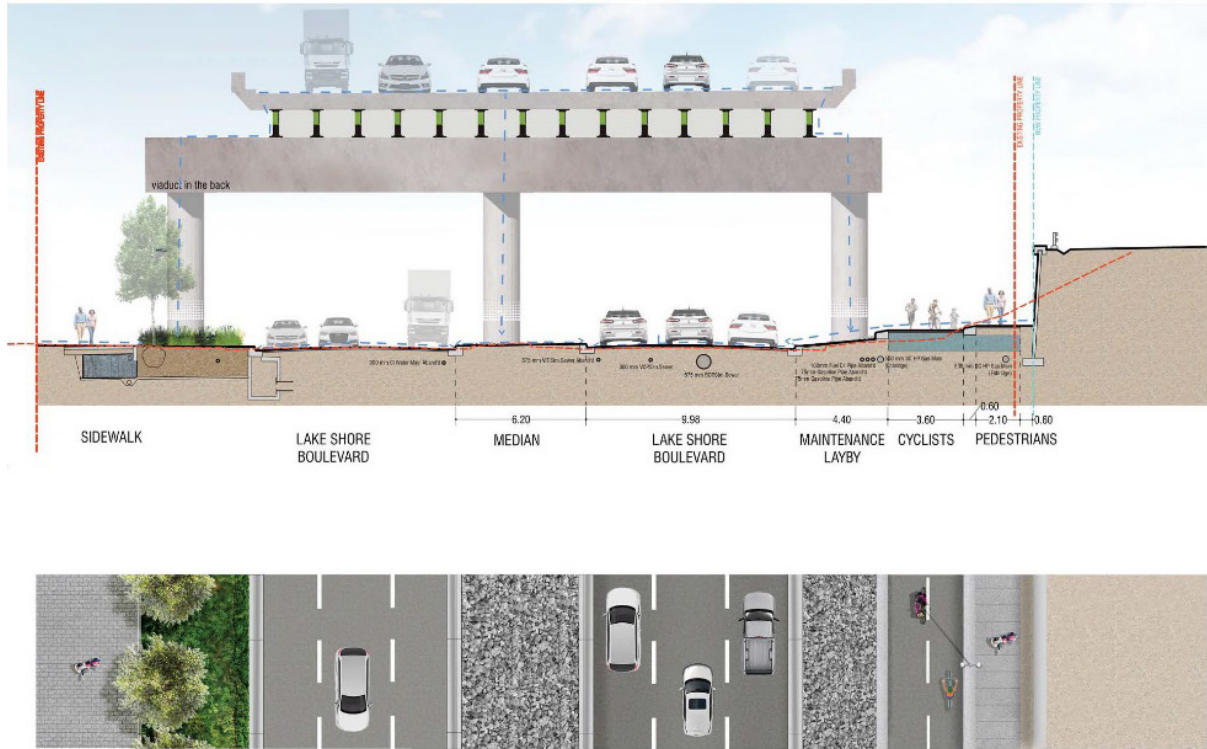


Figure 3.3 Sherbourne St. to Cherry St. North-Side Stormwater Management System

3.3.3. Jarvis St. to Cherry St. Medians

The potential for SWM measures to be located within the roadway medians was explored. From Jarvis St. to Sherbourne St., where the widest median area exists, it was determined that due to the many underground utilities SWM measures in this location were not feasible. While above-grade storage may be feasible, such features would potentially restrict Gardiner underside maintenance activities. Further east, where the median is less encumbered by underground utilities, SWM measures could also not be implemented because the area is very narrow and disrupted by Gardiner support columns.

3.3.4. Cherry St. to Don River

East of Cherry St., the Gardiner and LSB are to be realigned further north. SWM measures were also examined as part of the public realm improvements for this section. It is proposed that the bio-swale concept be continued through this area, with a swale under and adjacent to the elevated Gardiner just east of the future Munition St. access road to the sediment management facility. The swale is also proposed to be extended along each side of the Harbour Lead rail line. The location of the swale and its dimensions will need to be confirmed as part of future design work for the Gardiner-LSB reconfiguration which the City is advancing. **Figure 3.4** presents a section drawing showing the swale in relation to the overhead realigned Gardiner.

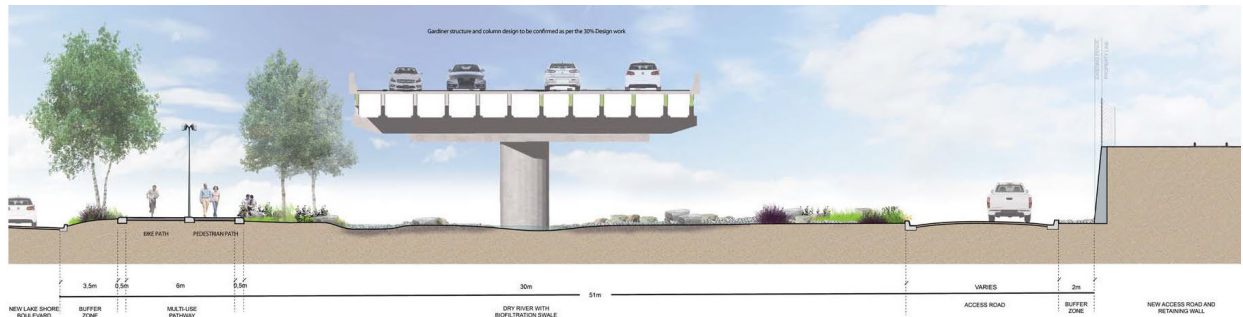


Figure 3.4 East of Cherry St. Section Showing Proposed Swale

3.3.5. Don River to Logan Avenue

East of the Don River, to complement the new LSB configuration, the proposed SWM system includes the use of Permavoid under the bike path and sidewalk and the use of bio-planters that would run along the edge of the roadway including the median area. As shown in **Figure 3.5**, both the Permavoid and the bio-planters would be connected to new storm sewers that are assumed to run along the length of the roadway.



Figure 3.5 East of Don River Section Showing Stormwater System

3.4. Utilities

The Gardiner-LSB corridor contains many underground utilities that were considered in the development of the Public Realm Plan. From Jarvis St. to Cherry St. it was assumed that existing utilities would remain largely as is with the exception of the utilities noted further below. As part of this design study, a Subsurface Utility Engineering (SUE) level D through A for the south site, and D through C of the north side from Jarvis to Cherry St. was undertaken to determine the presence and nature of utilities in the corridor. It is noted that SUE level D and C work provide approximate location of utilities. Many of the utilities in the corridor are quite old and as such details on these utilities are not available. Confirmation of utility location and depth can only be done through excavations at sample locations (e.g., trench cuts). This is recommended for future detailed design work.

East of Cherry St. it was assumed that existing utilities would be relocated along with the realignment with the Gardiner and LSB and as such utility realignment would be sensitive to the project design.

The following details a number of existing major underground utilities in the Jarvis St. to Cherry St. section.

Enbridge Gas Line

A 20-inch high pressure Enbridge gas line extends along the north side of the corridor east of Jarvis St. This line was constructed in the 1950s and travels variously under the road lanes, median or the north boulevard depending on the section of corridor. Enbridge has advised that they require access to this line for new connections and maintenance. While public realm improvements could be placed over the line (e.g., bike path), these public realm improvements would be subject to damage or removal should Enbridge need to access the line. Enbridge has advised that there may be advantages to relocating this line outside the Gardiner-LSB corridor in conjunction with their existing need to relocate the line east of Cherry St. to facilitate the Gardiner-LSB realignment. For the purposes of this Public Realm Plan, it was assumed that the gas line would be relocated in the future.

Hydro One Towers and Underground Line Relocations

Hydro One has informed the public realm team that they plan to bury the overhead transmission lines on the north side of Lake Shore Blvd. within the Union Station Rail Corridor berm, which is understood to be required for the Metrolinx USRC rail electrification project. The preferred option under consideration by Hydro One at the time the public realm study was undertaken includes relocating the overhead Hydro One lines into a surface trough within the Union Station Rail Corridor at track level immediately south of the tracks in an existing easement. This would require crossing the intersections overhead by utility bridges adjacent to the existing rail bridges. This will require future coordination with the USRC East Enhancements underpass extensions and Gardiner Public Realm detailed design of the intersections to minimize impacts to the public realm.

Toronto Hydro Underground Ducts

Along the southern boulevard there are power ducts owned by Toronto Hydro and Hydro One. These ducts vary in their location but generally run either just north of or within the existing southern boulevard. These ducts including their required setbacks, have the potential to impact the proposed southern design including the soil cells and trees. Based on trench cuts undertaken for the south-side pilot project, there are some differences between available records and the actual location of these ducts. Coordination will need to continue on allowable distances for planting trees in proximity to existing utilities, and at the time of detailed design, test pits will be required to confirm all utility depths and locations.

3.5. Gardiner Maintenance Layby

The Public Realm Plan is designed to accommodate Gardiner inspection and maintenance needs between Jarvis St. and Cherry St. Meetings were held with City Transportation Services to understand City Gardiner maintenance activities and requirements. In general most of the work is undertaken through the use of Genie Lifts. Most of the available space, including the median, boulevard areas and roadway lanes, is used for the movement of the Genie lift through the corridor.



The use of roadway lanes is minimized as much as possible and tends to occur during non-peak periods such as overnight. For chipping activities, a small dump truck also needs to be brought into the space to haul the material away. Inspection and maintenance activities occur at least once each year.

To allow Genie Lift access through the corridor, a layby has been introduced in the Public Realm Plan along the north edge of the westbound lanes. The 3.5 m wide lane, with a mountable curb, would enable a Genie Lift to travel much of the corridor. A study was undertaken to demonstrate that much of the underside of the Gardiner is accessible from this layby area (see **Figure 3.6** and **Appendix B**). A small section of the underside just east of Jarvis St. would require the Genie lift to travel along the bike path/walkway. Furthermore, the proposed design of the public realm would not encumber the use of the medians which are to be replaced with a granular material which the Genie Lift would be able to travel over.

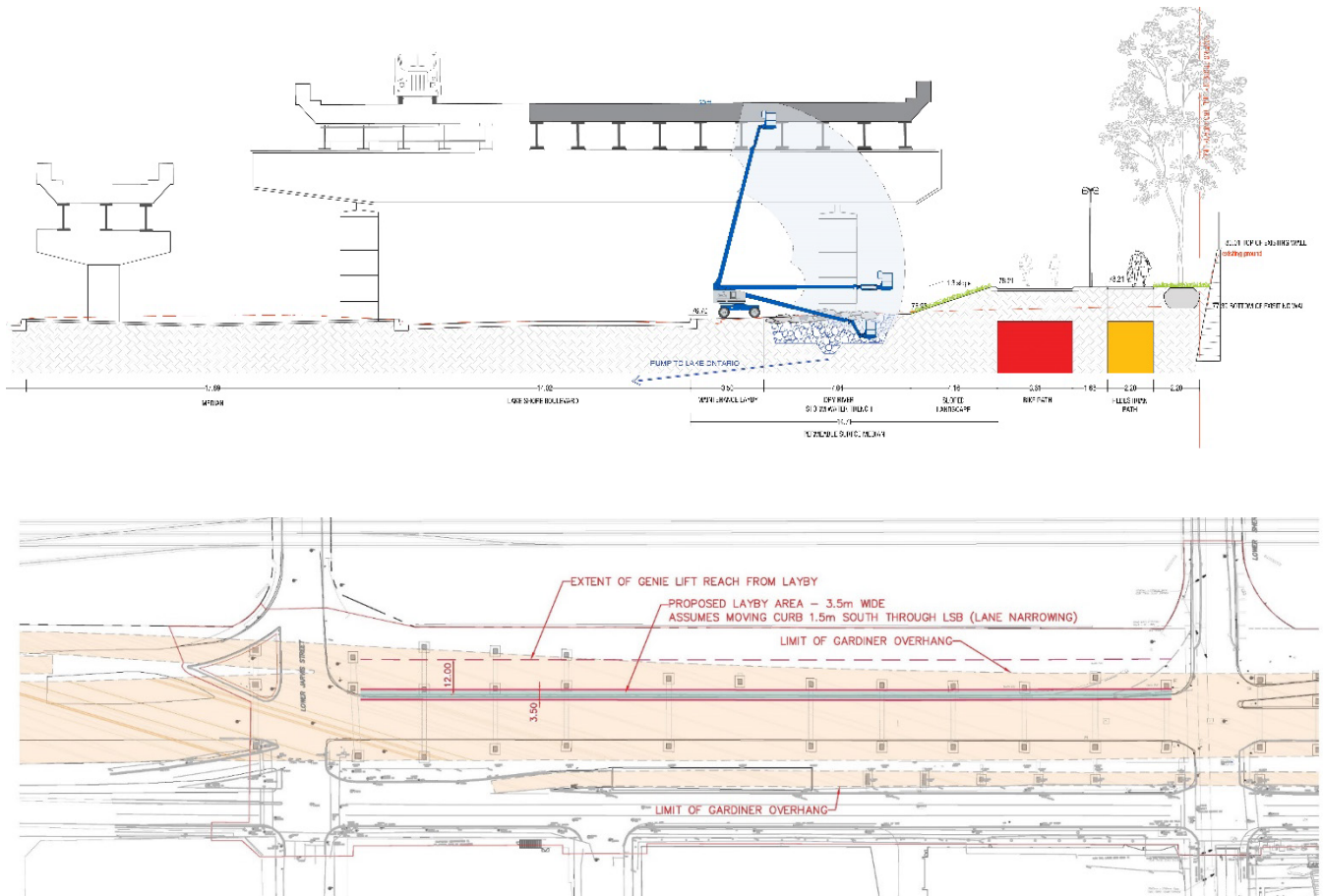


Figure 3.6 Genie Lift Access

3.6. Gardiner Expressway-Sherbourne St. Off-Ramp

Along the north corridor there is a closed section of the Gardiner westbound Sherbourne St. off-ramp that formerly provided access to north-bound travel on Sherbourne St. This section of ramp is tied structurally to the remaining section of ramp that continues to provide access to LSB and has been closed to traffic with jersey barriers. While its removal was



explored as part of the design process, it was determined that this redundant section will need to remain in place for now. Removal of the ramp would facilitate the introduction of trails through the narrow space between the ramp and USRC bin wall to the north.

3.7. Metrolinx USRC Interface

The northern edge of the study corridor is bounded by the Union Station Rail Corridor (USRC). The southern edge of the USRC corridor is in the form of either a berm or a vertical bin wall which is overgrown with vegetation in some sections. Several changes are required to the USRC southern edge as described in the sections below and assumed in the Public Realm Plan. These proposed changes require further discussion and coordination with Metrolinx prior to detailed design.

3.7.1. Sherbourne St. Pinch Point

East of Sherbourne St., particularly in the area adjacent to the redundant Sherbourne St. ramp that has been closed off, there is a need to extend into the USRC corridor and set back the bin wall by about 2 m to allow enough space for the separated bike path and pedestrian walkway as shown in **Figure 3.7**. As part of future design exercises, the City will need to negotiate this encroachment with Metrolinx. If this strip of land cannot be obtained then the cycle path and sidewalk would need to be combined into a multi-use pathway through this section. Alternatively, the redundant end section of the Sherbourne St. ramp would need to be modified as described in **Section 3.6** to allow for sufficient clearance for the paths to continue through as designed.

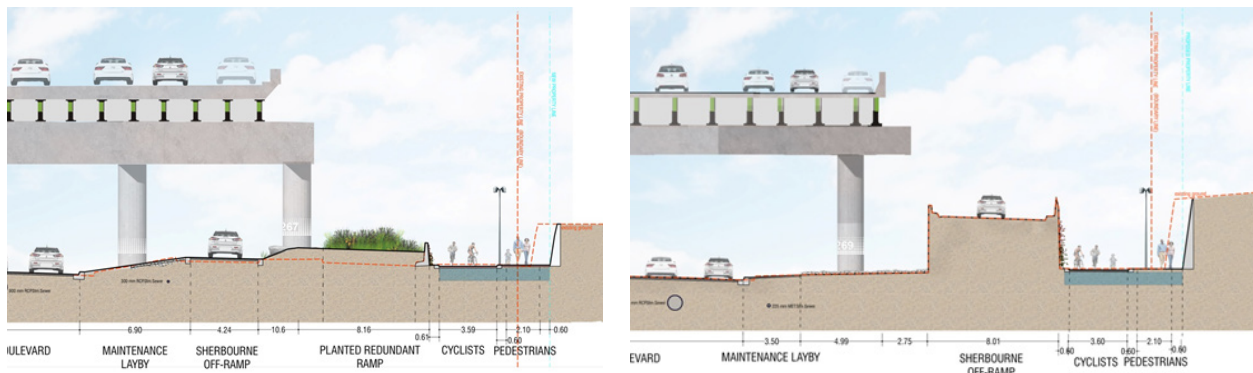
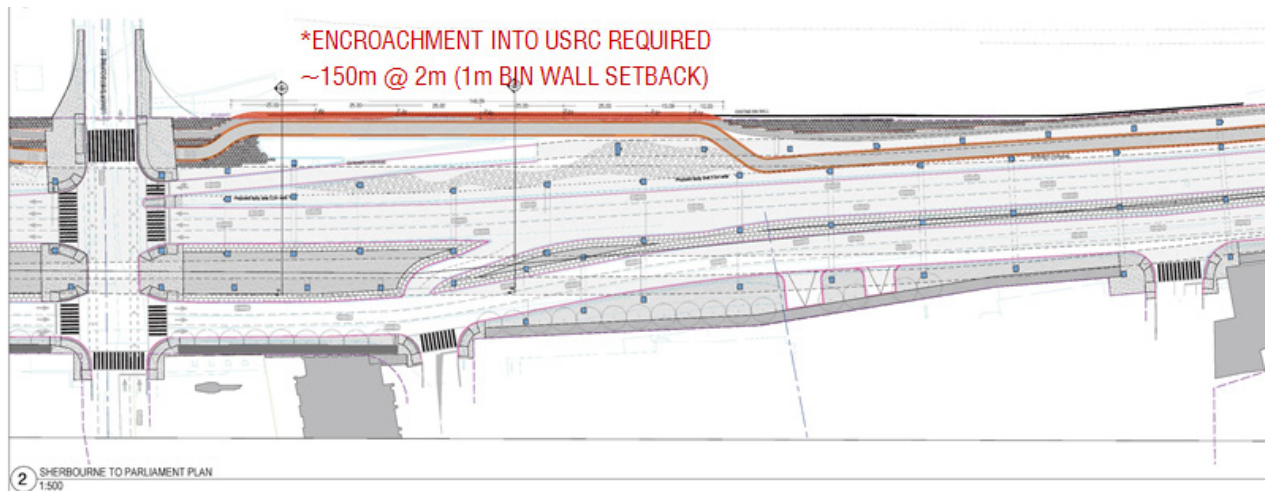


Figure 3.7 USRC Encroachment East of Sherbourne St.

3.7.2. Parliament St. to Cherry St.

For the entire block between Parliament to Cherry the ROW part of the north boulevard is not wide enough to support both side-by-side trails. Approximately 1 to 1.5 m of encroachment into the USRC corridor will be required to ensure continuity of the trails through this area (see **Figure 3.8**). While a setback of a new planned retaining wall east of Parliament has already been negotiated with Metrolinx, the encroachment for the remainder of the block will need to be secured as well. For most of the section this requires a setback of the fence at the foot of the berm, however some small portions of bin wall may also need to be set back, if possible. This will also have to be coordinated with the HONI relocation to ensure no conflicts with its alignment.

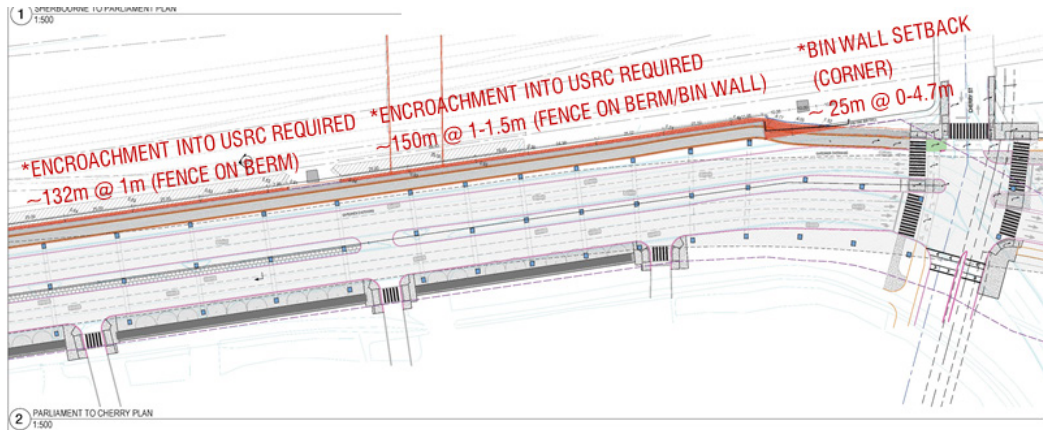


Figure 3.8 USRC Encroachment Parliament to Cherry

3.7.3. Cherry St. Pinch Point

Along the north edge of the boulevard immediately to the east of Cherry St., there is a significant pinch point area between the USRC corridor and the LSB westbound lanes. A bin wall around the base of a Hydro One tower is in close proximity to the nearest Gardiner Bent, creating a narrow pinch point that is an obstacle to the continuity of the trails. An encroachment of up to 7m would be required through this area as well as a slight setback of the corner of the existing bin wall to allow the routing of the bike path and pedestrian walkway. (See **Figure 3.9**) As above, this encroachment would also require negotiation with Metrolinx.



Looking East toward the Cherry St. Pinch Point

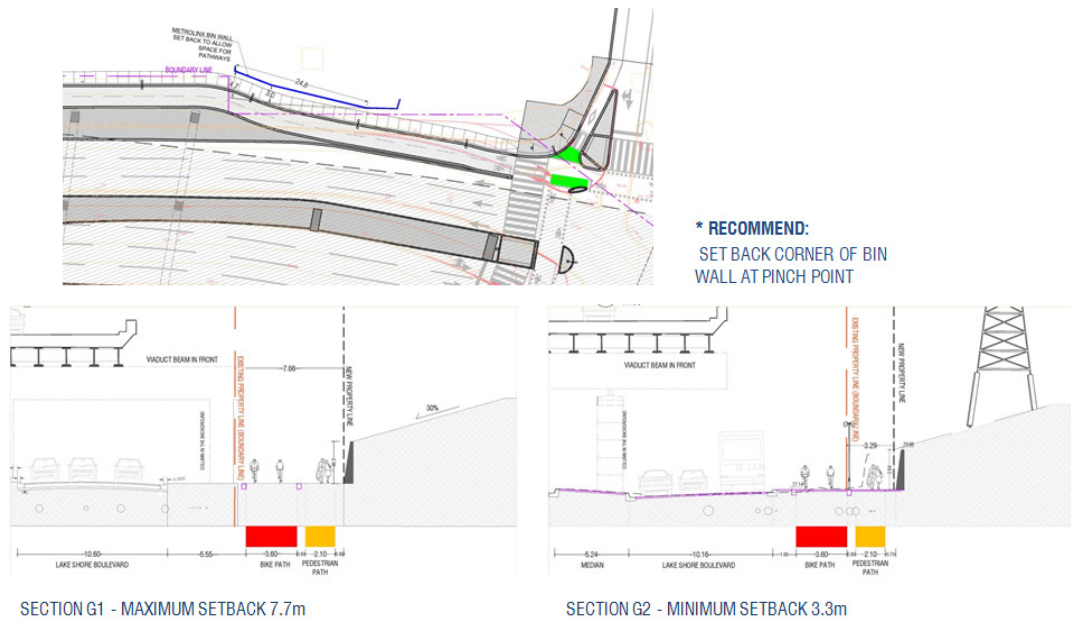


Figure 3.9 Cherry St. Pinch Point Encroachment

3.8. Port Lands Flood Protection

3.8.1. Cherry St. Intersection

A new alignment of Cherry St. from Lake Shore Blvd. into the Port Lands is to be implemented in the near term as part of the enabling works for the Port Lands Flood Protection project. The realigned Cherry St. south of Lake Shore Blvd. is to be tied into the existing alignment of Lake Shore Blvd., resulting in a new interim intersection condition (see **Figure 3.10**). This intersection will be further modified once Lake Shore Blvd. is realigned to the east as per the Gardiner East EA. The interim Cherry St. intersection condition will include minor modifications of the medians and curbs to make the new intersection functional and facilitate the intersection of the new Cherry St. bi-directional bike trail with the east-west trail along Lake Shore Blvd. The modification of the north-west corner and removal of the existing slip lane, that is part of these intersection interim works, will be an important enabling piece for the Public Realm Plan at this intersection.

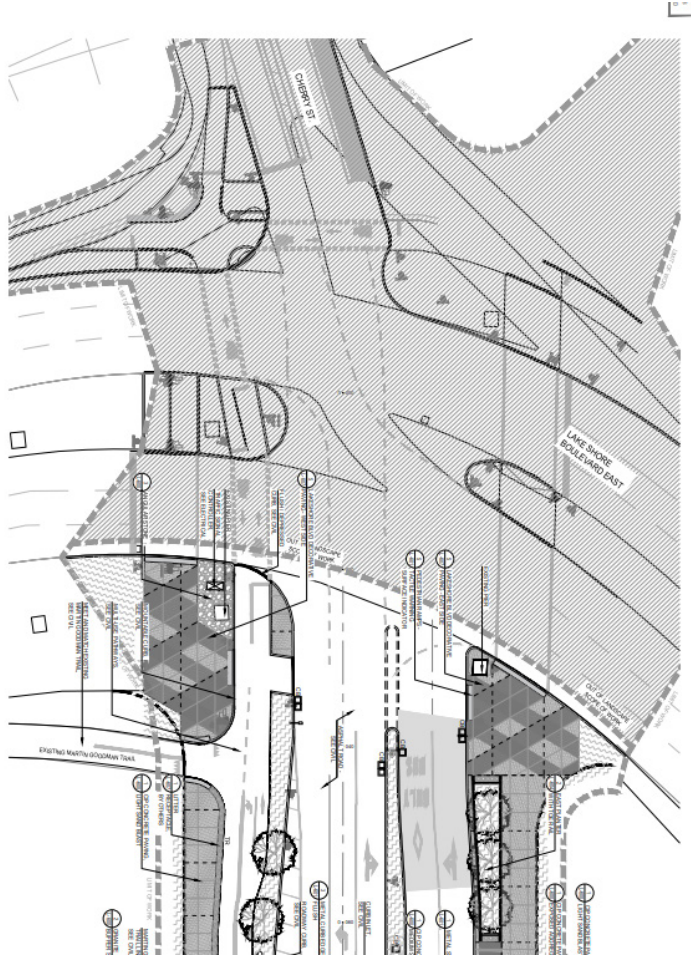


Figure 3.10 Cherry St. Intersection – Interim Condition Improvement

3.8.2. Don Roadway Intersection and Lake Shore Bridge

Don Roadway is also to be reconstructed as part of the Port Lands Flood Protection enabling works. Although it is to be tied into Lake Shore Boulevard, its scope only includes the south boulevard portion of the intersection. The Lake Shore Bridge will also require major modifications as part of the Port Lands Flood Protection and will impact the west end of the Don Roadway and LSB intersection. These projects are still under development and will require coordination with the Lake Shore Public Realm Plan (See **Figure 3.11**).

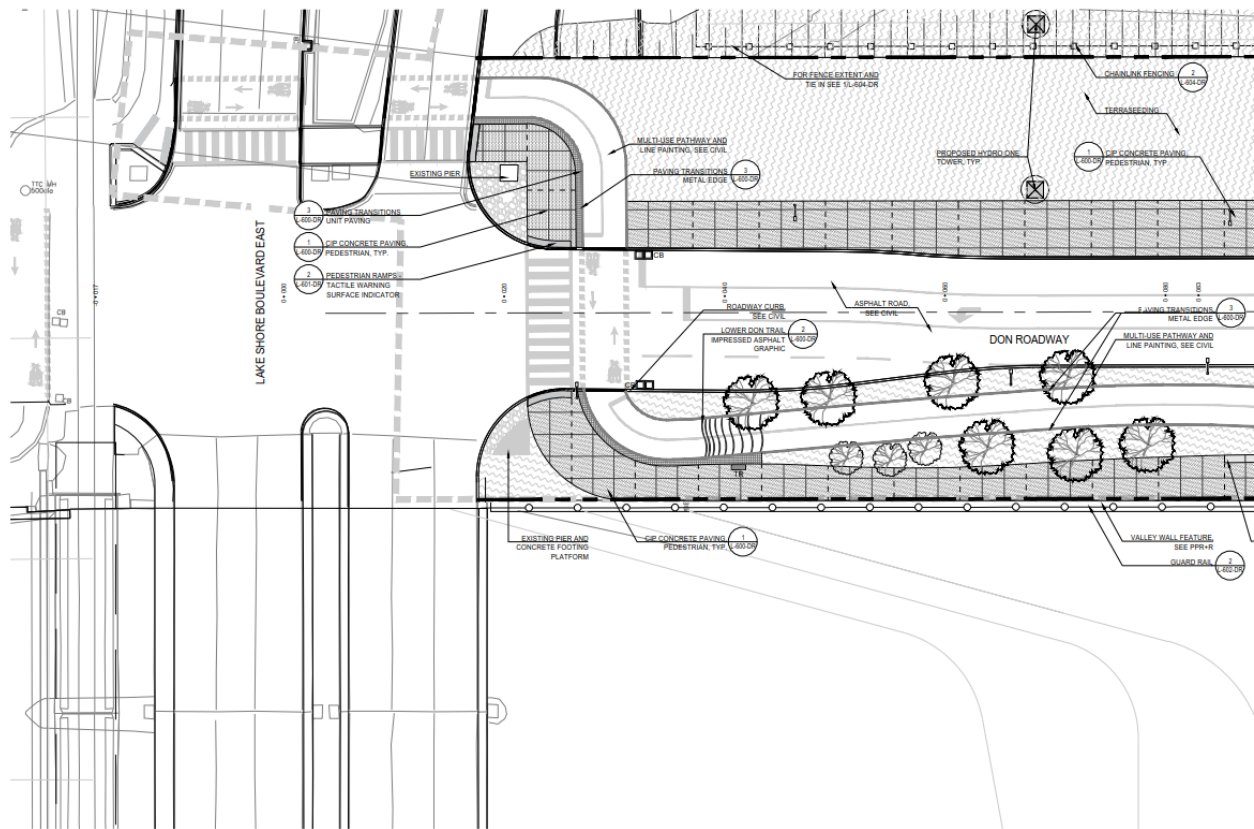


Figure 3.11 Don Roadway Intersection Drawing

3.8.3. Sediment and Debris Management Area (SDMA)

A key new land use proposed in the space between Cherry St. and the Don River is the planned sediment management facility that will sit on the west side of the river north of the future realigned LSB. This facility will occupy a large footprint and require an access road that is proposed to extend from the future Munition St. intersection (see **Figure 1.3**). The Public Realm Plan for east of Cherry St. has accommodated this facility in the design including the bike path to connect with the Don Valley trail system which will require the crossing of the SDMA access road and Harbour Lead rail. Efforts have been made to reduce fragmentation of the area by redundant fencing, and through the strategic siting of swales for spatial separation along the rail line.

3.9. Gardiner Reconstruction, Ramp Relocation & Lake Shore Blvd. Realignment

From approximately Cherry St. east, the Gardiner Expressway and Lake Shore Boulevard are to be reconfigured as per the Gardiner East Environmental Assessment that was approved in November 2017 by the Ministry of Environment and Climate Change (MECC), now Ministry of Environment Conservation and Parks (MECP). This project involves the removal and realignment of a portion of the existing overhead expressway east of Cherry St., including the Logan ramps which are situated east of the Don River. The new Gardiner Expressway and LSB alignment is situated further north away from the Keating Channel. The connection with the DVP is maintained. New on-off ramps with connection to LSB are situated just to the east of Cherry St. It is expected that this project would be implemented after other major projects in the area are completed including the Port Lands Flood Protection Project. A 30% design study is now underway for the Gardiner and LSB East reconfiguration which may result in some refinements to the project including the alignment of these roadways.

3.10. Broadview Avenue Extension

As per the South of Eastern and Port Lands Transportation Master Plan (TMP), Broadview Ave. is to be extended south from Eastern Avenue passing under the Metrolinx rail corridor, across LSB, and extending into the Port Lands across the Ship Channel. An alignment and concept design for the extension was developed as part of the TMP work. The roadway extension is required as part of the Unilever site redevelopment. The current design includes one vehicle lane in each direction, pedestrian and cycle facilities, and accommodation for an LRT. A Schedule C (Phase 3-4) Class EA is currently underway for the Broadway extension as far as LSB. South of LSB, the extension will be subject to a future Phase 3-4 Class EA. As the Broadview Avenue extension will cross the Keating Rail Yard that is situated along the north side of the LSB corridor, the City is examining the impact on the rail yard, including its possible reconfiguration in association with the Phase 3-4 Class EA. Changes to the rail yard might provide further opportunities for the reconfiguration of LSB.





4. Implementation Strategy

4.1. Integration with Other Projects

During the next 10 or more years, Toronto's eastern waterfront will undergo significant change. This includes advancement of the Port Lands Flood Protection project, the Gardiner Strategic Rehabilitation Project, Gardiner Expressway Hybrid 3 reconfiguration project, as well as East Bayfront and East Harbour projects. Implementation of the Lake Shore Boulevard public realm improvements needs to be carefully coordinated with many other projects and plans in the vicinity. Implementation timing for some of these projects is not confirmed and as a result, will influence the implementation timing of the LSB Public Realm Plan. Given that the project will be developed in phases and by different parties, it will be critical to ensure consistency throughout the corridor of this design and vision.

It is expected that the bulk of public realm improvements from Jarvis St. to Cherry St. would be implemented following completion of the Gardiner deck replacement and reconstruction of LSB, currently scheduled for after 2023 as shown in **Figure 4.1**. East of Cherry St. the public realm improvements would be implemented following the construction of the Port Lands Flood Projection Project and the Gardiner Hybrid 3 Project. Phasing details are provided in **Section 4.2** below.

LEGEND

-  Lake Shore Public Realm
-  Quick Start Projects
-  Pilot Project
-  Development Frontages

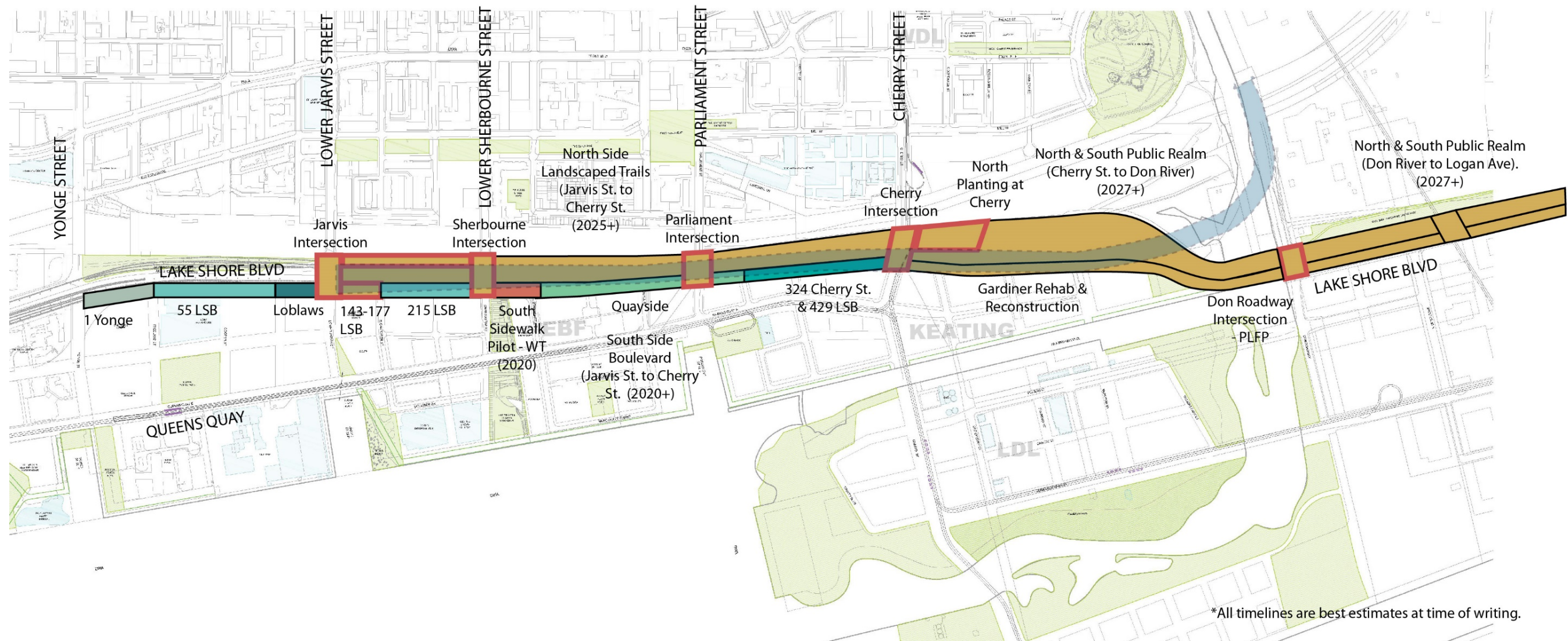


Figure 4.1 Timing of Planned Projects in the Gardiner-LSB East Corridor, Including Quick Starts

Future projects are categorized as follows:

Lake Shore Blvd. Public Realm Project Components – These are the improvements that are being developed and designed as per this Public Realm Plan. While most of these project components will be implemented by the City, private developments along the south side of Lake Shore Blvd. will be responsible for delivering the public realm along their properties to the existing curb line.

Other City Infrastructure Projects – The City will be embarking on several other infrastructure projects in the vicinity of the Gardiner-Lake Shore Boulevard East project. These will require coordination in their planning, design and implementation. The Lower Yonge Precinct project which abuts the western end of the Gardiner- Lake Shore Blvd. East project area is an example of this.

Other Public Agency Projects – Other agencies such as Waterfront Toronto, Metrolinx and the TRCA are all involved in the development of projects near the Gardiner-Lake Shore Boulevard corridor. Examples include the Metrolinx Union Station Rail Corridor (USRC) East Enhancements Project and the Port Lands Flood Protection and Enabling Infrastructure Project which Waterfront Toronto and the TRCA are leading. These projects will influence the transformation of the corridor. Coordination with the agencies leading these projects has been undertaken in the development of the LSB East Public Realm Plan and will continue in order to integrate the vision established in this plan through further design and construction stages.

Private Land Development Projects – Many of the lands adjacent to the Gardiner-Lake Shore Boulevard East corridor are privately owned and are planned for future development. Lands along the corridor that are currently in the process of being developed include the south edge of Lake Shore Boulevard immediately east of Jarvis St. and the site east of the Don River. It will be important to coordinate with the developers of these and other properties to ensure that there is consistency in the public realm improvements both within the public right-of-way and adjacent private parcels.

4.2. Phasing Strategy

It is anticipated the Lake Shore Boulevard public realm project will be implemented incrementally over time as previously illustrated in **Figure 4.1**. Phasing is necessary considering that the complicated geography of the area and the many other projects occurring in the vicinity. By implementing the public realm improvements in concert with other planned developments, implementation can be done in a manner that is efficient, removes the potential for the redoing work, and helps to ensure that the character of the corridor and adjacent lands are well integrated and consistent. Implementation will be undertaken with other public project partners (e.g., Waterfront Toronto, Metrolinx, TRCA) as well as with private developments along the corridor.

The proposed phasing of the public realm project considers the following:

1. The full Public Realm Plan will be implemented over time with specific components packaged as part of other larger infrastructure projects. Public realm project implementation may not happen in a sequential order along the corridor;
2. Where possible, package the public realm components with the Gardiner rehabilitation program;
3. Implementation will minimize throwaway costs that would result from early construction of a component that could be impacted by other future projects; and
4. Public realm project components which are similar in scope or geography have been packaged together to create efficiencies and potential cost-savings.

The following outlines the potential implementation phasing packages of the Lake Shore Boulevard East public realm project elements.

4.2.1. Quick Starts (2020-2022)

This Public Realm Plan identifies opportunities to introduce several improvements in advance of full plan implementation following Gardiner reconstruction and reconfiguration. The proposed Quick Starts described below would signal the transformative change coming to the Lake Shore Blvd. corridor.

A series of surface intersection improvements consistent with Vision Zero initiatives can be undertaken within the existing curbs to improve safety of the crossings over Lake Shore Boulevard and beneath the Gardiner. Design elements such as the bold pavement markings, special paving, and thermoplastic reflective paint bent “socks” at five intersections could be implemented in the near term.

In addition, small sections of the south-sidewalk design and north landscape can be implemented early, particularly if strategically attached to other projects. At 12 Bonnycastle, Waterfront Toronto will undertake a pilot project to test and evaluate the viability and maintenance requirements of newer LID techniques such as permeable paving (i.e., Hydropavers) and stormwater storage cells (i.e., Permavoid) as well as the survival rate and maintenance regimes for trees and plantings in this challenging corridor before implementation at full scale.

See **Section 5.0** for more details on the proposed Quick Starts.

4.2.2. Lake Shore Blvd. South-Side Boulevard (post 2020)

The south boulevard public realm improvements are likely the first to be implemented as much of the area is comprised of development frontages currently under construction or planned to be implemented in the next few years. It is anticipated that the south-side boulevard will be built out incrementally by developers, and then completed by the City of Toronto along with LSB reconstruction and relocation of the curbs.

4.2.3. Lake Shore Blvd. North-Side Landscaped Trails (post 2025)

It is proposed that public realm improvements between Jarvis St. and Cherry St. follow the re-decking of the elevated Gardiner Expressway and completion of detailed design work for the north side. It is appreciated that its full implementation may not likely be possible until LSB reconstruction is undertaken from Jarvis St. to Cherry St. to coordinate the movement of the existing curbs. However, it

may be possible to undertake new trail development and plantings through much of the north boulevard which are independent of curb works.

A possible sequence of work for the ultimate project could be as follows:

1. Westbound Lake Shore Boulevard travel lane width reduction. Install layby area along north edge of westbound lanes;
2. Complete USRC encroachment east of Sherbourne St. and at Cherry pinch point;
3. Raise grade of north-side boulevard with importation of fill material and construction of armor stone retaining wall;
4. Complete planting of trees;
5. Enbridge to complete relocation of their gas main (east of Bonnycastle);
6. Construct north-side cycle path and sidewalk and Permavoid system where applicable;
7. Install swale system; and
8. Install proposed street lighting Jarvis St. to Cherry St. (see **Section 2.2** and **Figure 2.6**).

There may be an opportunity to implement #3 and #4 in advance of curb relocation to implement early planting of the north landscape in order to leverage the years until full corridor implementation for the plants and trees to establish, grow, and adapt to the challenging conditions adjacent to the Gardiner.

This would improve the chance of success for the planting strategy, and would provide a more established landscape on opening day of the trails.

4.2.4. Jarvis St. to Cherry St. Intersections (post 2025)

The planned improvements to the Jarvis, Sherbourne, Parliament and Cherry St. intersections would occur following or in parallel with the LSB reconstruction and relocation of existing curbs (as per the two previous described projects). Key intersection works include:

1. Assess lighting, signage and traffic signal infrastructure consolidation and simplification and improved way finding for each intersection;
2. Reconstruct intersection corners with special paving in tandem with roadway curb relocation;

3. Resurface intersections with bold markings and painting to provide clear crossings for pedestrians and cyclists;
4. Finalize lighting plan (as described previously in **Section 2.2**) and install new lighting; and
5. Introduce public art.

It is assumed that the Gardiner “Bent Socks” will have been installed earlier as part of the planned project “Quick Starts” that are described below. The remaining intersections at Munition, Don Roadway, Broadview and Logan would be completed in association with the roadway improvements through the eastern section of the corridor.

4.2.5. Cherry St. to Don River (post 2027)

It is proposed that public realm improvements through this section occur following implementation of the Gardiner Hybrid 3 and in concert with the Port Lands Flood Protection Project (including the reconstruction of the Lake Shore Boulevard Don River Bridge). Cherry St. intersection improvements are assumed to be implemented by the Gardiner-LSB realignment project. Detailed design for this section will need to be advanced prior to project implementation.

1. Lake Shore Boulevard landscaping and plantings along corridor and within centre median – coordinate with Keating Precinct developments;
2. Multi-use trail along north side of Lakeshore Boulevard and connection with Don River trail network;
3. Street lighting; and
4. Sustainable management of stormwater.

4.2.6. Don River to Logan Ave. (post 2027)

It is proposed that public realm improvements through this section occur in conjunction with the reconstruction of LSB to Logan and following the removal of the Gardiner Logan ramps. The Don Roadway intersection improvement and the Broadview extension intersections are assumed to be implemented by other projects. The design for this section will need to be advanced prior to project implementation and be informed by other adjacent projects including the Port Lands Flood Protection project and the Unilever project.

There is a possibility of advancing Gardiner ramp removal, road reconstruction and public realm implementation from the Don Roadway to Logan Avenue earlier than currently forecast. The City will assess any opportunities to do so as they arise.

5. Recommendations for “Quick Starts”

5.1. Summary of Quick Starts

This Public Realm Plan proposes a series of “Quick Start” projects for early implementation between 2020 and 2022. These constitute early demonstration projects of the overall vision for Lake Shore Boulevard Public Realm, and would signal the coming transformation of the corridor and help establish standards for future developments. Opportunities identified here as well as others that may arise would be welcome given the long-term incremental nature of the Lake Shore Boulevard Public Realm Plan and the complexity adjacent infrastructure projects upon which its schedule depends.

As illustrated in **Figure 5.1**, the Quick Starts include:

- A series of minor improvements at five intersections – bolder pavement markings and reflective paint ‘socks’ on the Gardiner bents – to improve safety and experience of crossings;
- Two early planting projects in the north boulevard – to test viability of plant species selected, and to give planting time to establish before the creation of trails; and
- Four south-sidewalk projects, including two wholly funded by private developers and one partially funded by a private developer – to introduce non-standard LID elements (i.e., permeable pavers and base) and viability of plant species.



Figure 5.1 Proposed Quick Starts

5.2. Implementation

The feasibility of the proposed Quick Starts will be considered in light of other projects taking place in this study area. Estimated to cost approximately \$2.5M total, funding would be made available through the City's Gardiner Strategic Rehabilitation Program budget, except for those projects which are privately funded. The intention is to implement the projects over the span of the next two years from 2020-2022. As shown in the list below, sites that are not impeded by the Gardiner rehabilitation work that is currently underway could begin in 2020, while sites in close proximity to the Gardiner between Jarvis St. to Cherry St. would follow completion of the re-decking work, estimated in 2021.

Section 5.3 below provides a brief description of the proposed Quick Starts, with a more in-depth description of the South-Side Pilot at 12 Bonnycastle which is being implemented in 2020.

5.3. Quick Start Project Descriptions

The proposed Quick Start Projects are grouped into three categories:

- A. Five Intersection Improvement Projects
- B. Two North-Side Planting Projects
- C. Four South-Sidewalk Projects

A. Intersection Improvement Projects

5.3.1. Jarvis St. Intersection

Jarvis St. is an important connection between St. Lawrence Market and the neighbourhoods to the north, as well as Sugar Beach and Jarvis Slip to the south. The intersection improvements set out in this Public Realm Plan – bolder wider pavement markings at both north-south and east-west crossings, and thermoplastic reflective paint bent “socks” – would be applied to the Jarvis St. intersection to improve safety and the experience of crossing Lake Shore Blvd. beneath the Gardiner Expressway (See **Figure 5.2**). Implementation of Quick Start improvements at the Jarvis St. intersection would follow Gardiner re-decking work, estimated to end in 2021, and remain until the road is further reconstructed in 2024+. The intersection may also be modified by the Lower Yonge planned works.

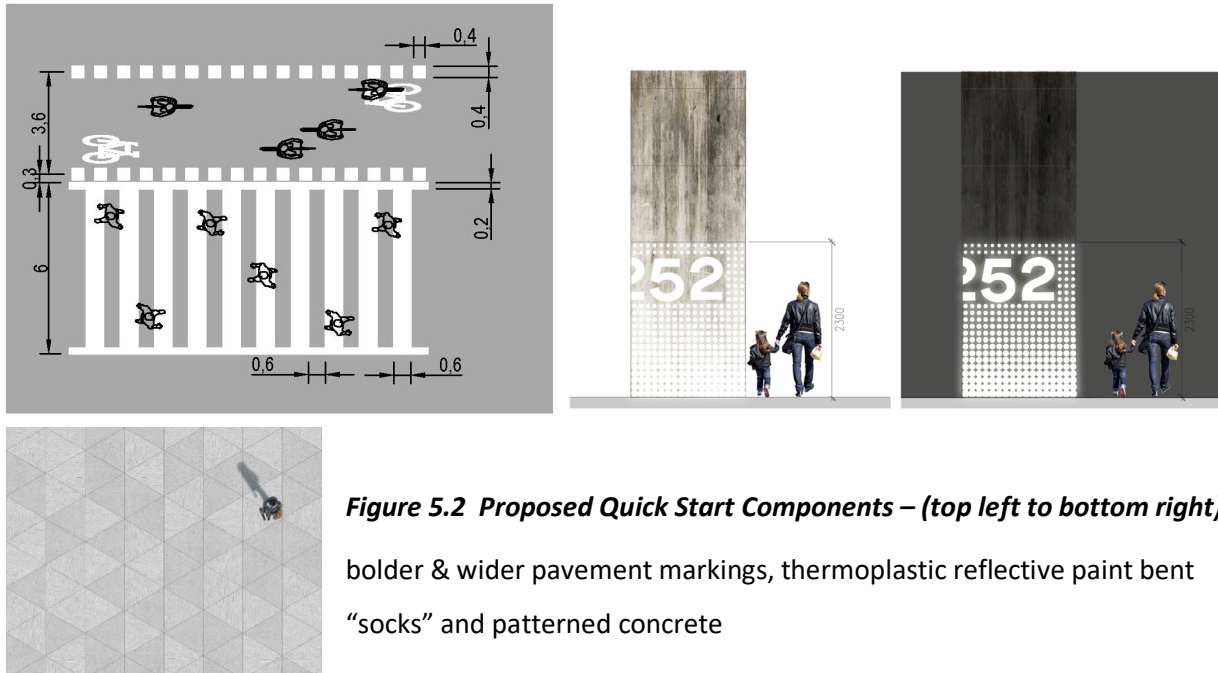


Figure 5.2 Proposed Quick Start Components – (top left to bottom right)
 bolder & wider pavement markings, thermoplastic reflective paint bent “socks” and patterned concrete

5.3.2. Sherbourne St. Intersection

Sherbourne St. is a key cycling corridor, and also connects neighbourhoods to the north to George Brown College, Sherbourne Common and the East Bayfront community on the waterfront. The same intersection improvements identified in this plan – bolder wider pavement markings at both north-south and east-west crossings, and thermoplastic reflective paint bent “socks” – would be applied to the Sherbourne and Lake Shore Blvd. intersection to improve the experience of crossing Lake Shore Blvd. beneath the Gardiner. Implementation of Quick Start improvements at the Sherbourne St. intersection would follow Gardiner re-decking work, estimated to end in 2021, and to remain until the road is reconstructed in 2024+.

5.3.3. Parliament St. Intersection

Parliament St. represents a significant connection between the Distillery District and the waterfront. The intersection improvements in this Public Realm Plan – bolder wider pavement markings at both north-south and east-west crossings, and thermoplastic reflective paint bent “socks” – would be applied to the Parliament and Lake Shore Blvd. intersection to improve safety and the experience of crossing Lake Shore Blvd. beneath the Gardiner. Implementation of Quick Start improvements at the Parliament

intersection are to follow Gardiner re-decking work, estimated to finish in 2021 and would remain until the road is reconstructed after 2024.

5.3.4. Cherry St. Intersection

The Cherry St. and Lake Shore Blvd. East intersection will be modified as part of the new realigned Cherry St., which is part of the enabling infrastructure of the Port Lands Flood Protection Project (PLFP). The intersection modifications by PLFP are expected to be implemented in late 2020-2021. The new Cherry St. alignment will be tied into Lake Shore Blvd. and curbs of the medians modified to improve the functionality of the intersection. The south side of the intersection, which is part of the scope of new Cherry St., will also include patterned concrete and wider pavement markings for the north-south crossings, as per the vision in this Public Realm Plan. These enabling works by PLFP are proposed to be augmented by the thermoplastic bent “socks,” as well as bold wide pavement markings at east-west crossings. Collectively, these works will enhance safety of the crossing, and facilitate the intersection of the new Cherry St. bidirectional cycling trail with the existing Lake Shore Blvd. trail in the north boulevard. The intersection will be further modified once the east section of Lake Shore Blvd. is realigned and the eastern waterfront LRT connection at Cherry St. is implemented.

5.3.5. Don Roadway Intersection

The intersection of Don Roadway and Lake Shore Blvd. is also to be modified as part of Port Lands Flood Protection enabling works. The south boulevard portion of the intersection will include patterned concrete corners. This quick start proposes bolder wide pavement markings, at both north-south and east-west crossings, and thermoplastic bent “socks” to complete the interim intersection vision and facilitate north-south crossing improvements. The projected timeline for Don Roadway implementation and tie-in to Lake Shore Blvd. by PLFP is 2022-2023, but interim improvements could be made in 2021. The intersection will be further modified when this section of Lake Shore Blvd. and the Lake Shore Bridge are reconstructed.

B. North-Side Planting Projects

5.3.6. North-Side Early Planting from Jarvis St. to Sherbourne St.

An early planting project of birch saplings is proposed for the north boulevard of Lake Shore between Jarvis St. and Sherbourne St. where there is the most room for planting (**Figure 5.3** and **Figure 5.4**). The scope would include raising the grade with clean fill, retained by armorstone, and planting birch saplings to establish a grove over several years. This planting would commence in 2021 at the earliest, following Gardiner works, and would remain in place indefinitely.

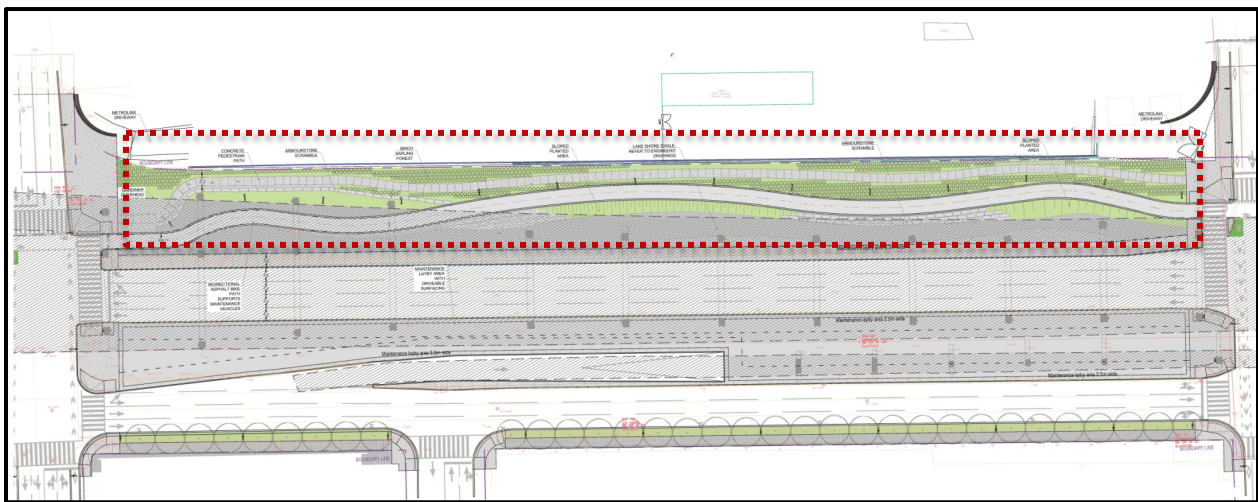


Figure 5.3 Proposed Jarvis St. to Sherbourne St. Birch Planting Quick Start



Figure 5.4 Proposed North-Side Quick Start:

Raised grade with clean soil for tree planting, planted birch saplings, armorstone retaining wall (trails, stormwater swale, and bent socks included in full implementation but not the Quick Starts)

5.3.7. North-Side Early Planting at Cherry St.

There is also an opportunity to densely plant young birch saplings adjacent to the existing Gardiner Expressway east of Cherry St. They would be planted in new soil retained by armorstone. Those trees that adapt in the challenging conditions of the Gardiner corridor would be transplanted into the corridor during implementation of the full Public Realm Plan.

A planting site is proposed for the area just east of Cherry St. bound by the rail berm and Lake Shore Blvd., and on either side of the Gardiner Expressway in the vicinity of the Lower Don Trail. The site may be available for more than four years, depending on the final alignment of Lake Shore Boulevard, whose availability must be confirmed and approved by the City of Toronto.

C. South-Sidewalk Projects

5.3.8. South-Sidewalk Pilot Project (Phase 1)

The long terms vision for the south-sidewalk is illustrated in **Figure 5.5**. The Lake Shore Blvd. and Bonnycastle South-Sidewalk Pilot Project will be the first project to introduce elements of the Lake Shore Public Realm Plan into the corridor. It comprises a 50m stretch of the south LSB in front of a recently completed development at 12 Bonnycastle, and adjacent to Sherbourne Common Park (See **Figure 5.6**). Like much of the corridor, this site is narrow, constrained both at-grade and below-grade, and exposed to flooding and salting. The 60% South-Side design has been further advanced to construction drawings for this area to address utility conflicts, resolve technical issues, and address constructability at a greater level of detail.

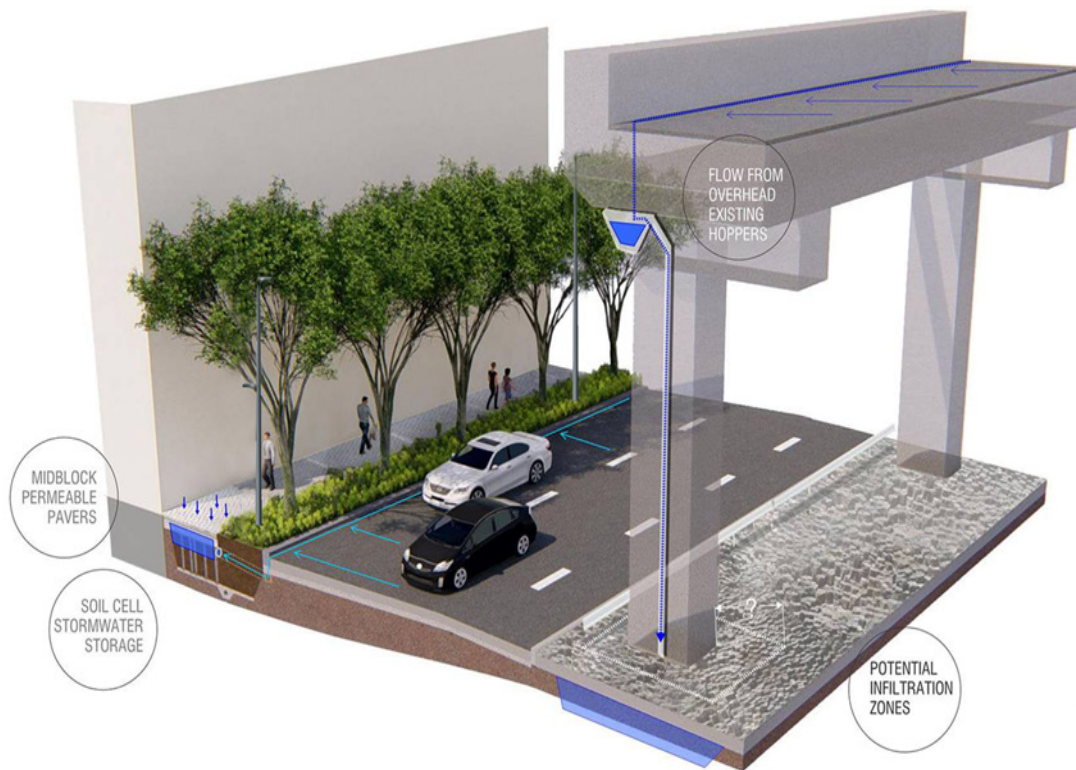


Figure 5.5 South-Side Components:

Curbside bioretention planter with resilient plantings, Permavoid base under paving, permeable pavers, connections to nearest CBs for passive irrigation from stormwater, and drainage, patterned concrete corner (trees and surface inlets included in full public realm vision but not in Quick Starts)

It is to be funded and implemented by Waterfront Toronto in 2020 along with public realm improvements along Bonnycastle St. It will test the performance of the design which captures stormwater from the road and sidewalk for passive irrigation of plantings. It will also set the standard for future development frontages along the corridor.

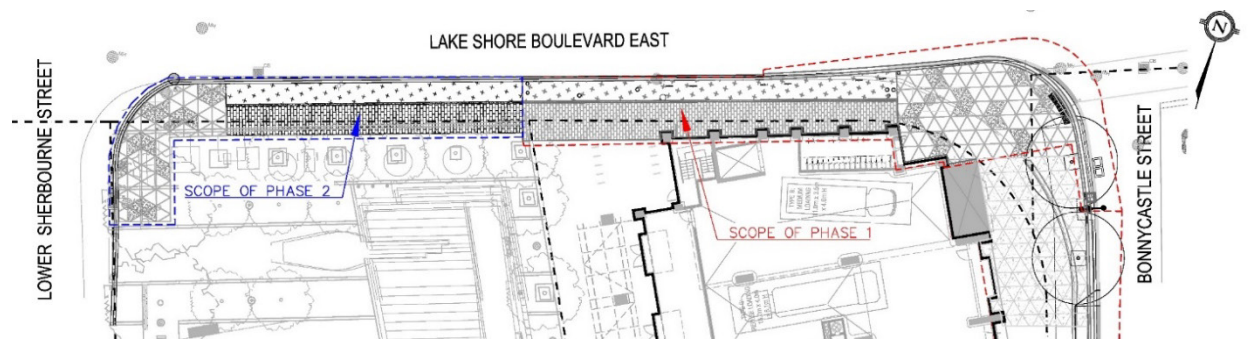


Figure 5.6 South-Sidewalk Projects Phase 1 and 2 Scope

As shown in **Figure 5.7** public realm improvements include AODA-compliant permeable paving in the sidewalk, stormwater storage cells, a curbside bioretention planting area with salt and flood-tolerant plantings receiving water from the road, and patterned sawcut and exposed aggregate concrete at intersection corners. These non-standard items will be monitored and evaluated for broader use in the Lake Shore Blvd. corridor and across the City.

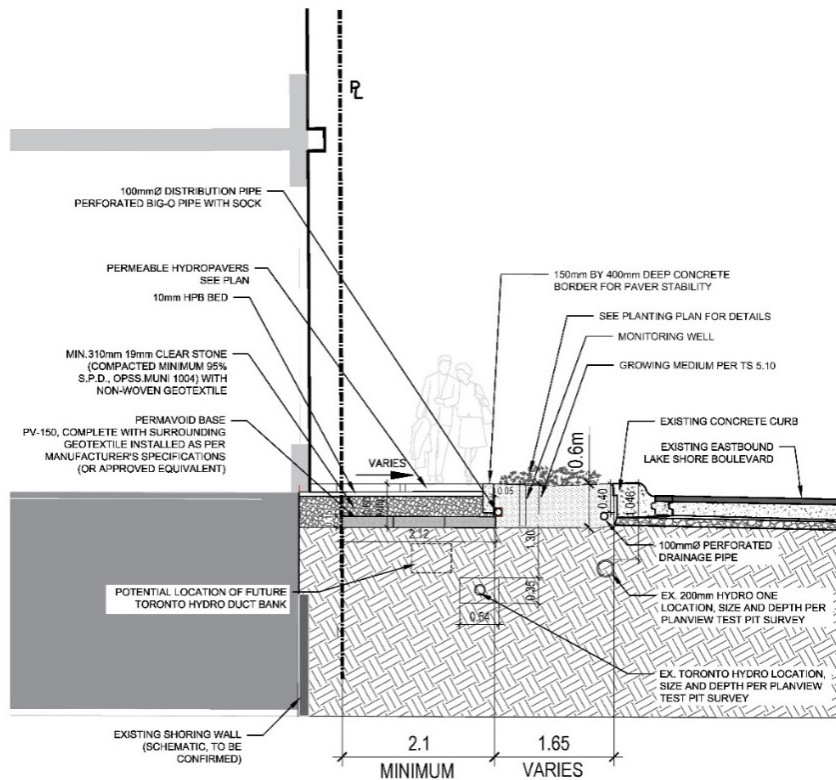


Figure 5.7 South-Side Pilot Project

On behalf of the City of Toronto Green Streets Initiative, the Toronto Region Conservation Authority (TRCA) Sustainable Technologies Evaluation Program (STEP) will be monitoring this pilot project. For a year following construction, STEP will assess the performance of the overall system and the plantings, stormwater management benefits, and durability of the non-standard permeable pavers, patterned concrete, and stormwater storage cells in the winter season. The outcomes of the monitoring program will inform detailed design of the public realm for the broader corridor, as well as the City’s Green Streets program regarding ongoing maintenance requirements and costs for similar green infrastructure projects across the City. In addition, the firm Autocase will undertake a triple bottom line financial, social and environmental cost benefit analysis of the pilot to estimate the full value of the public realm project against a base case design.

The question the pilot seeks to answer is to what extent a sidewalk bioretention system of permeable paving and curbside planting with passive irrigation, can sustain a high-quality public realm while minimizing operations and maintenance costs. The answers will assist the City with green infrastructure

implementation and public realm improvements in constrained and challenging public rights-of-way in the Lake Shore Boulevard corridor as well as across the City.

5.3.9. South-Sidewalk Extension (Phase 2)

There may be an opportunity to extend the Lake Shore Blvd. South Sidewalk pilot west to Sherbourne St. to include the frontage of Sherbourne Common Park (see *Figure 5.6* above). This would provide a consistent public realm across the entire block as well as the opportunity to compare the benefits and performance of two different bioretention systems.

5.3.10. South-Sidewalk Projects: 143-177 and 215 Lake Shore Blvd. East

Two other south-sidewalk projects are proposed as Quick Starts, both representing private developments. The first project at 143-177 Lake Shore Blvd. East will be undertaken by Waterfront Toronto in 2021, once access to the site is provided by the Gardiner team.

5.3.11. 143-177 Lake Shore Blvd. East

The development at 143-177 Lake Shore Blvd. East will be one of the first sections of the Lake Shore Public Realm Plan to be implemented, setting a precedent for the incremental transformation of Lake Shore Boulevard. The project will be undertaken by Waterfront Toronto sometime in 2021, once access to the site is provided by the Gardiner re-decking team. The works to be implemented include a curbside bioretention planting area, trees (where feasible within the existing curb), permeable pavers on the sidewalk, and patterned exposed aggregate concrete at intersection corners to highlight pedestrian areas. These interim improvements will be modified following the City of Toronto's road reconstruction in 2024+, which includes curb relocation that will provide additional boulevard planting areas.

5.3.12. 215 Lake Shore Blvd. East

This proposed quick start would build upon the public realm improvements agreed to at 143-177 Lake Shore Blvd. East at the neighbouring 215 Lake Shore Blvd. East development. Similar to other south boulevard sections, the improvements would include a curbside bioretention planting area, permeable pavers on the sidewalk, as well as patterned exposed aggregate concrete at the intersection corners to highlight pedestrian areas. If agreed to, implementation of improvements would be delivered as part of development phases. Phase 1 is estimated to be completed in 2023, with subsequent phases following the City of Toronto's full road reconstruction expected in 2024+.

6. Future Public Realm Design Work

The following describes the additional design work required to ready the public realm project for full implementation.

6.1. Jarvis St. to Cherry St.

The first area of the Lake Shore Boulevard East corridor to be transformed by this Public Realm Plan following Gardiner rehabilitation works is the Jarvis St. to Cherry St. segment. In this segment, the Gardiner Expressway remains in its current configuration, and Lake Shore Blvd. curbs and lane widths are adjusted to make additional room for public realm and stormwater management improvements.

6.1.1. Jarvis St. to Cherry St. South-Side Boulevard

The south-side boulevard has been advanced to approximately 60% design level. It is expected that public realm improvements will be partially secured through the City's Site Plan Approval review process as applicants seek development approvals. The City would then complete the improvements once the LSB south curb is rebuilt in tandem with roadway reconstruction following Gardiner rehabilitation work. This implementation phasing will need to be confirmed. To support completion of 100% design, detailed utility locates work is required for the boulevard (B & A level SUE). The experience of the south-side pilot project should also be drawn on to inform the detailed design of the wider corridor.

6.1.2. Jarvis St. to Cherry St. North-Side Boulevard

The LSB north-side boulevard has been advanced to approximately 30% design level. This section will be implemented by the City. Additional work is required to advance public realm to the detailed design level. Some key design elements are described below.

The proposed north-side design requires some encroachment into the USRC corridor. Initial discussions with Metrolinx have identified that the amount of proposed encroachment to support the Public Realm Plan is feasible but will require further discussions. Hydro One has undertaken a feasibility study for relocation of its above-ground transmission line and has proposed burying the line along the south edge of the USRC. Finally, related to the USRC project, the design of the proposed underpass extensions at

Jarvis St. and Sherbourne St. need to provide for a continuous public realm experience with that proposed in this Plan.

Other required future design work required will include the confirmation of underground utilities. While level D and C SUE survey has been completed, SUE (level B&A) work is required to confirm utility locations and depths to avoid conflicts, particularly where the SWM swale is to be located between Jarvis St. and Sherbourne St.

The design of the planned stormwater management (SWM) system also requires advancement including determining how the proposed swale is to be implemented while preserving the integrity of the Gardiner support columns and footings. As well, the design of the Permavoid system that is to lie beneath the cycle path and pedestrian sidewalk east of Sherbourne St. is to be further developed.

6.1.3. Jarvis St. to Cherry St. Intersections

Intersection design, including opportunities for public art, is to be advanced in line with the strategies detailed in this Public Realm Plan.

6.1.4. Decluttering and Wayfinding Strategy

A strategy to declutter the intersections is to be undertaken that is to include the need for and form of lighting, signage, electrical-telecommunication infrastructure. The potential to remove, consolidate and replace with a consistent form and look is to be explored. Related to this is the need to confirm the need for guard rails to protect Gardiner columns from possible vehicle collisions. Where protection is determined to be essential, alternatives to the steel beam guardrail or concrete barrier are to be explored which are in character with the corridor public realm than with a highway.

6.2. East of Cherry St.

As the Public Realm Plan east of Cherry is only at a vision scale, considerable design work is required including: development of the landscaping plan, the stormwater management facility (swale), pathway alignment and public art plan. Programming of open space to the west of the future Munition St. extension is beyond the scope of this public realm study as that jurisdiction rests with Parks, Forestry and Recreation Division. The Stakeholder Advisory Committee has expressed a desire for an off-leash dog park and other active recreational facilities that the City can review during future design development work. The following is required prior to advancement of the design:

- Completion of the 30% design study that is currently underway for the Gardiner and LSB east of Cherry St. This work will further define the roadway alignment, Gardiner column locations, the east of Cherry on-off ramp configuration, stormwater management, grading, as well as the final public realm scope and costing. The scope of study also includes the development of a work program to advance the Public Realm Plan in this area;
- Confirm access road alignment and grades for access to the Don River sediment management facility and Wilson Yard;
- Confirm stormwater management plan for the area including the need to direct water to Cherry St. stormwater management facility;
- Confirm grade changes and configuration of the new LSB Don River bridge;
- Metrolinx is to confirm the boundaries of the Wilson Yard expansion to ensure that there is adequate space for the trail connection to the Don Valley trail system;
- Hydro One to confirm the footprint and detailed design of their proposed relocation on the transmission line in the USRC; and
- Define the nature of land use to extend along the south side of LSB through the update of the Keating Channel Precinct.

7. Project Costing and Funding

7.1. Project Costing

A cost estimate was developed for the Lakeshore Blvd. East Public Realm Phasing and Implementation Plan. The budget is based on available design information for the Lake Shore Boulevard East corridor at the time of writing, which varies from 60% to 10% design level. The estimate was generated by Altus Group and is intended to be the fair market value for the construction of the proposed Public Realm Plan. The estimate has been derived using generally accepted principles on method of measurement as per the Canadian Institute of Quantity Surveyors Elemental Cost Analysis and/or Method of Measurement of Construction Works.

The estimate includes all direct and indirect construction costs consistent with the information available. The rates used and developed for this estimate, where applicable, include labour and material, equipment, and subcontractor overhead. It was assumed that the project would be procured with a General Contractor approach under a CCDC 2 (2008) standard form of contract. Unionized commercial civil and landscape contractors would perform the work. Further, the unit rates are based on construction activities occurring during normal working hours and proceeding within a non-accelerated schedule.

From the information provided, quantities have been measured where possible and unit rates applied for the specific items based on historical and current cost data for this type of project. The costing accuracy reflects the available design detail for the project, which varies from the more advanced 30-60% design for the Lower Jarvis St. to Cherry St. section, to 10% design for the Cherry St. to Logan Avenue section. Where design information was limited, discussions with the relevant design discipline have been held and/or assumptions made based on estimator experience with projects of a similar type, size, and standard of quality.

Implementation of the Lake Shore Blvd. East Public Realm Plan has been priced according to the project component list provided by Waterfront Toronto. It was further assumed that the Jarvis St. to Cherry St. section would be constructed over a two-year period starting in 2025, while the section east of Cherry

St. would begin in 2027 over a three-year period. This schedule assumes public realm is implemented following Gardiner Expressway rehabilitation and reconfiguration works, the schedule for which is subject to change.

The estimate includes all direct and indirect construction costs as described below:

- Demolition and disposal of existing elements;
- Concrete sidewalks and pavers;
- Asphalt paving and concrete curbs to City of Toronto standards;
- Granite curbs to south sections of public realm;
- Soft landscaping including trees, shrubs, plantings, and sod;
- Soil cells below permeable unit pavers;
- Stormwater management system including swales and below-grade modular storage system;
- Thermoplastic painting of Gardiner Expressway bents;
- Electrical site service and lighting;
- Relocation of catch basins; and
- Site hoarding, Jersey barriers at intersections and public realm surrounding site work areas.

The following contingencies and additional costs over the project “raw” costs were also included as part of the estimation exercise. Generally higher contingencies were applied to the Cherry-Logan section due to the less advanced state of the design:

- Design and Pricing (10% for Jarvis-Cherry section and 15% for Cherry-Logan section);
- Escalation (18% for Jarvis-Cherry section, assuming 2026 implementation, and 27% for Cherry-Logan section, assuming 2029 implementation); (Note that these are the mid-point construction years, as it was assumed that the Jarvis St. to Cherry St. section would be constructed over a two-year period starting in 2025, while east of Cherry St. would begin in 2027 over a three-year period);
- Construction Contingency (20%);
- Design and Engineering Fees (25% Jarvis-Cherry section, and 31% Cherry-Logan section); and
- Project Management Fees (6% Jarvis-Cherry section and 8% for Cherry-Logan section).

The total estimated cost for implementing the Public Realm Plan on the north and south Lake Shore Blvd. corridors between Lower Jarvis St. and Logan Avenue is approximately \$90M. A breakdown of the cost is provided below in **Table 7.1**.

Table 7.1 Public Realm Cost Breakdown Summary

Project Area	Sub-Total Cost (excluding contingencies)	Total Project Cost (including contingencies)
South boulevard, including medians	\$15,858,200	\$37,011,000
North boulevard	\$19,237,100	\$40,060,800
Intersections, including public art	\$8,262,100	\$10,263,600
Quick Starts	\$2,549,887	\$2,549,887
Decluttering /wayfinding study	\$30,000	\$30,000
TOTAL	\$45,937,287	\$89,915,287

In 2016, a high-level conceptual estimate for a public realm plan of \$60 million in 2013 dollars (+/-20%) was reported to City Council as part of the Gardiner East Environmental Assessment. A revised cost estimate of \$90 million (+/-20%) has been prepared by Altus Group. This estimate is based on the recent 60% and 30% public realm design work completed for the south and north corridors respectively from Jarvis St. to Cherry St., and 10% design work east of Cherry St., which includes stormwater management facilities. It also accounts for inflation escalation to reflect the staged approach to implementation over ten years, the inclusion of contingencies, and the stormwater management strategy, which was not part of the original estimate. This updated cost estimate is consistent with the original \$60 million in 2013 dollars, which amounts to approximately \$84 million in 2020 dollars. Actual costs will be confirmed closer to implementation, once designs are further refined.

Cost estimates will be advanced as the Public Realm Plan is further evolved, particularly for the east of Cherry St. section, which is only at a vision scale of 10% design. Additional costs for infrastructure improvements to support the public realm need to be determined. In particular, capital costs have not yet been calculated for the resurfacing or rebuilding of Lake Shore Blvd. following overhead deck rehabilitation, as well as the management of stormwater from the Gardiner Expressway, a worthwhile but complex undertaking given the area's constraints.

The “Quick Start” projects from Jarvis St. to Cherry St., proposed to be implemented between 2020 and 2022, were estimated to cost approximately \$2.5M.

7.2. Project Funding

This Public Realm Plan will act as a guiding framework to City divisions and other public and private agencies over the 10-year period of full implementation. Improvements will be phased to complement other planned infrastructure and development projects in the area, and will be funded through a variety of means, including:

1. Gardiner and Lake Shore Boulevard Improvements through Gardiner Strategic Rehabilitation Program will fund the bulk of Public Realm Plan implementation.
2. Partnering with other agencies involved in improvements in the study area including for example: Waterfront Toronto and the TRCA (e.g., reconstruction of the Lake Shore Boulevard Don River bridge to facilitate the Don River Naturalization and Port Lands Flood Protection Project) and Metrolinx in relation to the USRC project.
3. Partnering with private-sector developments, particularly on the south boulevard where three developers have already agreed to implement public realm improvements outlined in this plan.

During the City's Jarvis St. to Logan Avenue Gardiner-Lake Shore Boulevard rehabilitation from 2019 to 2027+, key public realm elements that may be delivered include:

- South-side LSB lane width narrowings, including relocation of curb and stormwater systems;
- South-side landscaping including trees, lighting and cycle track;
- Separated pedestrian and cycling paths;
- Interim and permanent intersection improvements at Jarvis, Parliament, Cherry and Sherbourne Streets;
- North-side LSB lane reductions;
- Armourstone, landscape features and streetscaping – multi-use path along the north edge;
- Stormwater management features; and
- The Don River – Lake Shore bridge crossing (to be jointly undertaken by the City, TRCA and Waterfront Toronto).

Funding for public realm improvements, will be brought forward as part of individual projects, as well as through submissions to the City's Capital Budget and Plan as needed.

Private developers and other public agencies will also implement the public realm through development block frontage streetscaping, and the creation of new streets and parks in the area, including the Keating and Lower Yonge Precincts. The schedule for permanent intersection enhancements and construction of the linear multi-use trail will be impacted by interim implementation of the Cherry St. extension through the Port Lands Flood Protection Project, pending final improvements through the Gardiner – Lake Shore Blvd. reconfiguration; Broadview Avenue extension through the City's Transportation and Servicing Master Plan (TSMP EA); and straightening of Sherbourne St. through the FedEx plan of subdivision.

Close coordination with Metrolinx will be required throughout the implementation period as USRC plans influence the amount of public realm available, the edge condition of rail embankment and the character and length of underpasses. The Don River bridge crossing will also require coordination with the Toronto Port Lands Company (TPLC) and Create TO. Final design and construction of the trail will be undertaken in coordination with the Unilever Precinct Plan and South of Eastern developments.

8. Conclusion

This report describes the work undertaken to prepare a Public Realm Plan for the Lake Shore Blvd. East corridor extending from Lower Jarvis St. to Logan Avenue, as required by City Council and the Ministry of Environment, Conservation and Parks (MECP). A vision scale design has been developed for the entire corridor, and a more detailed design has been developed for the Jarvis St. to Cherry St. section.

The advancement of this Public Realm Plan has involved considerable coordination with community stakeholders, private developers and public agencies, and others involved in the delivery of other projects within the LSB East corridor.

Additional future work is required to advance the plan over the course of the next decade. For example, 100% detailed design level will occur in parallel with the design of other projects included the Gardiner Hybrid 3 project to 30% design, which the City is currently advancing. Prior to completion of detailed design, additional work described in this report will be required, including SUE studies to confirm underground utilities and confirm storm sewer capacities to advance the stormwater management strategy.

Public realm is seldom built all at once as part of a single project, especially in an area with a large amount of change occurring over the next decade. Consequently, public realm improvements identified in this plan will be an integral component of small and large city-building projects over the coming decade, delivered by multiple public and private partners and coordinated with other planning, development and infrastructure projects. Once fully implemented, these improvements will bring the Gardiner-Lake Shore Boulevard East corridor in line with the City of Toronto's new road reconstruction standards and practices, including Vision Zero initiatives.