City of Toronto

Municipal Class Environmental Assessment Study (Schedule "C") for a New Northwest PATH Connection (Union Station to Wellington Street)

Environmental Study Report

ARUP

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Environmental Study Report

April 2008

ARUP

with

DTAH

Gartner Lee

Hanscomb

TSH engineers architects planners

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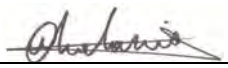
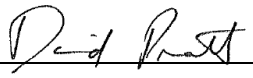
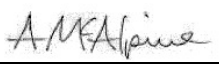
		Signature			
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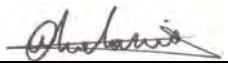
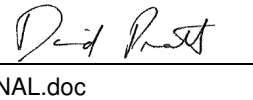
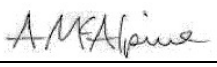
		Signature			
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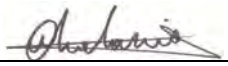
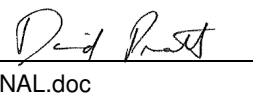
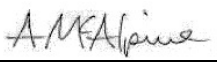
		Signature			
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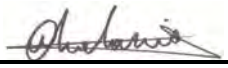
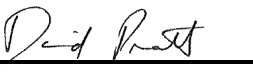
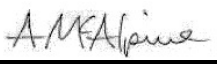
		Signature			

Issue Document Verification with Document ✓

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Executive Summary

Background

This Environmental Study Report (ESR) describes the planning process followed and conclusions reached for the Municipal Class Environmental Assessment Study (Schedule "C") for a New Northwest PATH Connection (Union Station to Wellington Street) undertaken by the City of Toronto. GO Transit has been an integral partner in the Study process, providing both financial and staff support.

The purpose of this new PATH connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new northwest PATH connection will also serve to more effectively disperse underground pedestrian activity in the PATH system which is currently oriented to the north east quadrant of Union Station. This redistribution will occur in conjunction with the development of a new GO west concourse (York Street Concourse) that will mirror the existing GO east concourse (Bay Street Concourse). The development of a new Northwest PATH connection is recognized as a key element of Station revitalization.

The study area for this project is bounded by Front St. to the south, King St. to the north, Simcoe St. to the west, and Bay St. to the east (see Figure 1). The Study Area is a heavily urbanized area within Downtown Toronto's Central Area which facilitates the concentration of Canada's highest living and working population density as well as key public, cultural, financial, sports and entertainment facilities and destinations.

Problem or Opportunity Statement

The current pedestrian facilities and operations will not meet projected pedestrian demands nor provide any opportunity for redistribution of other existing PATH users who may be oriented north and west of the Station. Based on the results of pedestrian studies, there is a clear need for new northwest pedestrian connections to relieve current congestion and provide increased pedestrian capacity to accommodate the proposed new GO York Street Concourse and destinations northwest of Union Station. Numerous planning documents also support the need for these connections, including the City of Toronto Official Plan, the Union Station District Plan and Union Station Master Plan.

New northwest pedestrian connections would serve to provide alternate routes from the planned GO Transit York Street concourse, thereby providing operational redundancy and flexibility in the PATH network. These connections would also reduce the peak-period bottleneck effect that currently exists at various locations throughout the PATH while serving to disperse underground pedestrian activity that is currently oriented to the east.

Description of the Alternative Solutions

Six alternative solutions, or functionally different ways of addressing the problem or opportunity described above, were considered during Phase 2 of the Municipal Class EA. These alternatives are:

Alternative 1 - Do Nothing

As the name implies this solution makes no interventions whatsoever in the study area. In accordance with EA requirements, this alternative was included in the evaluation process to highlight the potential of the other solutions to improve conditions within the study area.

Alternative 2 - Surface Routes with Streetscape Improvements

Improvements would include sidewalk widening, traffic signal timing adjustments, and streetscape enhancements such as plantings. Effort would have to be given to ensuring that pedestrians have good access to street level from Union Station.

Alternative 3 - Improvements to existing underground routes

Efforts would be made to expand the existing capacity of the PATH connections, including those through the Fairmont Royal York, Citigroup Building, and the RBC Tower. As the pre-existing structures are private property or historically listed it was anticipated that there is very little room for improvements on these routes.

Alternative 4 - New Underground Routes

This solution proposes the construction of a new, underground connection to the existing PATH network located north of Union Station.

Alternative 5 - New Underground Routes Connecting to Surface Improvements

This solution would involve the construction of a new underground route that would at some point ascend to an improved surface route.

Alternative 6 - New Underground Routes in Parallel with Surface Improvements

This solution proposes both a new underground connection to the existing PATH network with parallel surface improvements. This solution is the most comprehensive solution to the problem of expanding pedestrian demand/volumes at Union Station.

Selection of a Preferred Solution

The assessment and evaluation (presented in Tables 3 and 4 on pages 36 and 37of this report) resulted in Alternative 6 - a “new underground route in parallel with surface improvements” being carried forward as the preferred alternative solution. Alternative 6:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of Union Station revitalization;
- provides expanded pedestrian capacity and effectively accommodates a range of pedestrian demands (more effective distribution and connectivity, weather protection and directness of routes);
- provides pedestrians with a safe and comfortable environment for commuting to and from Union Station; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties.

Description of Alternative Design Concepts for an Underground PATH Connection

In order to implement the Preferred Alternative Solution (new underground route in parallel with surface improvements), various Alternative Design Concepts were developed. These concepts addressed both underground routes and at-grade or surface public realm improvements.

The underground routes are all predominantly or exclusively within publicly owned rights-of-way (streets) with the potential for underground connections to private buildings where both desired and technically feasible. They include:

Underground Alternative 1 – Do Nothing

This alternative maintains the existing conditions and proposes no changes to the underground. The "do nothing" alternative was included as a benchmark to compare the other alternatives.

Underground Alternative 2a – University Avenue

Alternative 2a would connect to the Citigroup Place, where Union Station would be connected by the existing PATH Citigroup tunnel. This alternative would cross below Front Street just southwest of the Front Street and York Street intersection and incorporate the existing parking garage structure underneath University Avenue, which would be converted to a pedestrian walkway.

Underground Alternative 2b – University Avenue

Alternative 2b is different from alternative 2a in that this connection would connect directly to the northwest corner of Union Station. The new PATH tunnel would cross below Front Street immediately southeast of the Front Street and York Street intersection and run parallel to the east side of University Avenue with a new connection to the parking structure underneath University Avenue, which would be converted to a pedestrian walkway.

Underground Alternative 3 – York Street

Alternative 3 essentially runs north-south, with the southern connection on the southeast corner of Front Street West and York Street (Union Station), crossing below Front Street West and running north below York Street to Wellington Street West. At Wellington Street West, potential connections can be made to the existing PATH network through private building connections and/or within the public right-of-way.

Underground Alternative 4a – Royal York Hotel to York Street

Alternative 4a would envision a new connection below Front Street West east of the intersection of Front Street West and York Street connecting to the concourse level of the Royal York Hotel. The Royal York Hotel concourse would then be connected on the west side to a new north /south PATH tunnel located below York Street to Wellington Street West. At Wellington Street West, potential connections can be made to the existing PATH network through private building connections and/or the public right-of-way.

Underground Alternative 4b – Royal York Hotel to York Street

Alternative 4b would involve the restoration and modification of the existing Royal York connection to Union Station. The existing tunnel would need to be significantly reconfigured to improve or meet accessibility requirements. The Royal York Hotel concourse would then be connected on the west side to a new north /south PATH tunnel located below York Street to Wellington Street West. At Wellington Street West, potential connections can be made to the existing PATH network through private building connections and/or the public right-of-way.

Selection of a Preferred Design Concept for an Underground PATH Connection

The assessment and evaluation resulted in **Alternative 3 – York Street** - being carried forward as the preferred alternative design concept. The York Street Alternative Design:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of Union Station revitalization;

- provides expanded pedestrian capacity and effectively accommodates a range of pedestrian demands (more effective distribution and connectivity, weather protection and direct route to demand areas northwest of Union Station);
- provides pedestrians with a safe and comfortable environment for commuting to and from Union Station;
- meets all accessibility requirements;
- minimizes long-term negative effects on adjacent and surrounding businesses;
- seeks to minimize potential disruptions and impacts to utilities, vehicular and transit operations; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties.

Description of Alternative Design Concepts for Surface Improvements

The following surface improvements design concepts were carried forward for consideration on York Street. These design concepts are exclusively within the publicly owned right-of-way (streets) with the potential for connections to the new PATH tunnel under York Street where both desired and technically feasible.

Surface Improvements 1 - Do Nothing

This base condition is intended to reflect existing conditions on the roadway network. The “do nothing” alternative was included as a benchmark to compare the other alternatives. No changes to the public realm or existing conditions are proposed for this alternative.

Surface Improvements 2 - Two Travel Lanes (One-way Northbound)

Alternative 2 considers closing the two easterly northbound lanes on York Street from Front Street to Wellington Street West resulting in two travel lanes (one way northbound) with widened sidewalks (as a result of reduced traffic lanes).

Surface Improvements3 - Two Travel lanes (One-way northbound) with lay-by

Alternative 3 considers closing the eastern most northbound lane on York Street from Front Street to Wellington Street West. The north leg of the York Street / Front Street East / University Avenue will be reduced from three receiving lanes to two lanes with additional lay-by facilities with widened sidewalks (as a result of reduced traffic lanes).

Surface Improvements 4 - Full closure

Alternative 4 considers closing all four lanes of York Street to vehicular traffic and having York Street function as a pedestrian promenade between Wellington Street West and Front Street.

Selection of a Preferred Design Concept for Surface Improvements

The assessment and evaluation (presented in Tables 10, 11 and 12 on pages 63, 64 and 65 of this report) resulted in **Alternative 3 –Two Travel lanes (One-way northbound) with lay-by** being carried forward as the preferred alternative design concept. This particular York Street Alternative Design:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of Union Station revitalization;
- minimizes negative effects on service levels;

- reduces pedestrian crossing distances at intersections;
- readily accommodates increased pedestrian traffic and increase business attractiveness as a result
- provides public realm enhancements through design and landscaping improvements; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties.

It should be noted that the proposed alternative design concept for at-grade or surface improvements are subject to further detailed engineering and traffic operations review.

Description of the Preferred Undertaking

A summary of the York Street undertaking is provided below:

Below-Grade - Tunnel Component

- Construct a new five metre wide by three metre high concrete PATH tunnel using an open cut and cover method with 9 metre deep excavations, using temporary support for excavations to prevent any negative impact on the existing infrastructure. The heavy congestion of existing utilities within the project area presents a serious challenge for co-ordinating all the relocations and temporary supporting that would be required in order to construct the tunnel. For the purposes of this EA, preliminary discussions were held with all major utilities, which allowed them to provide input into the selection of the proposed tunnel alternative. Further discussions will be required with the various utilities during the next stages of the tunnel design and construction to determine the details regarding mitigation, relocation, costing and support efforts required.
- Align the tunnel so that it begins at the northwest moat wall at Union Station, runs northwest below Front Street (over the existing TTC subway tunnel) and along the east side of York Street to the intersection with Wellington Street West where the tunnel connects to the existing underground PATH tunnel at two locations – at the PATH level at 70 York Street and immediately south of the property located at 100 Wellington Street West.
- Undertake modifications to the following structures to allow for construction: the existing stair enclosure building on the northwest moat wall of Union Station and the TTC Subway pumping station.
- Allows for 3 other potential underground connections to the following buildings: 100-120 Front Street West (Royal York Hotel), 1 University Avenue, 33 University Avenue/60 York Street (Strathcona Hotel).
- Use a combination of a cast-in-place concrete structure, which would require ‘in situ’ work including installation of formwork, placing reinforcing bars and pouring concrete, and pre-cast concrete segments to construct the portion of the underground tunnel that is reinforced concrete founded on native soil/shale bedrock.
- Use pre-cast concrete box with concrete caisson foundations at each end, and pre-cast concrete wall-beams forming tunnel walls that would be erected on top of the pile caps and supported by concrete caisson foundations at each end to construct the 21 metre span across the existing subway structure and adjacent pumping station.
- Provide public art in accordance with City policy, and quality finishes within the tunnel structure.

Surface Component

- Following tunnel construction, replace York Street's existing roadway configuration with a configuration consisting of two vehicle travel lanes of 3.5 metres in width, proposed laybys of 3.0 metres to the south of Piper Street on both sides, and a 3.5 metre bay on the west side north of Heenan Place.
- Widen the sidewalks (as a result of reduced traffic lanes) to a minimum of 11.5 metres from Front Street to Piper Street, and 6.4 metres from Piper Street to Wellington Street on the east side, and 4.0 metres from Front to Heenan Place and 3.5 metres from Heenan Place to Wellington Street on the west side.
- Provide curb extensions (reduce pedestrian crossing distances) at the intersections of York Street and Front Street as well as York Street and Wellington Street West.
- Potential to locate a new staircase between the proposed PATH tunnel below York Street and the expanded pedestrian boulevard at surface level – potentially adjacent to the Royal York Hotel's west entrance
- Provide landscaping and urban design enhancements that correspond with the recommendations found in the 2006 Union Station District Plan.

Preliminary Construction Cost Estimate

A preliminary construction cost estimate was prepared based on current available unit pricing for material and labour and on plans and specifications produced for the tunnel and surface improvements at a planning level-of-detail. The cost estimates presented below are preliminary and subject to revision.

Project	Cost ($2007)
Surface – Public Realm Improvements on York Street	$ 2,500,000
Surface /Below Grade – Surface Connection Outside Royal York Hotel	$ 1,000,000
Below Grade – Connections to Private Properties	$ 1,000,000
Below Grade – New PATH Tunnel	$ 60,500,000
TOTAL	**$ 65,000,000**

Included in the estimates are allowances for Design and Engineering Services (25%) and Construction Administration (10%).

Summary of Construction Effects and Mitigation

The following chart is a summary of potential effects of construction and mitigation measures that will be undertaken by the City of Toronto:

Anticipated Effects	Mitigation / Future Commitments
Modifications to existing structures	Additional study during later design stages to finalize the details of these connections, and in consultation with the owners of the affected properties
Nuisance effects from dust, noise, and vibration	Monitoring dust emissions during construction; use of dust control and suppression measures; avoiding unnecessary idling of construction equipment; employing the City's by-laws and practices regarding hours of construction; preparing traffic management plans to address the redistribution of rerouted traffic; assigning truck routes
Reduced access / visibility for retailers along York Street	Mailing of notices to retailers and other businesses to inform them of the timing of construction, coordination/communications throughout the construction period.
Removal of street trees	Replanting of trees within a continuous root zone trench at a ratio of 2:1
Modifications to built heritage, including existing moat at Union Station	Restoration of condition of moat to the extent necessary to preserve and respect heritage elements and address Union Station heritage interventions to the satisfaction of Parks Canada..
Relocation of utilities	Further discussion with the various utilities during the next stage of the tunnel design in order to determine the details regarding mitigation, relocation, costing and support efforts required.
Building Settlement and potential for dewatering	In-depth geotechnical and foundations investigations during later stages of the project to verify depth of fill, horizontal layering of silty sand/sandy silt and groundwater conditions, and to provide detailed recommendations related to temporary shoring and dewatering methods
Potential for contaminated soils	Phase 1 Environmental Site Assessment to determine likelihood of soil contamination
Property	Negotiations with affected property owners. Where necessary, undertake property acquisition and compensation in accordance with Ontario Expropriations act.
Surface Water	Adopt storm water management practices in accordance to municipal and provincial guidelines and practices
Groundwater	Conduct detailed groundwater and soils analysis
Business Disruption	Hold ongoing discussions with property owners and tenants during design development. Implement traffic management plan including signage and temporary parking (if required). Use on-site community liaison staff to communicate with the local businesses during construction.
Aesthetics	Install and maintain fencing and screening at construction sites. Employ good housekeeping practices.
Archaeological Resources	Should any potential archaeological artifacts be uncovered during construction, the Heritage Operations Unit of the Ministry of Culture will be contacted immediately

Public Consultation Program

The public consultation program included two Public Information Centres (PICs), a stakeholder workshop, meetings with individual stakeholders, and associated notices and letters advertising the study. Written and verbal comments from the public and stakeholders were taken into consideration by the project team throughout the Environmental Assessment process.

1 Introduction and Background

For the purpose of this study, the Municipal Class Environmental Assessment (EA) Study (Schedule "C") process has been followed. The EA process requires that the City confirm the need (i.e. define the problem/opportunity), identify and evaluate feasible alternative solutions, select a preferred alternative solution, identify and evaluate alternative designs that achieve the preferred solution, and select an alternative design for construction. This Environmental Study Report (ESR) describes the planning process followed and conclusions reached for the Municipal Class Environmental Assessment Study (Schedule "C") for a New Northwest PATH Connection (Union Station to Wellington Street) undertaken by the City of Toronto. GO Transit has been an integral partner in the Study process, providing both financial and staff support.

Union Station was built between 1914 and 1927 as a joint construction project by the Canadian Pacific Railway Company (CPR) and the Grand Trunk Railway (now the Canadian National Railway Company) to consolidate their railway services within one facility. It opened in August 1927. Since then, it has operated as one of the most significant hubs in Canada's transportation network. As of September 2007 Union Station was handling approximately 45 million GO train and bus passengers, 20 million TTC subway passengers, and over 2 million VIA passengers yearly.

Union Station is the most important transportation hub serving the Greater Toronto Area. The ongoing revitalization of Union Station is intended to improve the delivery of local, regional and national rail passenger services. The revitalization process is being facilitated by the City of Toronto and other parties that have an interest in Union Station. These parties are working together to coordinate transportation and pedestrian planning initiatives that are intended to respond to anticipated increases in transit ridership over the next 20 to 30 years and to address the constraints that this growth will place upon the existing infrastructure. Given the growth expected, there is a need to consider existing and future pedestrian movements and interactions both inside and outside of the station building and understand how these movements tie into the urban fabric of the downtown business district and surrounding area. Specifically, there is a need to address the permeability of pedestrian flows within the station building and from the station onto the public sidewalks and the underground PATH System.

A number of important public transportation improvements are being implemented at Union Station, which will have a direct impact on the use of the station complex:

- GO Transit has identified $600 million in required major improvements to Union Station and the rail corridor to handle the anticipated increases in ridership over the next 20 to 30 years. Preliminary upgrades are already underway to improve and increase access to the rail platforms and upgrade the signal systems. The project is expected to be completed by 2014.
- As part of the Waterfront revitalization initiative, the Toronto Transit Commission (TTC) is adding a second subway platform at Union Subway Station, and expanding and reconfiguring the TTC concourse area. These improvements, valued at $90 million, are needed to accommodate the growing numbers of passengers using the Union Station subway and pedestrians walking through the TTC concourse area. The project is expected to be completed by 2012.
- VIA Rail is just completing a $10 million renovation of its space in Union Station to consolidate and improve its operations in the station and better accommodate its passengers.

Enhancement of Union Station's transportation attributes and providing the flexibility to improve transportation usage is a priority for the City of Toronto that will continue to be co-ordinated with the ongoing construction programs of GO Transit, VIA Rail and the TTC.

The Union Station Master Plan (2004) and Union Station District Plan (2006) advocate strong pedestrian connections leading to, through and from the Station. They define parameters for specific studies that have been completed to identify opportunities and improve the overall pedestrian amenities within and in the vicinity of the Station. Since the adoption by city council of the Master Plan for station redevelopment, the City of Toronto Transportation Planning Section has commissioned Arup Inc. to undertake two studies of pedestrian movement in and around Union Station. The *Union Station Area Pedestrian Study* identified present and future pedestrian conditions in the vicinity of Union Station and developed measures and infrastructure requirements needed to address increasing demands and improve the overall quality of the pedestrian environment at below and at-grade locations in the vicinity of Union Station. The *Union Station Internal Pedestrian Circulation Study* included an analysis of forecast pedestrian volumes and levels of service to confirm the adequacy of planned facilities at Union Station. The intent of this work has been to provide greater insight into the existing and future operation of Union Station from a pedestrian flow perspective and to refine concepts for the layout of retail, commercial and transit-related components.

As an integral component of the *Union Station Area Pedestrian Study* - Arup Inc. also conducted a preliminary engineering feasibility assessment of constructing a pedestrian tunnel under Front Street in the vicinity of University Avenue. The preliminary findings of the study indicated that it was possible to construct a new underground pedestrian tunnel under Front Street, which could be extended north under York Street or University Avenue and/or link to adjacent buildings and existing PATH connections in the vicinity of Wellington Street.

Following from that work and ongoing, parallel studies, City Council at its meeting on June 27, 28 and 29, 2006, adopted Clause No. 16(a) contained in Planning and Transportation Committee Report 4 entitled “Union Station District Plan - Area Bounded by Bay Street, Wellington Street - Simcoe Street, the Rail Corridor, Rees Street and Lake Shore Boulevard /Harbour Street”, and in doing so, requested among other things, that staff take the necessary action on a priority basis, to commence an Environmental Assessment (EA) for the creation of a new northwest PATH connection in accordance with the design directions noted in the Union Station District Plan (May 2006).

Following from Council’s direction, this Environmental Study Report (ESR) describes the planning process followed and conclusions reached for the Municipal Class Environmental Assessment Study (Schedule “C”) for a New Northwest PATH Connection (Union Station to Wellington Street).

The purpose of this new PATH connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit’s service expansion over the next twenty years. A new northwest PATH connection will also serve to more effectively disperse underground pedestrian activity in the PATH system which is currently oriented to the north east quadrant of Union Station. This redistribution will occur in conjunction with the development of a new GO west concourse (York Street concourse) that will mirror the existing GO east concourse (Bay Street concourse). The development of a new Northwest PATH connection is recognized as a key element of Station revitalization.

GO Transit has indicated that the construction of the new northwest PATH pedestrian connection will be critical to the phasing of their operational improvement program, including a key component of station revitalization that includes opening of a new west GO (York Street)

concourse area in Union Station (targeted for 2012), and must move forward to design and implementation on an urgent basis.

The City of Toronto's Facilities and Real Estate Division and City Planning Division are currently considering options for Union Station Revitalization, including opportunities to reconfigure the internal Station layout and connections in a way that supports pedestrian movement and compliments the highest and best use of space within the building. Within this context, the City will continue to study pedestrian movements within and beyond the Station to increase the effectiveness of Union Station as a major transportation hub. GO Transit are also interested in ensuring optimum pedestrian conditions at Union Station in conjunction with their multi-year capital rail improvement program.

The study area for this project is bounded by Front St. to the south, King St. to the north, Simcoe St. to the west, and Bay St. to the east (see Figure 1). The Study Area is a heavily urbanized area within Downtown Toronto's Central Area which facilitates the concentration of Canada's highest living and working population density as well as key public, cultural, financial, sports and entertainment facilities and destinations.

The following report organization provides a description of the planning and design process for the project:

- Chapter 2 Overview of the Planning Process
- Chapter 3 Planning Context and Problem/Opportunity Statement
- Chapter 4 Existing Conditions
- Chapter 5 Alternative Planning Solutions
- Chapter 6 Alternative Design Concepts
- Chapter 7 Public and Agency Consultation
- Chapter 8 Description of the Proposed Undertaking
- Chapter 9 Detailed Assessment of Environmental Effects
- Chapter 10 Summary of Mitigation and Future Commitments
- Chapter 11 References.

1.1 Project Team

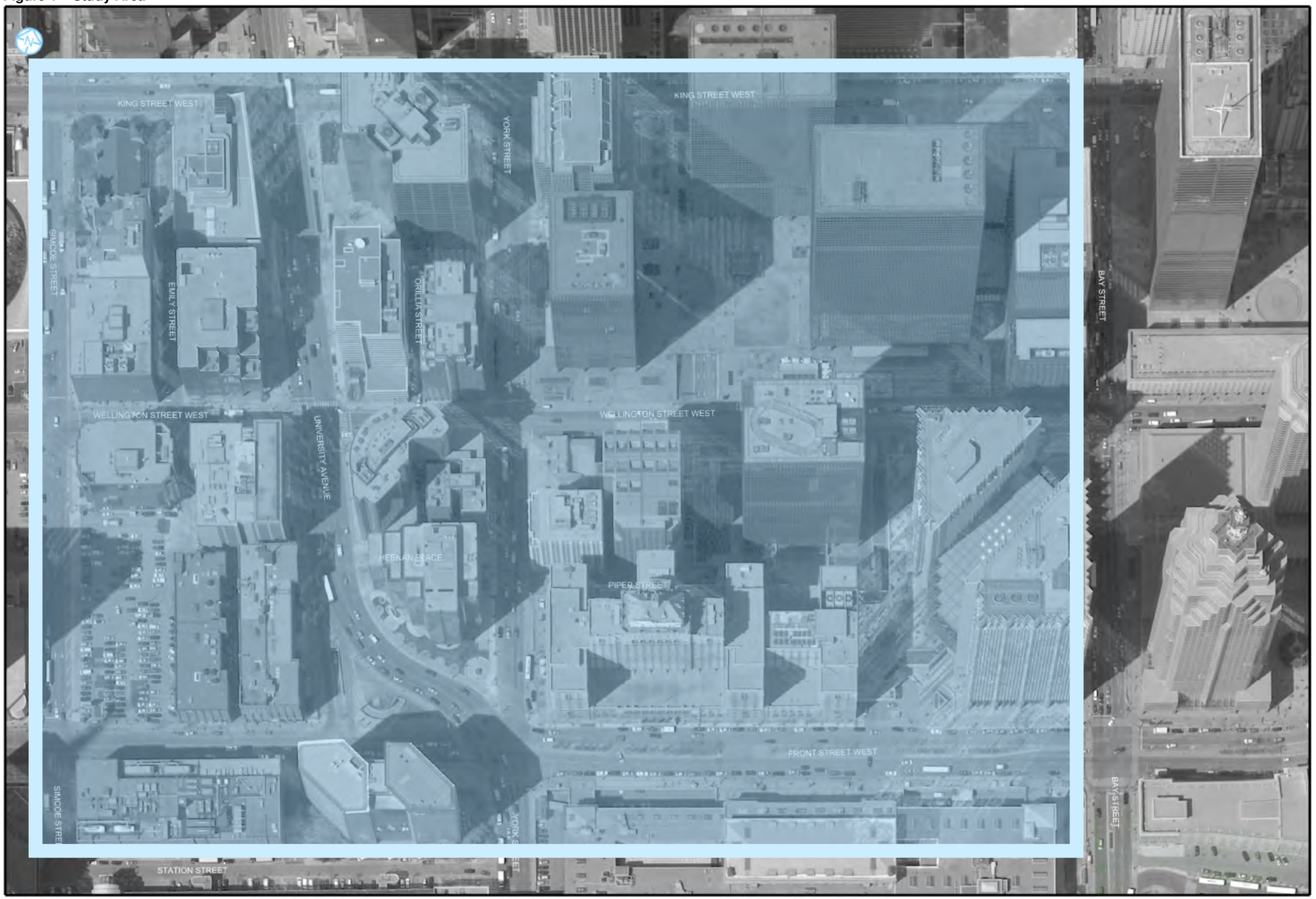
The City of Toronto retained Arup Inc. to undertake this class environmental assessment study. The project team was comprised of representatives from the City of Toronto, GO Transit, Arup Inc. and a number of sub-consultants providing technical assistance:

- Environmental Planning and Public Consultation — Gartner Lee Limited
- Urban Design — Dutoit Allsopp Hillier
- Cost Estimation — Hanscomb Limited
- Engineering Services — Totten Sims Hubicki Associates

General direction was provided by City of Toronto. Meetings were held at key points during the Study process and leading up to the completion of this report.

The EA was undertaken between December 2006 and January 2008.

Figure 1 – Study Area



2 Overview of the Planning Process Followed for this Project

2.1 The Municipal Class Environmental Assessment Process

The Municipal Class Environmental Assessment (2000) (Class EA) process, which is approved under the Environmental Assessment Act, enables the planning of municipal infrastructure projects in accordance with a proven procedure for protecting the environment.

Since projects undertaken by municipalities vary in their potential environmental effects, the Municipal Class EA classifies the projects into three schedules according to their potential environmental significance:

a) Schedule 'A' projects are limited in scale, have minimal adverse effects and include a number of municipal maintenance and operational activities. These projects are approved and may proceed directly to Phase Five for implementation without following the other phases.

b) Schedule 'B' projects have the potential for some adverse environmental effects. The municipality is required to undertake a screening process (Phases One and Two) involving mandatory contact with directly affected public and relevant review agencies to ensure that they are aware of the project and that their concerns are addressed.

   Schedule 'B' projects require that a report be prepared and submitted for review by the public and review agencies. If there are no outstanding concerns, then the municipality may proceed to Phase Five for implementation.

c) Schedule 'C' projects have the potential for significant environmental effects and must proceed under the full planning and documentation procedures specified in the Class EA Document (Phases One to Four). Schedule 'C' projects require that an Environmental Study Report be prepared and submitted for review by the public and review agencies. If there are no outstanding concerns, then the municipality may proceed to Phase Five for implementation.

This study was conducted to meet the requirements for the most onerous of the applicable Schedules - that being a Schedule C, due to the expected costs associated with the project. For the purposes of the Municipal Class EA, the project was classified as "construction of underpasses for pedestrian use" with a cost exceeding $1.5 million.

This study was undertaken in accordance with the first four Phases of the Class EA process for a Schedule 'C' project (see Figure 2). These phases are:

Phase One: Identify the Problem / Opportunity

This phase involves not only identifying the problem / opportunity, but also describing it in sufficient detail to lead to a clear problem / opportunity statement. As part of describing the problem/opportunity, input from review agencies and the public can be solicited (see Chapter 3).

Phase Two: Identify and Evaluate Alternative Solutions to the Problem / Opportunity

This phase involves six steps:

1. identify all reasonable alternative solutions to the problem / opportunity;
2. prepare a general inventory of the existing natural, social and economic environments in which the project is to occur;
3. identify the net positive and negative effects of each alternative solution including mitigating measures;
4. evaluate the alternative solutions;
5. consult with review agencies and the public to solicit comment and input; and

6. select or confirm the recommended solution (see Chapter 5).

Phase Three: Identify and Evaluate Alternative Design Concepts for the Recommended Alternative Solution

This phase follows the same steps as Phase Two, except it addresses the designs that can fulfil the recommended solution (see Chapter 6).

Phase Four: Prepare the Environmental Study Report

Following completion of Phase Four, documentation of the three phases must be prepared. Once the documentation has been completed, it must be placed on public record for a period of at least 30 calendar days to allow review agencies and the public an opportunity to review it.

During this review period, concerned individuals have the right to request a Part II Order under the EA Act before the project may proceed to implementation. A Part II Order requires that an Individual EA be carried out, documented, and submitted to the Minister of the Environment for review and approval. The decision on whether the project should be subject to a Part II Order rests with the Minister of the Environment.

Once the public review period has expired and there are no outstanding Part II Order requests, the municipality may proceed to the final phase of the planning and design process.

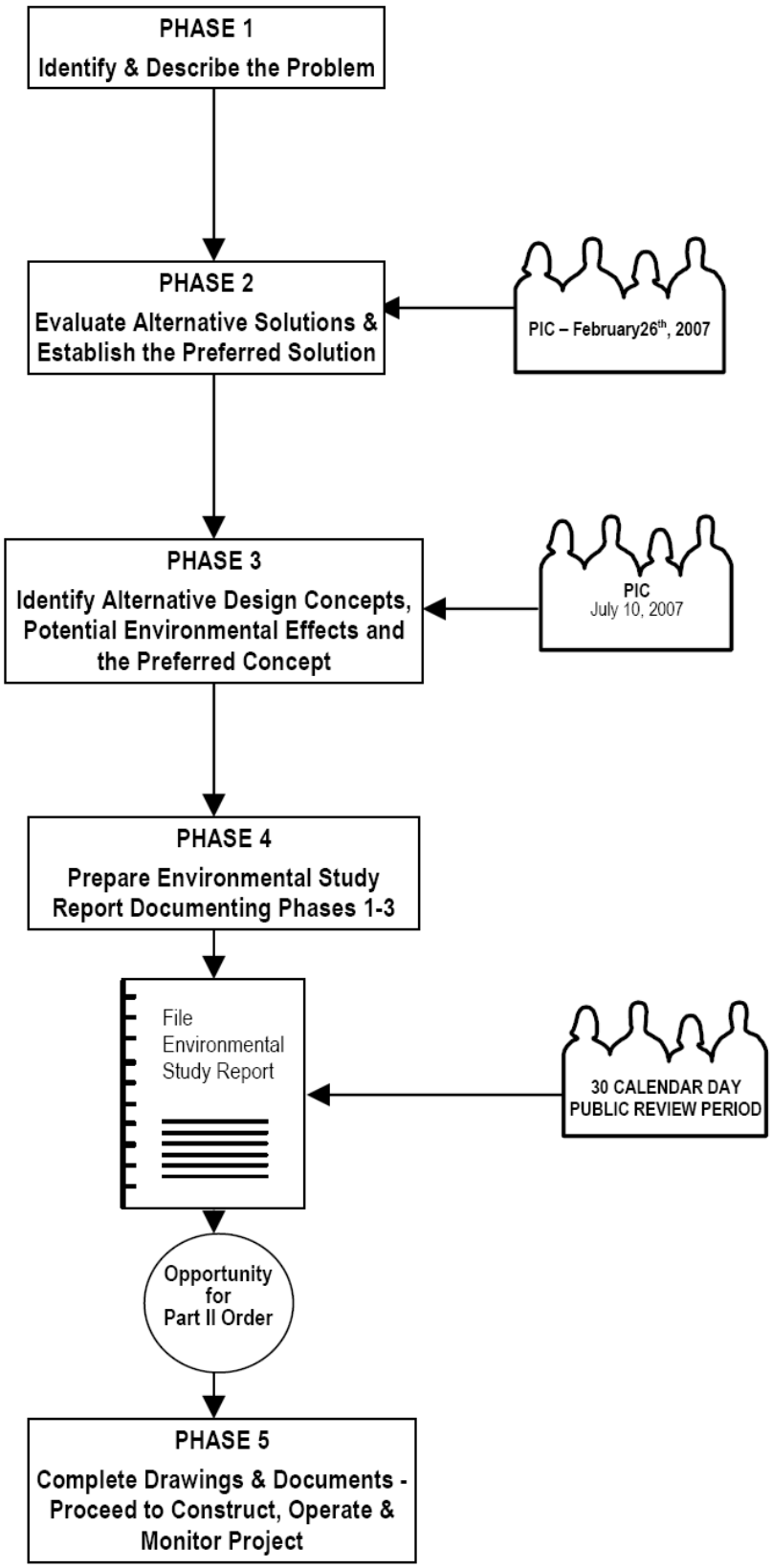
Phase Five: Complete Contract Drawings and Documents and Proceed to Construct, Operate, and Monitor the Project

This phase involves completing contract drawings and tender documents incorporating the recommended solution and mitigating measures documented in the Environmental Study Report. Once contracts are awarded, construction can take place and the project is implemented. Any monitoring programs identified during the Class EA shall be undertaken to ensure that the environmental provisions and commitments made during the process are fulfilled and effective.

The Schedule 'C' Class EA process includes public and review agency consultation, an evaluation of alternative solutions, an evaluation of alternative design concepts, an assessment of the effects on the environment, and identification of reasonable measures to mitigate any adverse effects. In completing the Class EA, the project team documented the problem / opportunity to be addressed by the study and developed and evaluated alternative solutions that address the problem. Based on the preferred alternative solution, alternative design concepts for a combination of an underground route and surface public realm improvements were identified and evaluated and a preferred design concept was selected.

There were a number of opportunities during the Class EA process for public input, including the Public Information Centres (PICs) and review of this Environmental Study Report (see Figure 2 – Process Chart). The public consultation activities and comments received during the EA process are documented in Section 7 (page 65).

Figure 2 – Planning Process Flow Chart



2.2 Study Schedule

The study was initiated in December 2006 and the anticipated completion date for the environmental assessment is March 2008. Subject to securing appropriate approvals, authorizations and financing arrangements, the preliminary schedule for design and construction is as follows:

- Detailed Design and Tender: 2008 -2009
- Construction Start: 2009 - 2010
- Construction Completion: 2010 - 2012

It is intended that the new tunnel be complete and operational to coordinate with the opening of the new GO York Street concourse.

3 Planning Context / Problem or Opportunity Statement

3.1 Planning Horizon

The planned underground route and surface improvements are intended to accommodate increased pedestrian volumes to 2021 and beyond.

3.2 Pedestrian Policy, Principles and Objectives

Considering that all transit passengers are ultimately pedestrians, appropriate pedestrian planning principles and objectives were developed at the outset of the latest revitalization initiative to ensure that pedestrian circulation is maintained or improved to accommodate current and projected flows in a safe and efficient manner. In consultation with a Station Operator's Committee (comprising GO Transit, VIA Rail and the TTC) and the Union Station Revitalization Public Advisory Group (USRPAG) a document outlining the existing policy directions, principles and objectives was produced as a background document for the Union Station Master Plan. The Pedestrian Planning Policy and Objectives document brings together a cohesive policy framework for pedestrian planning and provides specific principles and objectives for the station building and for the immediate area surrounding the station.

The higher-level policy directions are derived from the City of Toronto Official Plan (November 2002) and the Toronto Pedestrian Charter (May 2002) and provide general guidance to the development of the station as a pedestrian facility:

- Union Station will be refurbished and its passenger handling capacity expanded;
- A program of street improvements will be developed to enhance the pedestrian environment and measures undertaken to make it safer to walk and cycle in Downtown; and
- An urban environment and infrastructure will be created that encourages and supports walking throughout the City through policies and practices that ensure safe, direct, comfortable, attractive and convenient pedestrian conditions

It should be noted that the new Toronto Official Plan has had an important influence on how transportation planning matters are approached within the City. One of the main objectives of the Official Plan is to take a more comprehensive approach that links land use and transportation planning policies to create an effective strategy for accommodating the City's future trip growth in a way that reduces auto-dependency by making transit, cycling and walking more attractive alternatives. This new approach is increasingly reflected in the City's guidelines, programs and practices that promote walking as a mode encouraging both health and transportation benefits – cornerstones of comprehensive City building.

The Union Station Master Plan

Toronto City Council adopted the Union Station Master Plan in December 2004. The Master Plan is a bold, visionary roadmap for the restoration, revitalization and operation of the Union Station complex. As a high-level policy document it is intended to direct decision making for Union Station as it continues to evolve.

The Union Station Master Plan advocates for strong pedestrian connections leading to, through and from the Station. The Master Plan effectively reiterates and reorganizes a number of the existing policy directions and objectives as outlined above and includes input received from the USRPAG and others during the consultation process of developing the Master Plan. The Master Plan also defines the need for additional studies that are to be undertaken to help improve the overall pedestrian conditions /amenities both within the station and its environs.

The Union Station District Plan

Toronto City Council adopted the Union Station District Plan in May 2006. The District plan provides an opportunity to advance pedestrian issues in the vicinity of Union Station. The Plan makes several recommendations and pushes the pedestrian agenda in ways that are positive and proactive for the City of Toronto. The District Plan provides a vision for Union Station that integrates the historic character of the area while allowing the district to thrive as a multi-modal transportation hub. The Plan acts as a catalyst for urban improvement by:

- Delineating a Union Station Heritage Conservation District – clear guidelines for preserving and enhancing the historic character of the area
- Developing an improved public realm – shifts the design focus to the pedestrian sphere; and
- Enhancing connections and flow – acknowledges the multi modal and multi-directional "hub" that Union Station has become.

The District Plan sets out a number of guiding principles for the public realm that are intended to enhance and improve the pedestrian environment and better integrate the heritage and transportation requirements into the fabric of the downtown by improving pedestrian connectivity, enhancing pedestrian crossings and improving north-west PATH connectivity.

3.3 Council Direction

City Council, at its meeting on June 27, 28 and 29, 2006, adopted Clause No. 16(a) contained in Planning and Transportation Committee Report 4 entitled "Union Station District Plan - Area Bounded by Bay Street, Wellington Street - Simcoe Street, the Rail Corridor, Rees Street and Lake Shore Boulevard/Harbour Street", and in doing so, requested that staff take the necessary action on a priority basis to commence an Environmental Assessment (EA) for the creation of a new northwest PATH connection in accordance with the design directions noted in the Union Station District Plan (May 2006). Following Council's direction, the City of Toronto initiated a Municipal Class Environmental Assessment Study (Schedule 'C') for additional connections between Union Station to Wellington Street with assistance from GO Transit and retained a consulting engineering firm (Arup Canada Inc.) to provide engineering and project management services for the study.

3.4 Pedestrian Studies and Demand

The Union Station Master Plan (2004) and Union Station District Plan (2006) advocate strong pedestrian connections leading to, through and from the Station. They define parameters for specific studies that have been completed to identify opportunities and improve the overall pedestrian amenities within and in the vicinity of the Station. Since the adoption by city council of the Master Plan for station redevelopment, the City of Toronto Transportation Planning Department has commissioned Arup Canada Inc. to undertake two studies of pedestrian movement in and around Union Station. The *Union Station Area Pedestrian Study* identified present and future pedestrian conditions in the vicinity of Union Station and developed measures and infrastructure requirements needed to address increasing demands and improve the overall quality of the pedestrian environment at below and at-grade locations in the vicinity of Union Station. The *Union Station Internal Pedestrian Circulation Study* included an analysis of forecast pedestrian volumes and levels of service to confirm the adequacy of planned facilities at Union Station. The intent of this work has been to provide greater insight into the existing and future operation of Union Station from a pedestrian flow perspective and to refine concepts for the layout of retail, commercial and transit-related components.

Assessing Pedestrian Demand

Union Station Pedestrian Movement Study-Phase 1

The primary objective of the Phase 1 Study was to develop a quantitative picture of peak pedestrian flow conditions in and around Union Station, for both current and future forecast conditions, and to identify potential constraints impacting pedestrian flows associated with proposed concept plans for the Union Station revitalization. It was also intended that the data collected and generated would be sufficient to support more detailed flow analysis, through simulations and other analytical tools, in a future Phase 2 of the study. The Phase 1 work was also intended to support decision making, design efforts and operational planning for the revitalization of Union Station and the surrounding area.

The study was completed for two principal time frames; base (2003) conditions and projected 2021 conditions, corresponding to forecast horizons for the various transportation providers and the City of Toronto's employment and residential population data. A third 2011 condition was also documented on the basis of a straight line interpolation between 2003 and 2021. The analysis focuses on peak hour and peak 15 minute pedestrian movement volumes for the morning peak, the afternoon peak, Air Canada Centre special events, and Rogers Centre special events (refer to Figure 3).

The final report summarized a number of opportunities and constraints. This includes issues identified by the City of Toronto, agencies and public stakeholders. The issues identified were also used to assist in defining the scope and focus of subsequent Phase 2 pedestrian movement analysis and other related studies.

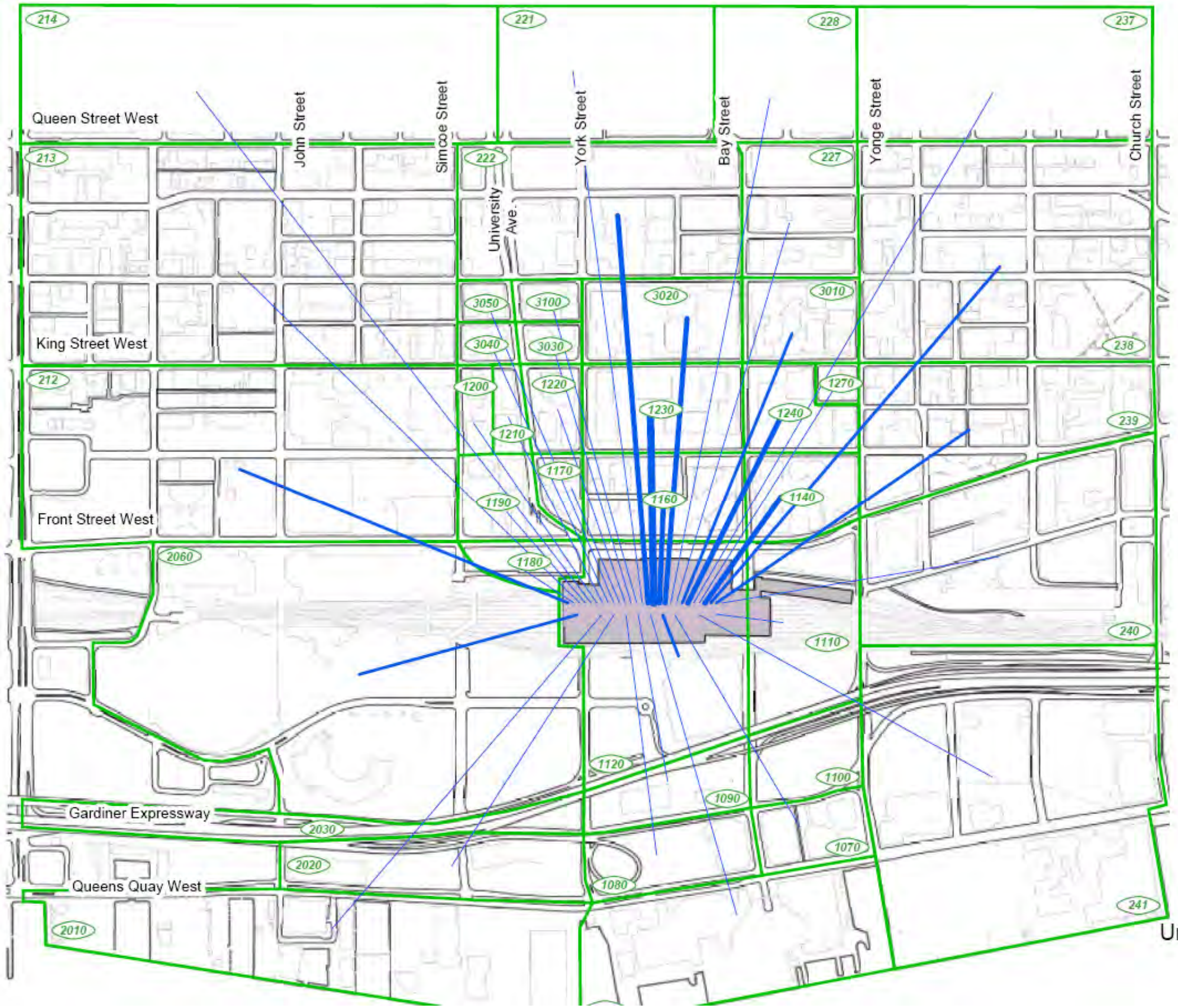
The Phase 1 Pedestrian Study highlights/supports the opportunity for:

- Providing additional linkages to the street and PATH network to ensure appropriate levels of pedestrian capacity, and further disperse pedestrian movement related to the Station
- Further planning and review of the Union Station Front Street Plaza and other areas external to the Station in the context of the Station Master Plan
- Further consideration of enhancing the porosity of the Station consistent with the Master Plan and the overall objective of minimizing bottlenecks and pedestrian congestion (eg. vertical transfers to the teamways from station platforms)

The Phase 1 Pedestrian Study highlighted the following constraints:

- There will continue to be a very heavy orientation of pedestrian flow between the Station and the downtown core, resulting in increasing congestion on the existing surface and below grade pedestrian network. This is likely going to require the introduction of several mitigating measures to improve (or at least not further degrade) future surface and below grade pedestrian conditions;
- The entry/exit points to Union Station (TTC station access and York Street exit in particular) represent the most critical points of potential congestion. The Phase 1 study recommended further simulation analysis and sensitivity testing to verify that vertical circulation and other corridors and spaces will operate at a satisfactory "Level of Service" (LOS).

Figure 3 - Mapping of Existing AM Peak External Station Trips



Existing AM Pedestrian Flows

Zone / Block Number	15 Minute	Hour
212	611	1632
213	166	441
214	187	491
221	337	892
222	945	2528
227	241	640
228	352	925
237	117	308
238	841	2225
239	524	1471
240	132	400
241	139	391
1060	122	343
1070	17	48
1080	287	806
1090	18	51
1100	0	0
1110	215	605
1120	592	1663
1140	1026	2843
1160	947	2618
1170	80	220
1180	72	202
1190	246	679
1200	170	471
1210	179	494
1220	261	723
1230	1545	4273
1240	1087	3013
1270	43	121
2010	50	145
2020	7	21
2030	0	0
2060	550	1549
3010	913	2426
3020	1042	2790
3030	89	238
3040	115	309
3050	47	125
3100	111	298

Notes

1.) Desire lines represent origin / destination demand volumes only. Desire lines are not intended to illustrate assignment of these volumes to any particular pedestrian facility in or around Union Station

Legend

Peak Direction Pedestrian Desire Lines

Existing AM 15 Minute Volume

- 0 - 460
- 461 - 920
- 921 - 1380
- 1381 - 1840
- 1841 - 2300
- 2301 - 2760

240 Zone / Block Number

Union Station Pedestrian Movement Study - Phase 1

Existing AM Pedestrian Desire Lines
Total External Station Trips

Union Station Internal Pedestrian Circulation Study – Phase 2

The intent of the Phase 2 study was to provide greater insight into the existing and future operation of Union Station from a pedestrian flow perspective and to refine concepts for the layout of retail, commercial and transit-related components within Union Station. This work was coordinated with other transportation planning elements (e.g. loading, servicing and taxi stands) and other initiatives in the immediate area. The work undertaken by Arup in Phase 2 was intended to answer four fundamental questions:

- How would the proposed Union Station Concept Plan support or otherwise impact pedestrian flow patterns?
- Was the Union Station Concept Plan appropriate from a pedestrian flow perspective?
- What are the internal and external congestion points, and what conditions may be causing congestion?
- Where are areas of flexibility that provide opportunities for other Precinct and Station revitalization initiatives?

Phase 2 of the Planning Study involved the creation of “agent based” simulation models of the facility. To accomplish this objective the first task was to improve the resolution of the information that was produced during Phase 1. Using a series of statistical methods, cross-checks, and operator-approved assumptions, Arup was able to produce a minute by minute breakdown of where pedestrians would enter the study area (origin) and where they would be going (destination) both in 2003 and in 2021.

Phase 2 focused on three distinct configurations for the station and surrounding environment, Current Configuration (2003), Future Concept Plan (2021), and Future Concept Plan (2021) with a new Northwest PATH connection (refer to Figure 4).

Figure 4 - Simulation Environment (2021)

All configurations were simulated with the pedestrian volume forecasts for the a.m. peak 15 minutes and the statistical outputs of these simulations defined in the final Arup report.

The results of the Phase 2 work predicted that the proposed northwest PATH link would be a critical element required to reduce pedestrian congestion in other areas of the station and enhance overall station efficiency.

Front Street Pedestrian Demand

Approximately 14,000 pedestrians currently exit northbound from Union Station to Front Street during the morning peak commuter period. During the same time, approximately 19,000 pedestrians utilize the existing PATH system. Future northbound exiting pedestrian volumes to Front Street are projected to increase to approximately 24,000 morning peak hour movements. Existing PATH volumes are forecast to increase to more than 36,000 hourly movements. Significant pedestrian volume increases are also anticipated at other peak times.

Of the 24,000 morning peak hour pedestrians that are forecast to exit to Front Street, approximately 13,000 are expected to continue travelling north, of which an estimated 4,700 to 6,100 will be oriented to the north and west. It is estimated that the Front Street / York Street University Avenue intersection will, at a maximum, accommodate an estimated 3,900 northbound pedestrians per hour.

As noted above, the Phase 1 Report confirmed the technical viability of a new Northwest PATH link through a preliminary assessment of constraints and opportunities, while recommending further in depth study of key issues. The Phase 2 report also indicated that the proposed Northwest PATH link would reduce pedestrian congestion in other areas of the station (see Figure 5 - Transportation Network).

3.5 Problem or Opportunity Statement

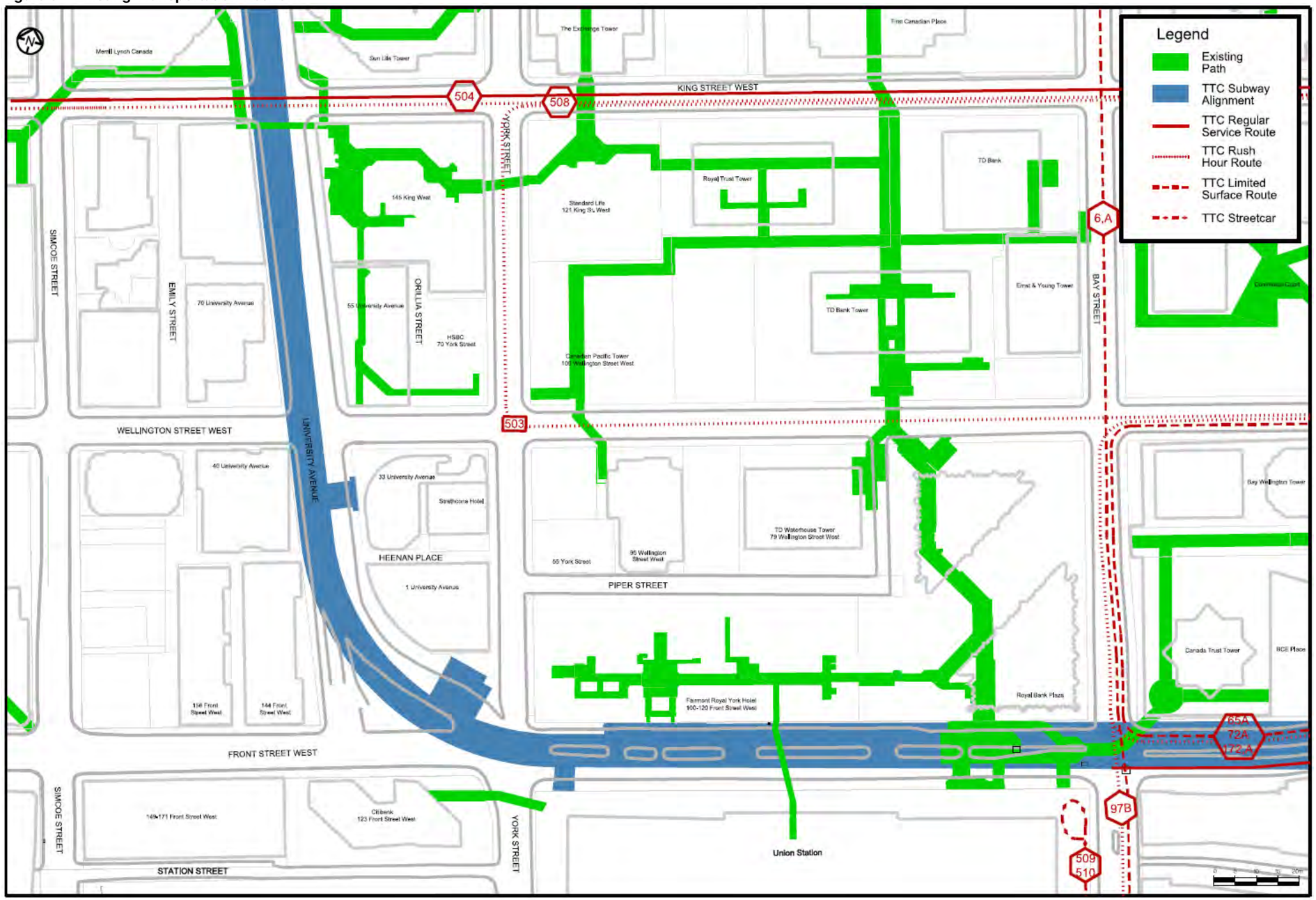
The projected pedestrian volumes at Union Station and in particular the pedestrian demands anticipated in the vicinity of Front Street and York Street / University Avenue have been examined as part of an overall pedestrian strategy for Union Station and its environs. The objective is to provide additional capacity, amenity and routing options to accommodate station related pedestrian activity.

The current facilities and operations will not adequately meet projected pedestrian demands nor provide any opportunity for redistribution of other existing PATH users who may be oriented north and west of the Station. Based on the results of pedestrian studies, there is a clear need for new northwest pedestrian connections to relieve current congestion and provide increased pedestrian capacity to accommodate the proposed new GO York Street concourse and destinations northwest of Union Station. Numerous planning documents also support the need for these connections, including the City of Toronto Official Plan, and the District Plan and Master Plan for Union Station.

New northwest pedestrian connections would serve to provide alternate routes from the planned GO Transit west concourse, thereby providing operational redundancy and flexibility in the PATH network. These connections would also reduce the peak-period bottleneck effect that currently exists at various locations throughout the PATH while serving to disperse underground pedestrian activity that is currently oriented to the east.

Additional pedestrian facilities, comprising an underground connection to the existing PATH network with parallel surface improvements, is the most comprehensive solution to the challenge of accommodating increasing pedestrian volumes at Union Station.

Figure 5 – Existing Transportation Network



There is also an opportunity to effectively coordinate the construction of new public infrastructure in the area. In particular, GO Transit's expansion program (GO TRIP) is proceeding with a number of important projects being planned for and developed at Union Station. GO Transit has indicated that the construction of the new northwest PATH pedestrian connection will be critical to the phasing of various projects, including the opening of a new York Street GO concourse area (targeted for 2012), and must move forward to design and implementation on an urgent basis.

Other work in the area that provides a coordination opportunity includes the Toronto Transit Commission's (TTC) $90 million Second Platform Project at Union Station, and the Front Street Reconfiguration Environmental Assessment Study (York Street to Bay Street) which is currently being initiated pursuant to Council's direction in consideration of the Union Station District Plan. The construction activities resulting from these projects provide an opportunity for the City to undertake street level and subsurface work in a coordinated approach that will minimize construction cost and disturbance to pedestrians and automobiles, and provide new pedestrian and transit infrastructure in a planned and efficient manner.

4 Existing Conditions

This section of the report describes the existing infrastructure and environmental conditions within the study area.

4.1 Transportation

Union Station is an amenity used by the entire region and by virtue of its daily transportation function, is essential to the region's economic competitiveness and well-being.

4.1.1 Pedestrian Network and PATH

The existing pedestrian network that connects Union Station with the surrounding neighbourhood is comprised of both at-grade open air (street sidewalk network) and sheltered routes located below-grade (PATH) and above-grade (Skywalk). Approximately 80% of the peak pedestrian volumes in and around Union Station are generated by GO Transit commuter rail passengers *(Union Station Pedestrian Movement Study-Phase 1, Part 1 Report - Preliminary External and Internal Pedestrian Movement Analysis, July 2005)*. The pedestrian network around Union Station (particularly to the north) is subjected to exceptionally high volumes of foot traffic during the morning and the evening commuter peak times. GO Transit's ongoing expansion initiatives will put additional pressures on the existing pedestrian network and infrastructure.

Pedestrian Network

York and Bay Streets are the busiest open air routes within the study area. The sidewalks along these two streets between the rail corridor and Wellington Street, as well as the cross walks at the Front Street intersections, are nearing capacity at the busiest times of the day. This leads to undesirable pedestrian behaviour including mid-block crossing and walking on the road surface to avoid pedestrian congestion.

The mid-block sidewalks along Front St. are busy but not as congested as those along York and Bay Streets. There is a significant amount pedestrians that cross Front St. between the Front St. entrance of Union Station and the driveway formed by the Royal York Hotel and the Royal Bank Plaza. Although this is not a defined public pedestrian corridor, this area is heavily used.

The sidewalks on University Avenue are generous enough that, despite significant volumes of pedestrians during peak times, there is unused capacity.

PATH Network

During the morning peak of pedestrian activity the connection from Union Station, through the TTC concourse, to the PATH network under the Royal Bank Plaza is congested. The volumes at this PATH connection are the highest for any sheltered connection to Union Station with approximately 2,700 people moving northbound through this area during the morning peak 15 minutes *(Union Station Pedestrian Movement Study-Phase 1, Part 1 Report - Preliminary External and Internal Pedestrian Movement Analysis, July 2005)*. The Union Station PATH connection to Brookfield Place (formerly BCE Place) located at the northeast quadrant of Union Station/moat is another very busy PATH route with approximately 1,970 people moving north through this connection during the morning peak 15 minutes *(Union Station Pedestrian Movement Study-Phase 1, Part 1 Report - Preliminary External and Internal Pedestrian Movement Analysis, July 2005)*.

The existing PATH connection from Union Station to the Royal York Hotel – one of the first PATH connections established - is relatively narrow with two significant vertical transitions as it crosses under the Union Station moat and below Front Street. As a result this connection is not heavily used.

There is an existing PATH connection located at the northwest corner of Union Station/ west moat wall that that crosses below York St and connects to the Citigroup Building. In the same general vicinity, the Skywalk connection from Union Station to the Metro Convention Centre/Rogers Centre is a wide sheltered above-

grade route with natural light from a continuous glass wall. This route is most heavily used before and after special events at the Rogers Centre and has been experiencing increased volumes as GO Transit's operations become increasingly oriented serving the west-end of the station (e.g. introduction of York teamway staircases at the west end of platforms).

4.1.2 Road Network

The transportation network within the Study Area is shown in Figure 5 of this report. The major arterial roads within the study area include: University Avenue, York Street, Wellington Street West and Front Street. Bay Street and King Street, although not located immediately within the study area provides an important transportation influence on the study area.

A traffic operations review was undertaken as a part of this study, which included compiling existing traffic volumes for the road network. Existing AM and PM peak hour volumes are summarized in Table 1.

University Avenue

University Avenue merges into York Street south of Front Street (refer to York Street Discussion). North of Front Street, University Avenue has a varying cross section consisting of four to six traffic lanes. Within the Study area, University Avenue is a busy major arterial street, with peak hour volumes ranging between 1,600 and 2,150 vehicles, and intersections operate at LOS C or lower. The curb lanes in each direction are used as drop-off and delivery areas. Access to a Toronto Parking Authority parking garage located underneath University Avenue south of Wellington Street is provided at the northwest quadrant of the University Avenue/Front Street intersection from University Avenue.

York Street

South of Front Street, York Street is a busy two-way major arterial, serving northbound York Street traffic, as well as northbound and southbound University Avenue traffic. (York Street is a one-way, northbound traffic only, minor arterial, north of Front Street). University Avenue and York Street merge into a single, two-way roadway (York Street) south of Front Street via a five-legged intersection at Front Street (refer to Figure 5). The complex intersection is heavily utilized by both vehicular and pedestrian traffic during both AM and PM peak hour periods. This intersection operates under capacity constrained conditions during the peak times.

North of Front Street, York Street is a one-way minor arterial street with four traffic lanes. At the west-side entrance to the Royal York Hotel (just north of Front Street) on York Street, there is a lay-by reserved for private automobiles, bus and taxi pick-up and drop-off. In addition to this lay-by area, York Street has four traffic lanes with the east and west curb lanes utilized for parking, deliveries and pick-up/drop-off areas. Traffic volumes on this section of York Street are typical of minor arterials, as described in the City of Toronto Road Classification System (June 2000).

Wellington Street West

Wellington Street West is a one-way westbound four-lane minor arterial road. The peak hour volumes range from 700 to 1350, and intersections operate at LOS C or lower. During the morning and afternoon peak periods (6am – 9am & 3pm – 6pm), Wellington Street West also accommodates (one-way, westbound) streetcar service from Church Street to York Street. Refer to Transit discussion for additional details.

Front Street

Front Street is currently subject to a large volume of passenger pick-up and drop-off activity in front of Union Station. There are approximately 11 spaces for taxis on the south side of Front Street at the west end of Union Station and five spaces at the east end of Union Station. This west end taxi stand is unrestricted (i.e., open to brokers and others). The remaining space directly in front of Union Station between York and Bay Streets is intended for private automobile passenger pick-up and drop-off and buses. It should be noted that

Table 1 – Traffic Volumes for Study Area Roads

Road	Classification [1]	Number of lanes*	Typical AADT for Classification; Min. Number of lanes[1]	Existing AADT[2]	Existing AM Peak Hour Volume[7] (Vehicles per hour)	Existing AM Peak Hour LOS[5] (based on speed of traffic)	Existing PM Peak Hour Volume[7] (Vehicles per hour)	Existing PM Peak Hour LOS[5] (based on speed of traffic)
University Avenue	Major Arterial	4 - 6	> 20,000; 4	30,000 to 35,000	1950 to 2050	C to F	1600 to 2150	C to E
York Street (South of Front Street)	Major Arterial	5	> 20,000; 4	38,000	2700	F	1850	F
York Street (North of Front Street)	Minor Arterial	4 (one-way northbound)	8,000 to 20,000; 2	8,500 to 14,000	550 to 1050	D	450 to 650	D
Wellington Street East	Minor Arterial	4 (one-way westbound)	8,000 to 20,000; 2	12,000 to 20,500	750 to 1100	C to F	700 to 1350	C to F
Front Street East	Minor Arterial	4 - 5	8,000 to 20,000; 2	22,000 to 24,000	1150 to 1250	D to F	1500 to 1600	D to F

Notes:

1. Road classification criteria based upon City of Toronto Road Classification System (June 2000).
2. Existing AADT is calculated as the sum of observed peak hour volumes.
3. Hourly volumes are rounded to nearest 50 vehicles.
4. Daily volumes are rounded to nearest 500 vehicles.
5. Synchro 7 arterial LOS analysis is based on speed.
6. Not including taxi stands, lay-bys, pick-up/drop-off areas.
7. Count locations: King Street @ Simcoe Street; King Street @ University Avenue; King Street @ York Street; Wellington Street @ Simcoe Street; Wellington Street @ University Avenue; Wellington Street @ York Street; Front Street @ Simcoe Street; Front Street @ University Avenue & York Street.

the Royal York Hotel also incurs significant drop-off and pick-up activity at various times of the day and during special events accommodated of the hotel. The taxi stands and passenger pick-up and drop-off areas on Front Street are highly utilized, which contributes to both pedestrian and traffic congestion on Front Street.

It should be noted that an Environmental Assessment, in accordance with the directions of the Union Station District Plan, will be undertaken in 2008. The purpose of this environmental assessment will be to fully evaluate and recommend a future Front Street configuration and surrounding transportation network operations. The environmental assessment would further examine and refine street configuration options, determine the preferred implementation for the short, medium and longer term, recommend priority areas for investment and identify components that should be coordinated with other capital works initiatives in the district.

Cycling Activities

Cyclist activities were observed within the study area but no specific cyclist counts were conducted to gauge activity. Improving cycling opportunities within the Union Station District is a priority for the City of Toronto. While there are bike lanes and routes being planned and proposed separately within the study area, only one signed bike route is established within the study area on Bay Street. A new secure bike station location is currently under consideration for the York Street teamway.

4.1.3 Transit

Union Station

Union Station functions as Toronto's transportation hub for VIA rail passenger rail, GO Transit commuter trains and bus services and TTC subway and Harbourfront Light Rapid Transit (HLRT) services.

Every year, Union Station handles more passengers than all three terminals at Pearson International Airport, the nation's busiest airport:

- 45 million GO Train and bus passengers
- 20 million TTC subway passengers
- 2.4 million VIA passengers

GO Transit Rail and Bus Service

GO Trains and GO Buses serve a population of more than five million in an 8,000-square-kilometre area (3,000 square miles) extending from downtown Toronto to Hamilton, Milton, and Guelph in the west; Orangeville, Barrie, and Beaverton to the north; Stouffville, Uxbridge, and Port Perry in the northeast; and Oshawa and Newcastle in the east. The buses widen its service as far as 100 kilometres (over 60 miles) from downtown Toronto. GO connects with every municipal transit system in the Greater Toronto and Hamilton areas, including the Toronto Transit Commission (TTC).

GO Transit's seven train lines are Lakeshore West, Milton, Georgetown, Bradford, Richmond Hill, Stouffville, and Lakeshore East. At peak rush-hour periods, train service is available at all stations.

In weekday off-peak hours, trains run only on the Lakeshore between Oshawa in the east and Aldershot in the west, and on the Georgetown line between Union Station in the east and Bramalea in the northwest. On weekends, trains run only between Oshawa in the east and Aldershot in the west. Bus connections extend the Lakeshore service to Newcastle in the east and Hamilton in the west.

Off-peak GO Buses between Union Station and other train stations (sometimes nicknamed train-buses) give passengers more choice when travelling to and from downtown Toronto before and after rush hour when the trains aren't scheduled to run, even on weekends. More riders are choosing Union Station buses because of the flexibility of travelling one way by train and the other by bus.

Every business day, Union Station serves more than 155,000 GO train passengers and some 10,000 GO bus passengers. This number is expected to significantly increase over the next 20 years as GO Transit's expansion plans are realized. GO Transit estimates that about 1.5 billion kilometres of automobile travel per year is currently deferred by commuters using the GO system rather than driving. If these same commuters were to drive motor vehicles, 48 lanes of highways would need to be added to accommodate the increase in traffic volume. Figure 6 illustrates the GO Transit System, which primarily radiates from Toronto's Union Station.

Toronto Transit Commission (TTC)

The TTC's Union Station subway station is the fourth busiest station in the TTC system, used by 75,000 passengers a day or 20 million a year. The TTC operates 52 trains through Union Station in the busiest hour of the morning rush period - an average of one train every 70 seconds. The TTC operates 700 trains through Union Station on weekdays.

The TTC Yonge-University subway line is aligned underneath Front Street from east of Bay Street to York Street. At York Street, the east-west alignment of the tunnel transitions to a north-south direction below University Avenue. Union Subway Station and St. Andrews Subway Station (at University Avenue and King Street) are the two subway stations located within the study area.

The study area also includes TTC streetcar services on King Street and Wellington Street. Two different routes (King 504, Lake Shore 508) are available on King Street the rush hours, including one regular service route (King 504). Only rush hour service is available on the Wellington route (Kingston 503). Ridership is approximately 13,000 daily on the King Street 504 and about 1,000 daily on the Kingston 503. Figure 7 illustrates all TTC routes and services within the study area and Toronto's Downtown.

VIA Rail and VIA Rail, Amtrak and Ontario Northland Rail Service

Union Station is VIA Rail's busiest station with over 50 per cent of all VIA passengers using this station. On average, 44 VIA Rail trains use Union Station daily. Union Station also provides access to other long distance train services, provided by Amtrak and Ontario Northland.

VIA Rail operates seven lines at Union Station, connecting Toronto to Montreal, Jasper, Vancouver, Kingston, Ottawa, Kitchener, Sarnia, London, Windsor and Niagara Falls. Total current annual ridership on the Toronto lines/utilizing Union Station is approximately 2.34 million.

Union Station to Lester B. Pearson International Airport Air Rail Link

A potential new rail service connecting Lester B. Pearson International Airport (LBPIA) to Union Station is currently undergoing an Individual Environmental Assessment. The proposed service would operate from LBPIA along a three kilometre (km) dedicated spur line at the airport to be built by the private sector, then along the existing 20 km Canadian National Railway (CN) Weston Subdivision line and connect onto GO Transit's (GO) Union Station Rail Corridor to its final destination at Union Station. The air-rail link would connect the biggest airport in Canada with the busiest surface passenger transportation hub in the country, potentially handling approximately 80,000 and 200,000 passengers, respectively per day. In conjunction with the Air-Rail Link Project, an Environmental Assessment (EA) is currently underway to study GO Rail service expansion along the GO Georgetown Corridor.

Figure 6 – GO Transit System Map

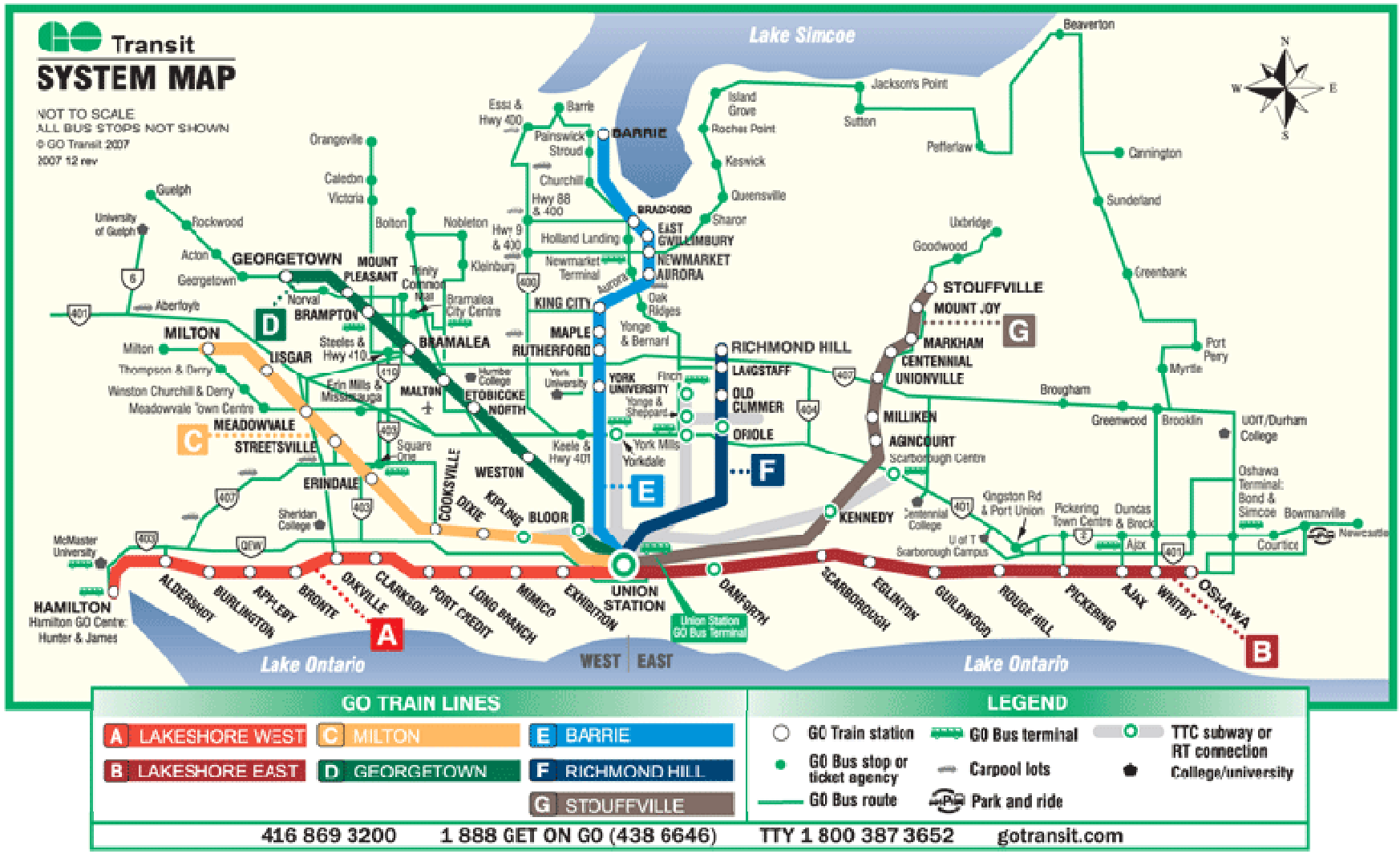


Figure 7 – TTC Routes and Services in Downtown Toronto

4.2 Utilities

The following section identifies the existing utilities within the project area and the potential impacts on the proposed tunnel construction. Figure 8 (below) provides an overview of the extent of the complex network of utilities present in the project area. A large format plan (Drawing U-1) of the utilities is provided in Appendix A.

Due to the complexity of the utility related issues on the project a Subsurface Utility Engineering SUE investigation was completed in accordance with the ASCE 38-02 – Standard Guidelines for the collection and depiction of Existing Subsurface Utility Data. For the purposes of this study, the SUE investigation was limited to Quality Level D-B information (a review of records and geophysical investigation); no test holes were completed. As part of the SUE investigation, a presentation was made at a Toronto Public Utility Coordinating Committee meeting on January 24, 2007 in addition to several meetings and consultation efforts between the project team and key utility companies to gather input on existing conditions and potential impacts.

The review of the records and DMOG mapping along with discussions and information received from some of the utility owners confirmed that there is information missing from the available utility map, and there was likely more deviations not identified. Due to the critical nature of this project it was imperative that the potential utility conflicts in the proposed corridor chosen for the new PATH tunnel were identified and included in the overall evaluation. The inaccuracy of the DMOG mapping resulted in the need for field investigations to be completed. The field investigations were necessary to verify the location of underground utilities within the preferred corridors, to help ensure that the most complete and accurate data was available and to gather depth information where required.

As the project moves forward to later design stages there may be a need to gather additional information in key areas to further confirm potential conflicts and implement solutions. There could be the requirement for test holes in order to determine the exact size and depth of some of the utilities. It will also be very important to have additional discussions with the utilities to further delineate details regarding costs and schedules for the relocations. All work relocations/supports must be completed based on the City's and various utility company's standards.

Utilities are a complicated arrangement of infrastructure some of which date back more than 50 years. Recently, telecommunications cables have been located within the right-of-way adding to the complexity of the network already in place.

A summary of each of the infrastructure components and their key plant is provided in the table and sections below. For detailed discussion of the existing utilities network in the study area, please refer to the Drawing U-1 and the SUE report provided in Appendix A.

4.2.1 Toronto Sewers

There are a number of different sewers within the project area. New PATH alternatives may impact these facilities, potentially requiring reconfiguration, replacement and/or relocation to accommodate construction. Sewer plant within the study area includes a 1050mm x 1575mm Interceptor sewer on the south side of Front Street, which will create a potential pinch point for tunnel alternatives. There is also a 750mm combined sewer on Front Street which runs over the current steam tunnel. On York Street, there is a combined 1050mm sewer, as well as a chamber south of Wellington Street West where 1350mm and the 450mm pipes combine into the 1050mm. On Piper Street, there is a 450mm combined sewer on Piper Street. There is also a 600mm sewer located along Wellington Street.

4.2.2 Toronto Water Mains

There are a number of water mains in the project area. The 300mm and 600mm water mains along Front Street are the two major water mains.

In addition, there are 150mm and 300mm water mains along York Street as well as a 300mm water main along Wellington Street West.

4.2.3 Toronto Hydro Structures

There are several Toronto Hydro Structures in the study area; in particular, two structures running along Front Street could cross potential new PATH tunnels aligned to connect to the existing PATH system to the north as well as a Toronto Hydro vault structure serving the Royal York Hotel. There are multiple Toronto Hydro ducts in the project area.

4.2.4 Street Lighting and Traffic Signals

Cabling for street lighting and traffic signals are typically located within the existing Toronto Hydro structures or dedicated small conduits/structures.

4.2.5 Enbridge Gas

Enbridge currently has both active and abandoned plants within the project area, including an abandoned 500mm and 600mm gas main on the south side of Front Street, as well as an abandoned gas main on the north side of Front Street and along York Street.

Other plants which may be a concern during design and construction in the study area are the existing 300mm gas main along Front Street and the gas services and mains along York and Wellington – and in particular the existing gas service connection to the Royal York.

4.2.6 Bell Telephone

Bell Canada currently has duct structures on either side of the road along York. There are currently no structures that run along Front street east of York. There is also a Bell structure running along the north side of Wellington Road, and during design and construction.

4.2.7 Ontario Hydro

Ontario Hydro has an existing plant running along Front Street and York Street. The plant consists of high voltage oil filled pipes. Ontario Hydro is currently in the process of installing new infrastructure along Front Street, into a deep tunnel under the roadway. The pipes are typically backfilled with heat conductive backfill to dissipate heat.

4.2.8 Enwave

There is a large Enwave Chamber in the middle of York Street, which provides access to the main cooling pipes that run out to Lake Ontario. Heating and cooling pipes exist along York. Enwave also has steam lines in the existing steam tunnel crossing Front Street. These steam lines currently provide heat to Union Station, and could possibly be used to heat the underground tunnel alternatives.

4.2.9 Rogers

Rogers fibre / coax cables exist in Toronto Hydro and Bell Canada structures on both York and Front Streets. It is also present in a joint trench on Front Street with GT and TELUS.

4.2.10 Telus

Telus fibre are present in three locations within the project. On Front Street, the plant is located within a joint trench with GT and Rogers. On York Street, fibre is located within a joint trench with GT, and on Wellington Telus is the sole owner of a trench running east to west across York Street.

4.2.11 Group Telecom (GT)

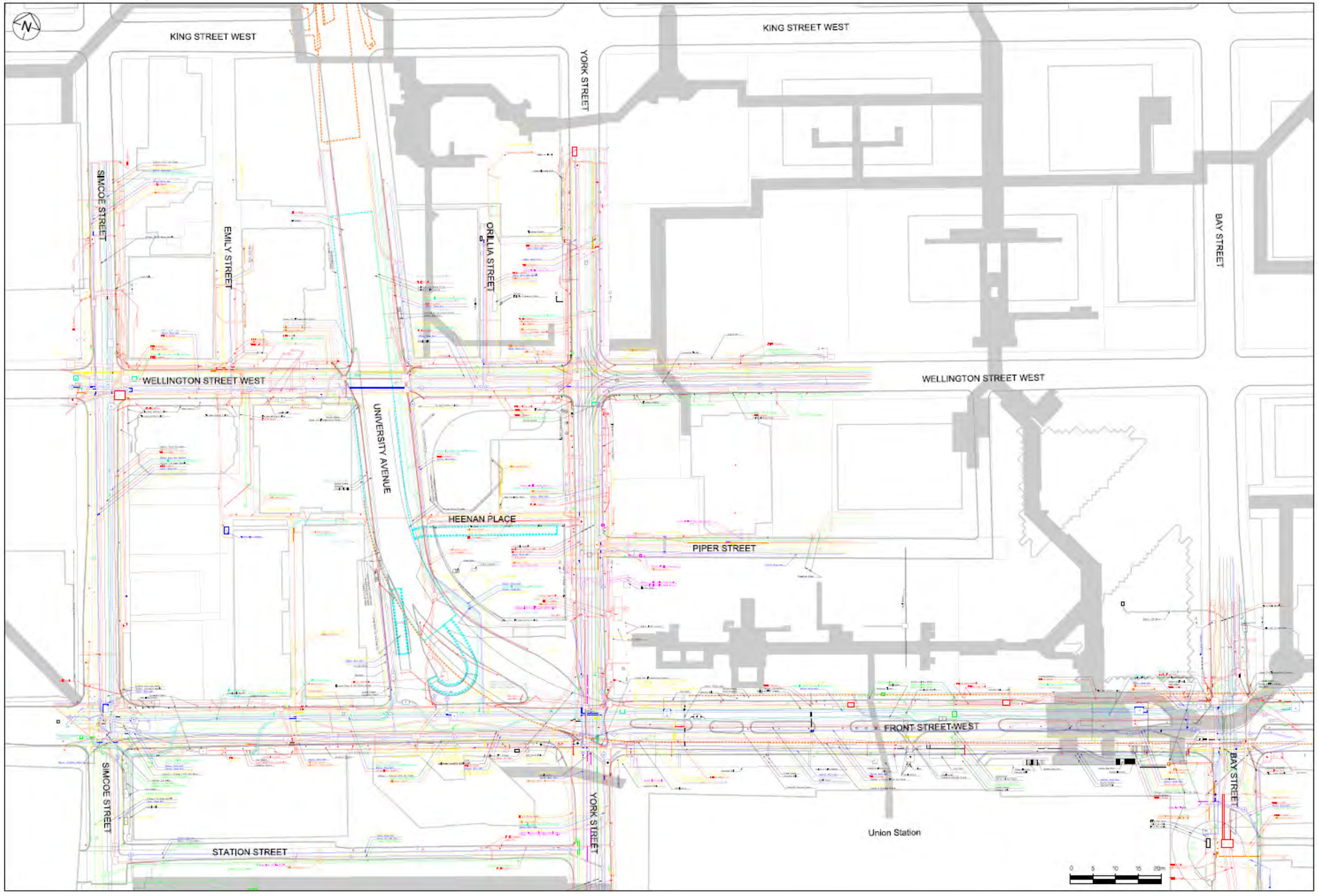
GT fibre exists in two locations within the project: On Front Street it is located within a joint trench with Telus and Rogers; and on York Street it is located within a joint trench with Telus.

Table 2 Summary of Utilities

Utility / Road	Toronto Sewers	Toronto Water Mains	Toronto Hydro Structures	Street Lighting	Enbridge Gas	Bell Telephone	Ontario Hydro	Enwave	Rogers	Telus	Group Telecom	Allstream
York Street	1050mm combined sewer runs along York Street from Front to just south of Wellington. 1350mm combined sewer runs from 1050 combined sewer north across Wellington. 450mm combined sewer runs from 1050 combined sewer north across Wellington. 900mm R.C.P. combined sewer crosses York just north of Front. 600mm V.P. combined sewer crosses York just north of Front. 300mm V.P. combined sewer crosses York just north of Front. 450mm V.P. combined sewer crosses York at Pipe. 225mm V.P. combined sewer crosses York at Heenan and ties into 1050mm sewer running along York.	150mm Water main runs along the west side of York from Front to Wellington. 300mm water main runs along the east side of York from Front to Wellington. 250mm watermain crosses York at Piper.	T.H.E.S. conduit runs along the west side of York from Front to Wellington. T.H.E.S. conduit runs along the east side of York from Front to Wellington. T.H.E.S. conduit crosses York between Front and Piper. T.H.E.S. conduit crosses York at Piper. T.H.E.S. conduit runs along Heenan and ties into conduit running along York.	Cabling for street lighting and traffic signals are generally located in existing Toronto Hydro structures.	50mm gas main runs along east side of York from Piper to Wellington. 100mm gas main runs along Heenan, crosses York continues running along the south side of Piper. 100mm gas main runs along the west side of York from Wellington north.	Conduit runs along west side of York Street from Front to Wellington. Conduit runs along the east side of York from Front to Wellington. Conduit crosses York just south of Piper. Conduit crosses York at Piper. Conduit runs along Heenan and ties into conduit running along east side of York.	H.E.P.C. 115 Kv Conduit runs along west side of York Street from Front to Wellington.	1200mm chilled water supply and return pipes run along York Street from Front to just south of Piper. A large chamber is located just south of Piper. 400mm steam main runs along east side of York from just south of Piper to Wellington. 925mm x 500mm steam main crosses York just south of Piper.	Rogers cable in Bell conduit on west side of York from Front to Wellington. Rogers cable in T.H.E.S. conduit on York from Front to Wellington. Rogers cable in Bell conduit crossing York onto Piper.	Telus cable in GT conduit on the west side of York from Front to Wellington. Telus cable in GT conduit crossing York onto Piper.	GT conduit on the west side of York from Front to Wellington. GT conduit crossing York onto Piper.	200mm H.P. abandoned water main (Metronet) runs along York Street from Front to Wellington.
University Avenue	600mm V.P. combined sewer crosses University on north side of Front. 450mm V.P. combined sewer crosses University and runs along University from Front to Wellington. 375mm V.P. combined sewer runs along the west side of University from Front to Wellington.	300mm water main crosses University and runs along the east side of University from Front to Wellington.	T.H.E.S. conduit crosses University and runs along the east side of University from Front to Wellington. T.H.E.S. cable runs along the west side of University from Front to Wellington.Bell c	Cabling for street lighting and traffic signals are generally located in existing Toronto Hydro structures.	300mm gas main crosses University and runs along the east side of University from Front to Wellington.	Bell conduit crosses University at Front.				Telus cable in joint trench (GT, Rogers, WFI) runs along the west side of University from Front to Wellington.	GT cable in joint trench (Telus, WFI) runs along the west side of University from Front to Wellington.	300mm H.P. abandoned water main (Metronet) crosses University and runs along the east side of University from Front to Wellington.
Wellington Street West	600mm R.C.P. combined sewer runs under Wellington crossing York. 675mm R.C.P. storm sewer runs from York along the south side of Wellington.	300mm water main runs along the south side of Wellington from crossing York. 150 mm water main runs along the north side of Wellington crossing York.	T.H.E.S. conduit runs along the south side of Wellington from University to Bay. T.H.E.S. conduit runs along the centre of Wellington from University to Bay.. T.H.E.S. conduit runs along the north side of Wellington from University to Bay.	Cabling for street lighting and traffic signals are generally located in existing Toronto Hydro structures.	150mm abandoned gas main runs along the south side of Wellington from University to York. 100mm abandoned gas main runs along the north side of Wellington from University to York. 150 mm gas main runs along the north side of Wellington from University to York. 50 mm gas main runs along the north side of Wellington from York to Bay.	Bell conduit runs along the north side of Wellington from just west of Orillia St. to Bay.				Telus cable in joint trench (GT WFI) runs along Wellington from University to York.	GT cable in joint trench (Telus WFI) runs along Wellington from University to York.	300mm H.P. abandoned water main (Metronet) runs along Wellington from University to York.
Front Street	1050mm x 1575mm E.S.Br. sanitary sewer runs along Front from west of York to Bay. 1500mm P.C.P. storm sewer runs along Front west of York. 750mm R.C.P. combined sewer runs along Front from York to Bay. 600mm V.P. combined sewer runs along Front west of York.	1200mm water main runs along the south side of Front from west of York to Bay. 300mm water main runs along Front from west of York to Bay. 600mm water main runs along Front from west of York to Bay.	T.H.E.S. 50mm iron pipe runs along the south side of Front west of York. T.H.E.S conduit runs along the south side of Front from west of York to Bay. T.H.E.S. conduit runs along the north side of Front from west of York to Bay.	Cabling for street lighting and traffic signals are generally located in existing Toronto Hydro structures.	600mm abandoned gas main runs along the south side of Front from York to Bay. 300mm gas main runs along Front from west of York to Bay. 500mm abandoned gas main crosses York on the south side of Front. 500mm abandoned gas main run along the north side of Front from York to Bay.	Bell conduit runs along the south side of Front from York west.	Ontario Hydro conduit runs along Front from west of York to Bay.	Steam line tunnel crosses Front just east of York.	Rogers cable in joint trench (GT, Telus, WFI) along Front from west of York to Bay.	Telus cable in joint trench (GT, Rogers, WFI) along Front from west of York to Bay.	GT cable in joint trench (Telus, Rogers, WFI) along Front from west of York to Bay.	300mm H.P. abandoned water main (Metronet) runs along Front from west of York to Bay. 2 x Unitel / Allstream conduit run along Front from west of York to Bay.

Figure 8 – Overview of Utilities Network in the Study Area

*(Note: Refer to Drawing U-1 in Appendix A for a full size drawing_*



4.2.12 Allstream (Formerly AT&T)

Allstream, a long-distance telephone service provider, has three structures located on Front Street - two are previously owned by Unitel and labeled as such in the DMOG mapping, the other is an abandoned water main in which an Allstream fibre is now routed.

4.3 Social Environment

4.3.1 City of Toronto Official Plan

The Official Plan policies for the City of Toronto are consistent with the Provincial Policy Statement and Provincial Growth Plan. The City's Plan contains more specific information and directions pertaining to the land use structure, with a vision of ensuring Toronto remain an attractive place to live and work.

The Study Area is not located within any of the City of Toronto's Official Plan Secondary Plan Areas but is located in proximity to the Railway Lands East Secondary Plan, which is located generally south of the Union Station complex.

4.3.2 Population and Employment

The study area is located within Ward 20 of the City of Toronto, as shown in Figure 9. It is bounded by Christie Street and Bathurst Street to the west, University Avenue to the east, the CPR tracks to the north and Lake Ontario to the south. Ward 20 has a physical area of eight square kilometres.

In 2001, Ward 20 had a total population of 51,210 and consisted of 25,180 households. There are a total of 5,665 employment establishments in Ward 20 and a total of 113,502 employees.

The study area is also located within Ward 28, as shown in Figure 10. It is bounded to the west by University Avenue, the Don River to the east, Queen Street East and Danforth Avenue to the north and Lake Ontario to the south. Ward 28 has a physical area of 14 square kilometres.

In 2001, Ward 28 had a total population of 59,160 and consisted of 28,585 households. There are a total of 5,062 employment establishments in Ward 28 and a total of 153,437 employees.

According to the 2006 Census conducted by Statistics Canada, the area bounded by Queen Street to the north, Front Street to the south, Simcoe Street to the west, and Yonge Street to the east has a population of 548 individuals.

4.3.3 Land Use Designations

In the City of Toronto Official Plan, land uses within the study area are designated as Mixed Use Areas, as shown in Figure 11. This designation permits a broad array of uses including but not limited to:

- Residential
- Offices, Hotels
- Retail and Services, Restaurants
- Institutions
- Entertainment
- Recreation and Cultural Activities
- Parks and Open Space

4.3.4 Adjacent Land Uses

Land uses within the study area consist primarily of commercial and office employment uses. There are a number of tourist-related uses, including the Royal York Hotel and Strathcona Hotel, and a variety of fast-food and full serve restaurants. Retail uses are located in the PATH system within the Royal York Hotel

and Union Station, and along York Street, University Avenue, and Wellington Street. There is one condominium tower located at 33 University Avenue. The University Avenue Toronto Parking Authority parking garage, which is generally located below University Avenue, provides parking for approximately 320 vehicles.

4.4 Natural Environment

The study area is highly urbanized, therefore there are no watercourses, woodlots, wildlife, or water resources within the study area due to the built up nature of the downtown. The only vegetation in the study area consists of street trees and other landscaping. The existing street trees on York Street between Front and Wellington represent a mix of species, sizes, and conditions. Existing tree species include Gelditsia (Honey Locust) and Fraxinus (Ash). All existing trees are planted within tree pits without irrigation.

4.5 Cultural Environment

There are a number of designated built heritage features within the Study Area. Union Station is a federally designated National Historic Site and is protected under a Heritage Easement Agreement that defines the design intent and limitations on alterations that can be made to the Station. The Royal York Hotel is part of the Union Station Heritage Conservation District.

Other municipally listed heritage buildings include:

- Prudential House: 55 York Street.
- The Toronto Club: 107-109 Wellington Street West.

Figure 9 – Map of Ward 20

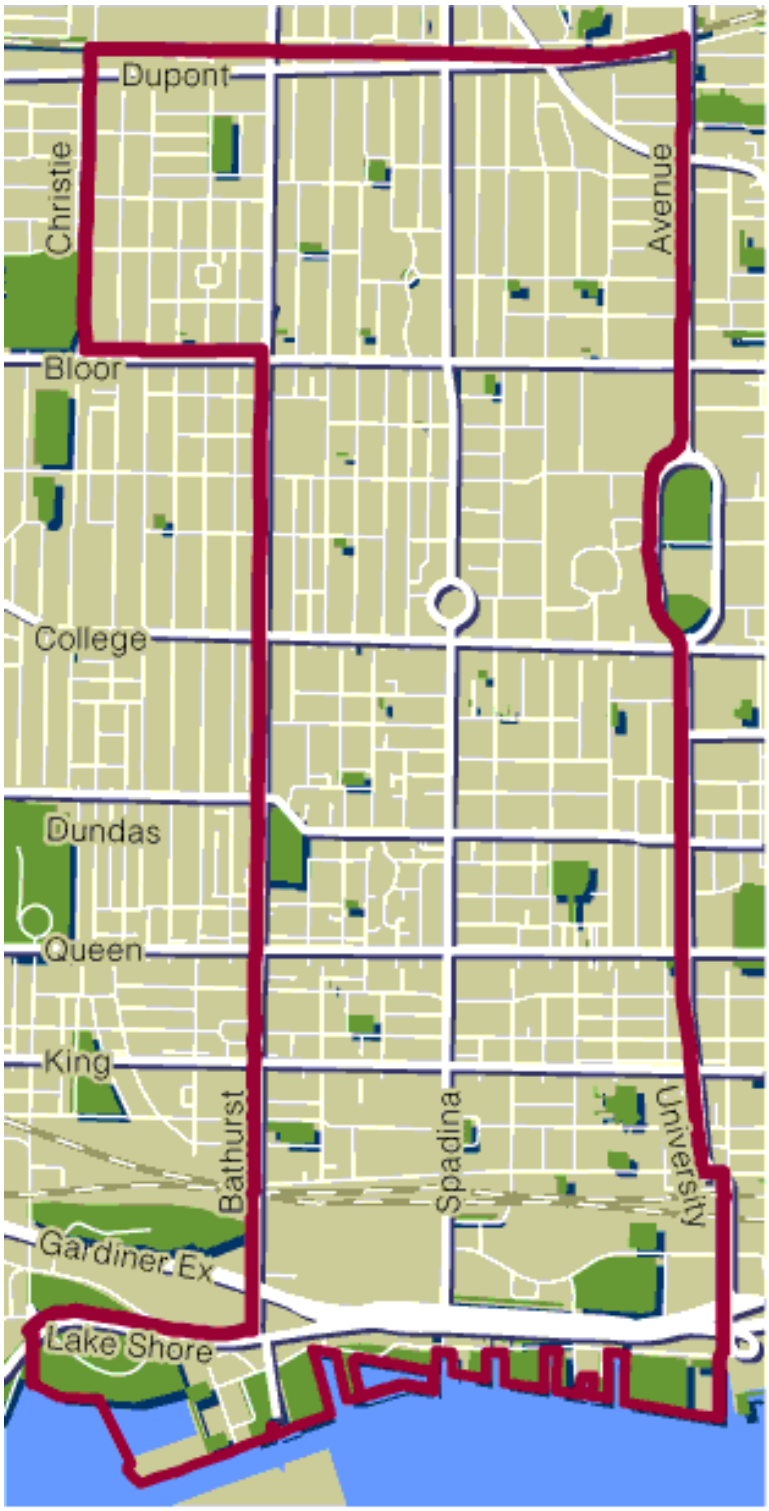
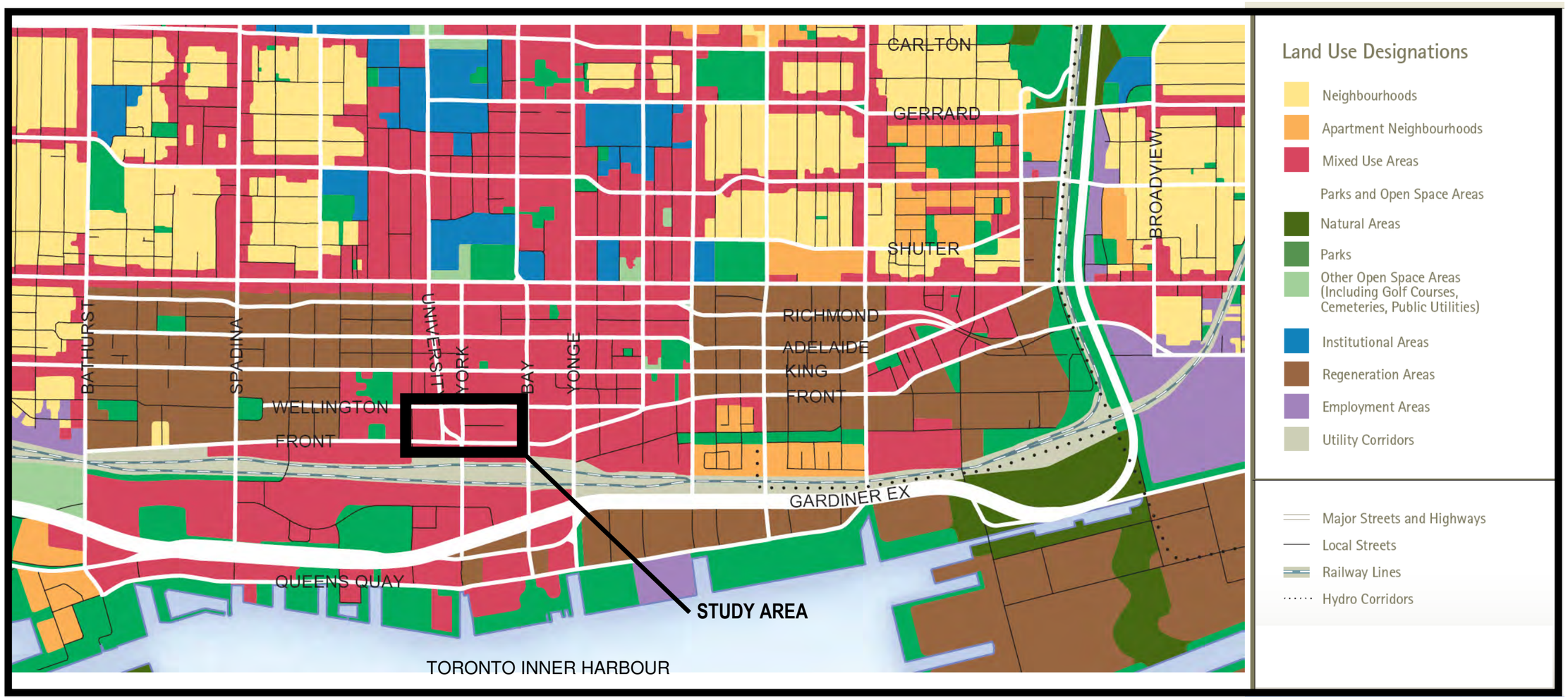


Figure 10 – Map of Ward 28

Figure 11 – Land Use Designations



Source: Toronto Official Plan Map 18 Land Use Plan, August 2007

5 Alternative Planning Solutions

The Alternative Planning Solutions Phase of this study involved several considerations of note:

1. The problem opportunity statement for this project is specific to an overwhelming need to plan for and prepare for significant pedestrian demands in the study area over the next 15 to 20 years and beyond. As such, the study team recognized the need to include planning solutions that would accommodate demand through potential underground PATH connections as well as improvements to at-grade surface/pedestrian realm improvements, such as those envisioned in the Union Station District Plan (e.g. wider sidewalks, improved pedestrian crossing conditions);
2. The alternative solutions were presented to a stakeholders workshop held on January 30, 2007 and to the public at PIC #1 on February 26, 2007. Comments from the public and study stakeholders were considered and incorporated into the alternative solutions phase of this study.

This section provides a detailed description of the alternative planning solutions that were considered during Phase 2 of the Municipal Class EA, the methodology for evaluating these alternatives, and the results of the evaluation, including the selection of a preferred alternative solution.

5.1 Description of Alternative Solutions

Alternative 1 - Do Nothing

As the name implies this solution makes no interventions whatsoever in the study area. In accordance with EA requirements, this alternative was included in the evaluation process to highlight the potential of the other solutions to improve conditions within the study area.

Alternative 2 - Surface Improvements

Improvements would include sidewalk widening (as a result of reduced traffic lanes), traffic signal timing adjustments, and streetscape enhancements such as plantings. Effort would have to be given to ensuring that pedestrians have good access to street level from Union Station.

Alternative 3 - Improvements to existing underground routes

Efforts would be made to expand the existing capacity of the PATH connections, including those through the Fairmont Royal York, Citigroup Building, and the RBC Tower. As the pre-existing structures are private property or historically listed it is anticipated that there is very little room for improvements on these routes.

Alternative 4 - New Underground Routes

This solution proposes the construction of an entirely new, entirely underground connection to the existing PATH network. The potential alignments for such a solution remain under study but the issues for any application of this solution are substantially the same.

Alternative 5 - New Underground Routes Connecting to Surface Improvements

This solution would involve the construction of a new underground route that would at some point ascend to an improved surface route.

Alternative 6 - New Underground Routes in Parallel with Surface Improvements

This solution proposes both a new underground connection to the existing PATH network with parallel surface improvements. This solution is the most comprehensive solution to the problem of expanding pedestrian demand/volumes at Union Station.

5.2 Evaluation Methodology

Taking the existing environment into consideration, the alternative solutions were comparatively evaluated according to a descriptive or qualitative assessment. A qualitative assessment was chosen as this method is suited to identifying the differences between alternatives and enables the public, stakeholders and review agencies to better understand the reasons that support the recommendations.

Evaluation criteria were developed to address the following elements of the environment: policy and planning, transportation, geotechnical and engineering, socio-economic, and cultural. The policy and planning criteria were used to determine the conformance of the proposed solutions with existing policies and municipal government directives. The transportation criteria define the likely success of each proposed solution in accommodating the growing volumes of pedestrian traffic at Union Station. The geotechnical/engineering criteria were used to evaluate technical issues such as constructability, maintenance, traffic impacts, and cost. The socio-economic environment criteria evaluated the effects on the surrounding neighbourhood during and after the implementation of any solution. The cultural criteria examined the effects of the proposed solutions on the historic fabric of the study area. Table 3 provides a list of the evaluation criteria.

Once developed, the evaluation criteria were used to comparatively evaluate the five alternative solutions and identify a technically preferred alternative solution through a “net effects analysis” consisting of the following steps:

1. Apply the evaluation criteria to each of the alternative solutions to identify the potential effects on the environment.
2. Identify reasonable mitigation measures available to avoid or minimize any potential negative environmental effects on the environment.
3. Apply the mitigation measures to identify the net positive or negative effects on the environment.
4. Identify the relative advantages and disadvantages for each alternative solution based on the net environmental effects.

5.3 Evaluation Summary

The alternative solutions were analyzed to identify differences in their net effects on the environment as summarized in Tables 4 and 5 below.

Table 3 – Evaluation Criteria Alternative Planning Solutions

Environment	Criteria	Intent
Policy and Planning	Conformity with policies of City of Toronto Official Plan	Assess consistency with City of Toronto OP policies and schedules
	Conformity with policies of Central Waterfront Secondary Plan	Assess consistency with Central Waterfront Secondary Plan policies and schedules
	Agreement with the objectives of Union Station Master Plan	Assesses consistency with Union Station Master Plan policies and schedules
	Agreement with direction from Toronto City Council	Assess consistency with City Council's direction to staff to commence an Environmental Assessment (EA) for a new northwest PATH connection
Transportation Environment	Pedestrian flow diverted from existing PATH network	Assess ability to divert users from existing PATH routes
	Pedestrian flow capacity where required	Assess potential for fluid pedestrian movement in highly travelled corridors and to relieve congestion
	Ease of use for pedestrians	Assess directness of pedestrian connections and degree of vertical circulation (i.e., stairs, elevators, etc.)
	Protection of pedestrians against inclement weather	Assess the degree of enclosure or separation from the natural elements
	Potential for Overcrowding	Assess the ability to provide a spacious pedestrian environment
	Safety of Pedestrians	Assess the opportunities to provide public animation, public interaction and flexibility of pedestrian connections
	Connectivity with the existing PATH network	Assess the ability of connecting to the current pedestrian network (e.g. flexibility, reliability, route choices)
Geotechnical/ Engineering Environment	Potential effect on existing structures and operation	Assess the potential impact to surrounding buildings
	Ease of Construction	Assess the complexity of constructing new pedestrian connections
	Limited staging costs and delays during construction	Assess the potential for impediments to the construction process
	Potential effect on public transit during construction	Assess the potential for interruptions to operation of the subway system during construction
	Potential effect on vehicular traffic flow during construction	Assess the potential for interruptions to traffic during construction including buses and streetcars
	Potential effect on station pedestrian flow during construction	Assess the potential for interruptions to pedestrian movement at Union Station during construction
	Frequency of maintenance	Assess how often pedestrian connections and their associated features (e.g., landscaping for surface improvements) would have to be maintained
	Minimize cost of implementation	Assess relative cost of constructing pedestrian connection
	Potential conflicts with existing utility services	Assess the potential for minimizing conflicts and disruptions to utilities (hydro, phone lines, sewer and watermains etc.)
Socio-Economic Environment	Potential nuisance effects on adjacent uses during construction	Assess potential impacts of construction (Noise, dust, vibrations, etc.)
	Potential effects on existing land uses and proposed developments	Assess the potential for businesses to benefit from their proximity to the pedestrian connection
	Minimize acquisition of private property for public use	Assess the potential for acquiring private property to construct the pedestrian connection
	Improvements to aesthetic experience of pedestrians	Assess the potential to make the pedestrian connection a pleasant pedestrian environment
	Pedestrian draw/attraction	Assess the likelihood that pedestrians will use the new connection
	Retail development opportunities	Assess the potential for providing new retail opportunities
	Public amenity opportunities	Assess the potential to provide amenities such as washrooms, telephone booths, and drinking fountains
Cultural Environment	Potential effects on designated heritage features	Assess the potential of new pedestrian connections intersecting with designated heritage properties

Table 4 – Comparative Evaluation Summary of Alternative Planning Solutions

Evaluation Criteria	Alternative 1 Do Nothing	Alternative 2 Surface Improvements to Above-ground Pedestrian Facilities	Alternative 3 Improvements to Existing Underground Routes	Alternative 4 New Underground Routes	Alternative 5 New Underground routes connecting to Surface Improvements	Alternative 6 New Underground Routes in Parallel to Surface Improvements
Policy and Planning Environment						
Conformity with policies of City of Toronto Official Plan Assesses consistency with City of Toronto OP policies & schedules						
Conformity with policies of Central Waterfront Secondary Plan Assesses consistency with Central Waterfront Secondary Plan policies & schedules						
Agreement with the objectives of Union Station Master Plan Assesses consistency with Union Station Master Plan policies & schedules						
Agreement with direction from Toronto City Council Assesses consistency with City Council's direction to staff to commence an Environmental Assessment (EA) for a new northwest PATH connection						
Transportation Environment						
Pedestrian flow diverted from existing PATH network Assesses ability to divert users from existing PATH routes						
Pedestrian flow capacity where required Assesses potential for fluid pedestrian movement in highly travelled corridors and to relieve congestion						
Ease of use for pedestrians Assesses directness of pedestrian connections and degree of vertical circulation (i.e., stairs, elevators, etc.)						
Protection of pedestrians against inclement weather Assesses the degree of enclosure or separation from the natural elements						
Potential for Overcrowding Assesses the ability to provide a spacious pedestrian environment						
Safety of Pedestrians Assesses the opportunities to provide public animation, public interaction and flexibility of pedestrian connections						
Connectivity with the existing PATH network Assesses the ability of connecting to the current pedestrian network						
Geotechnical / Engineering Environment						
Potential effect on existing structures and operation Assesses the potential impact to surrounding buildings						
Ease of Construction Assesses the complexity of constructing new pedestrian connections						
Limited staging costs and delays during construction Assesses the potential for impediments to the construction process						
Potential effect on public transit during construction Assesses the potential for interruptions to operation of the subway system during construction						
Potential effect on vehicular traffic flow during construction Assesses the potential for interruptions to traffic during construction including buses and streetcars						
Potential effect on station pedestrian flow during construction Assesses the potential for interruptions to pedestrian movement at Union Station during construction						
Frequency of maintenance Assesses how often pedestrian connections and their associated features (e.g., landscaping for surface improvements) would have to be maintained						
Minimize cost of implementation Assesses relative cost of constructing pedestrian connection						
Potential conflicts with existing utility services Assesses the potential for intersecting with a utility (hydro, phone lines, etc.)						
Socio-Economic Environment						
Potential nuisance effects on adjacent uses during construction Assesses potential impacts of construction (Noise, dust, vibrations, etc.)						
Potential effects on existing land uses and proposed developments Assesses the potential for businesses to benefit from their proximity to the pedestrian connection						
Minimize acquisition of private property for public use Assesses the potential for acquiring private property to construct the pedestrian connection						
Improvements to aesthetic experience of pedestrians Assesses the potential to make the pedestrian connection a pleasant pedestrian environment						
Pedestrian draw/attraction Assesses the likelihood that pedestrians will use the new connection						
Retail development opportunities Assesses the potential for providing new retail opportunities						
Public amenity opportunities Assesses the potential to provide amenities such as washrooms, telephone booths, and drinking fountains						
Cultural Environment						
Potential effects on designated heritage features Assesses the potential of new pedestrian connections intersecting with designated heritage properties						
Legend and Total Score for Each Alternative						
Very Good	2	8	1	13	7	15
Good		6	1	2	9	1
Neutral	13	8	12	2	2	3
Poor		4	5	6	6	3
Very Poor	13	2	8	5	4	6

Table 5 – Comparative Evaluation of Alternative Planning Solutions

Evaluation Criteria	Alternative 1 Do Nothing	Alternative 2 Surface Improvements	Alternative 3 Improvements to Existing Underground Routes	Alternative 4 New Underground Routes	Alternative 5 New Underground Routes Connecting to Surface Improvements	Alternative 6 New Underground Routes in Parallel to Surface Improvements Preferred Alternative Planning Solution
Policy and Planning ▪ Conformity with policies of City of Toronto Official Plan ▪ Conformity with policies of Central Waterfront Secondary Plan ▪ Agreement with the objectives of Union Station Master Plan ▪ Agreement with direction from Toronto City Council	As the Official Plan, the Union Station Master Plan, and City Council direction all recommend the expansion of the PATH network at Union Station - the do nothing solution does not effectively address the criteria of this criteria group.	This solution would create enhanced capacity and amenity for pedestrians within the study area, which is in line with the Official Plan. This solution is not fully consistent with the direction of the Union Station Master Plan or city council, which both recommend that direct underground connection to the existing PATH network be considered.	This approach does not provide the level of improvement called for in other existing planning documents or in council's direction with regard to a new northwest PATH connection.	A new underground PATH connection aligns very closely with the direction set out in all applicable City of Toronto planning documents and council direction.	A new underground PATH connection aligns closely with the direction set out in all applicable City of Toronto planning documents and council direction. While this option is not completely underground it offers a much improved route alternative to the northwest of Union Station that avoid the complicated pedestrian intersection at Front and York Streets.	A new underground PATH connection aligns very closely with the direction set out in all applicable City of Toronto planning documents and council direction. The Union Station District Plan recommends improved surface routes as a priority.
Transportation ▪ Pedestrian flow diverted from existing PATH network ▪ Pedestrian flow capacity where required ▪ Ease of use for pedestrians ▪ Protection of pedestrians against inclement weather ▪ Potential for Overcrowding ▪ Safety of Pedestrians ▪ Connectivity with the existing PATH network	Doing nothing to accommodate the forecast increase in pedestrian volumes within the study area will effectively decease the comfort and safety of pedestrians as time goes by. For this reason doing nothing is the least preferred of all the solutions considered with respect to solving the primary issue outlined in the problem and opportunity statement.	Improvements to the surface routes will have a positive impact on the safety of pedestrians who choose surface routes, and may help to relieve some overcrowding. These measures will not adequately provide shelter during inclement weather or temperature extremes. As a result the crowding on existing PATH routes will continue to be a worsening problem, when outside conditions are less than ideal.	As the potential for capacity improvements on these routes is quite small there is little expectation of improved safety or comfort for pedestrians. Improvements to existing routes will not address the concern that there are currently no direct connections to the PATH network to the northwest of Union Station. Additionally this solution does not address the safety concerns associated with busy and narrow sidewalks within the study area.	This solution will provide improvement in pedestrian traffic capacity leading to improved routing options, increased shelter, and better distribution of pedestrian traffic within Union Station and the larger study area. The only negative evaluation in this criteria group is that it does not address the safety concerns associated with busy and narrow sidewalks within the study area.	This solution will provide improvement in pedestrian route options and limited increased shelter leading to better distribution of pedestrian traffic within Union Station and the larger study area. Additionally this solution will address the safety concerns associated with busy and narrow sidewalks within the study area.	This solution will provide the largest improvement in pedestrian traffic capacity with improved routing options, increased shelter, and better distribution of pedestrian traffic within Union Station and the larger study area. Additionally this solution will address the safety concerns associated with busy and narrow sidewalks within the study area.
Geotechnical/ Engineering ▪ Potential effect on existing structures and operation ▪ Ease of Construction ▪ Limited staging costs and delays during construction ▪ Potential effect on public transit during construction ▪ Potential effect on vehicular traffic flow during construction ▪ Potential effect on station pedestrian flow during construction ▪ Frequency of maintenance ▪ Minimize cost of implementation ▪ Potential conflicts with existing utility services	Because there is no intervention there are no engineering or geotechnical concerns to consider.	This solution will have minimal impact on the structure or operation of the buildings and businesses within the study area during construction. Transit will not be extensively affected. There may be interruptions in vehicle traffic during construction and vehicle traffic capacity may be permanently reduced to accommodate sidewalk expansion. There will be a minimal impact on existing utilities and this option has the lowest cost of all the intervention-based solutions.	The existing routes through buildings in the study area are all bound by the existing building structures and services. To move or demolish this existing infrastructure will be difficult, costly, and disruptive to existing pedestrian flows.	This solution will be moderately complicated in terms of construction staging, utilities relocation, and impacts on existing structures. These factors make this solution relatively expensive. There will also be impacts on surface traffic (pedestrians, vehicles, and transit) during construction and some permanent reduction in vehicle traffic lanes to widen the sidewalks.	This solution will be moderately complicated in terms of construction staging, utilities relocation, and impacts on existing structures. These factors make this solution relatively expensive. There will also be impacts on surface traffic (pedestrians, vehicles, and transit) during construction and some permanent reduction in vehicle traffic lanes to widen the sidewalks.	This solution will be the most complicated in terms of construction staging, utilities relocation, and impacts on existing structures. These factors make this solution relatively expensive. There will also be impacts on surface traffic (pedestrians, vehicles, and transit) during construction and some permanent reduction in vehicle traffic lanes to widen the sidewalks.
Socio-economic ▪ Potential nuisance effects on adjacent uses during construction ▪ Potential effects on existing land uses and proposed developments ▪ Minimize acquisition of private property for public use ▪ Improvements to aesthetic experience of pedestrians ▪ Pedestrian draw/attraction ▪ Retail development opportunities ▪ Public amenity opportunities	While there will be no negative impact on the study area due to construction, the lack of adequate facilities resulting from a do nothing approach prevents the area from growing as an attractive and accessible destination for pedestrians.	As all improvements will happen within existing public rights of way there will be no need to acquire access to private property. The aesthetic experience of the area will improve with more space and amenity provided to pedestrians.	Any modest gains to route capacity would come at great expense and disruption for the already busy existing routes and associated businesses for the duration of construction. City has very limited control on improving underground pedestrian routes located on private property or addressing potential impact and mitigation.	While this solution will have temporary negative impacts on the areas adjacent to construction, the overall impact on the study area will be positive. Adjacent properties will become more attractive and the overall experience of pedestrians will be more comfortable with new connection to buildings from the new PATH tunnel. There will be new retail and amenity opportunities associated with this tunnel.	While this solution will have temporary negative impacts on the areas adjacent to construction, the overall impact on the study area will be positive. There will be new retail and amenity opportunities associated with the new PATH tunnel. The improved surface amenity will further enhance this area as an attractive and vibrant pedestrian environment.	While this solution will have temporary negative impacts on the areas adjacent to construction, the overall impact on the study area will be positive. Adjacent properties will become more attractive and the overall experience of pedestrians will be more comfortable with direct connections from the new PATH tunnel to these buildings. There will be new retail and amenity opportunities associated with this tunnel. The improved surface amenity will further enhance this area as an attractive and vibrant pedestrian environment.
Cultural ▪ Potential effects on designated heritage features	There will be no impact on the historical nature of the area.	There will be little to no impact on the historical fabric of the study area.	There will be little to no impact on the historical fabric of the study area.	There will be some impact on the heritage structures at Union Station, as this solution will require new openings in the moat retaining wall.	There will be some impact on the heritage structures at Union Station, as this solution will require new openings in the moat retaining wall.	There will be some impact on the heritage structures at Union Station, as this solution will require new openings in the moat retaining wall.

5.4 Preferred Alternative Solution

As noted previously, the new Toronto Official Plan has had an important influence on how transportation planning matters are approached within the City. One of the main objectives of the Official Plan is to take a more comprehensive approach that links land use and transportation planning policies to create an effective strategy for accommodating the City's future trip growth in a way that reduces auto-dependency by making transit, cycling and walking more attractive alternatives. This new approach is increasingly reflected in the City's guidelines, programs and practices which promotes walking as a mode that encourages both health and transportation benefits – cornerstones of comprehensive City building.

Considering the importance of the downtown core to the Greater Toronto Area with its financial, cultural, and administrative centres, and the prominence of Union Station, as the City and regional transportation hub, the solution to the problem of increased pedestrian demand in this area should be governed by its effectiveness to accommodate the range of pedestrian demands and not necessarily be constrained by the capital cost or ease of construction. The solution provided must stand and function well beyond the typical planning horizon of 15-20 years.

The assessment and evaluation (presented in tables 3 and 4) resulted in Alternative 6 - a new underground route in parallel with surface improvements being carried forward as the preferred alternative solution. Alternative 6:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of the Union Station revitalization;
- provides expanded pedestrian capacity and effectively accommodates a range of pedestrian demands (more effective distribution and connectivity, weather protection and directness of routes);
- provides pedestrians with a safe and comfortable environment for commuting to and from Union Station; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties.

6 Alternative Design Concepts

In order to implement the Preferred Alternative Solution (new underground route in parallel with surface improvements), various Alternative Design Concepts were developed. These concepts addressed both underground routes and surface public realm improvements. Please refer to Section 6.1 for a description of the underground routes and Section 6.2 for the surface public realm improvements.

6.1 Underground Alternative Design Concepts

6.1.1 Building-to-Building Connections

Building-to-building connections were examined in detail but were not pursued as an underground alternative design concept. During the course of this study, it became evident early in the process that factors such as current building operations, structural limitations and historical designations significantly limited the potential of this concept.

Based on consultation with representatives of the properties within the study area and building specifications provided by the building representatives, the project team determined early in the study that there were considerable constraints to pursuing this design concept. These constraints (summarized in Table 6 below) limited opportunities for establishing a new PATH tunnel connected through buildings in the study area. As a result, the project team did not pursue building-to-building underground connections as a preliminary design concept.

Table 6 – Summary of Potential Building-to-Building Connection Constraints

Property, Address	Constraints, Potential Impacts
Royal York Hotel 100 -120 Front Street West	• A PATH route north through this property would require considerable building modifications to address potential impacts to: Engine Room Electrical Room Mechanical Room Oil Storage Service Elevators Fresh Air Intake Transformer Room
55 York Street	• A PATH route north through this property would require considerable building modifications to address potential impacts to: Mechanical Room Delivery and Service Entrance on Piper Street Foundations
Toronto Club 107 Wellington Street	• The building is identified as a Historical Building and has access to the existing PATH via 95 Wellington Street. As such, and due to concerns over potential impacts of a new connection (highlighted below), representatives of the property indicated to the project team, that they would not be interested in an additional connection. Potential impacts include: Elevators Access to Piper Street
95 Wellington Street	• A PATH route north through this property would require considerable building modifications to address potential impacts to: Mechanical Room Air Intake Electrical Room Pump Room Foundations Underground Parking

Property, Address	Constraints, Potential Impacts
1 University Avenue	• A PATH route through this property would require considerable building modifications to address potential impacts to: Access to Toronto Parking Authority Garage Access to underground parking for building Underground Parking Garage for building Hydro service ducts Mechanical Room Electrical Room Elevators
Strathcona Hotel 60 York Street	• A PATH route through this property would require considerable building modifications to address potential impacts to: Electrical Room Stairs Elevators
33 University Avenue	• A PATH route through this property would require considerable building modifications to address potential impacts to: Underground Parking Mechanical Room Electrical Room Stairs Elevators Air Intake Shaft

6.1.2 Identification and Description of Preliminary Design Concepts

The following underground routes were identified and considered. These design concepts are all predominantly or exclusively within publicly owned rights-of-way (streets) with the potential for underground connections to private buildings where both desired and technically feasible. It should be noted that these underground routes are presented schematically with further refinements and routing options to be considered during the detailed design and construction phase.

Underground Alternative 1 – Do Nothing

This alternative maintains the existing conditions and proposes no changes to the underground. The "do nothing" alternative was included as a benchmark to compare the other alternatives.

Underground Alternative 2a – University Avenue

Alternative 2a would connect to the Citigroup building, where Union Station would be connected by the existing PATH Citigroup tunnel. This alternative would cross below Front Street just southwest of the Front Street and York Street intersection and incorporate the existing parking garage structure underneath University Avenue. Under this design concept, the entire parking garage would be converted to a pedestrian walkway to provide a new PATH connection leading to St. Andrews Subway Station and the existing PATH network (and connection to Metro Hall). Extensive reconstruction of the parking garage would likely be required. As well, the subway tunnel may also require reinforcement to withstand additional loading from the modified PATH tunnel. A schematic plan of the alternative is provided in Figure 12a.

Underground Alternative 2b – University Avenue

Alternative 2b is different from alternative 2a in that this connection would connect directly to the northwest corner of Union Station. The new PATH tunnel would cross below Front Street immediately southeast of the Front Street and York Street intersection and run parallel to the east side of University Avenue with a new connection to the parking structure underneath University Avenue. Under this design concept, the entire parking garage would be converted to a pedestrian walkway to provide a new PATH connection leading to

St. Andrews Subway Station and the existing PATH network (and connection to Metro Hall). Extensive reconstruction of the parking garage would likely be required. As well, the subway tunnel may also require reinforcement to withstand additional loading from the modified PATH tunnel. A schematic plan of the alternative is provided in Figure 12b.

Underground Alternative 3 – York Street

Alternative 3 essentially runs north-south, with the southern connection on the southeast corner of Front Street West and York Street (Union Station), crossing below Front Street West and running north below York Street to Wellington Street. At Wellington Street West the tunnel connects to the existing underground PATH tunnel at two locations – at the PATH level at 70 York Street and immediately south of the property located at 100 Wellington Street West. A schematic plan of the alternative is provided in Figure 12c.

Underground Alternative 4a – Royal York Hotel to York Street

Alternative 4a would envision a new connection below Front Street West (east of the intersection with York Street) connecting to the concourse level of the Royal York Hotel. The Royal York Hotel concourse would then be connected on the west side to a new north /south PATH tunnel located below York Street to Wellington Street. At Wellington Street West the tunnel connects to the existing underground PATH tunnel at two locations – at the PATH level at 70 York Street and immediately south of the property located at 100 Wellington Street West. A schematic plan of the alternative is provided in Figure 12d.

Underground Alternative 4b

Alternative 4b would involve the restoration and modification of the existing Royal York connection to Union Station. The existing tunnel would need to be significantly reconfigured to improve or meet accessibility requirements. The Royal York Hotel concourse would then be connected on the west side to a new north /south PATH tunnel located below York Street to Wellington Street. At Wellington Street, potential connections can be made to the existing PATH network through private building connections and/or the public right-of-way. At Wellington Street West the tunnel connects to the existing underground PATH tunnel at two locations – at the PATH level at 70 York Street and immediately south of the property located at 100 Wellington Street West. A schematic plan of the alternative is provided in Figure 12e.

6.1.3 Assessment Methodology

The assessment methodology for evaluating the underground alternative design concepts is similar to methodology used for evaluating the alternative solutions. Evaluation criteria, indicators, and measures were developed based on the criteria used for the evaluation of alternative solutions. These criteria were chosen as a result of their ability to identify the potential environmental effects of each alternative and distinguish their strengths/weaknesses. In keeping with the evaluation of the concept alternatives, the intent of the comparative evaluation was to clearly identify the net effects of each alternative on the environment after the application of mitigation measures so that the advantages and disadvantages of each alternative could be compared. Then, using a reasoned argument approach, the alternative that best resolves the problem/opportunity with the least impact on each aspect of the environment was identified as recommended.

The evaluation criteria, indicators, and measures are contained within the evaluation matrix in Table 7.

The analysis and evaluation of the surface and underground alternative design concepts are based on a planning level of detail. Detailed refinements (i.e. detailed utilities investigations, alignment refinements and preliminary structural design) would be limited to the preferred design concept recommended as the *Proposed Undertaking*, described in Chapter 8.

Figure 12a – Underground Alternative 2a – University Avenue

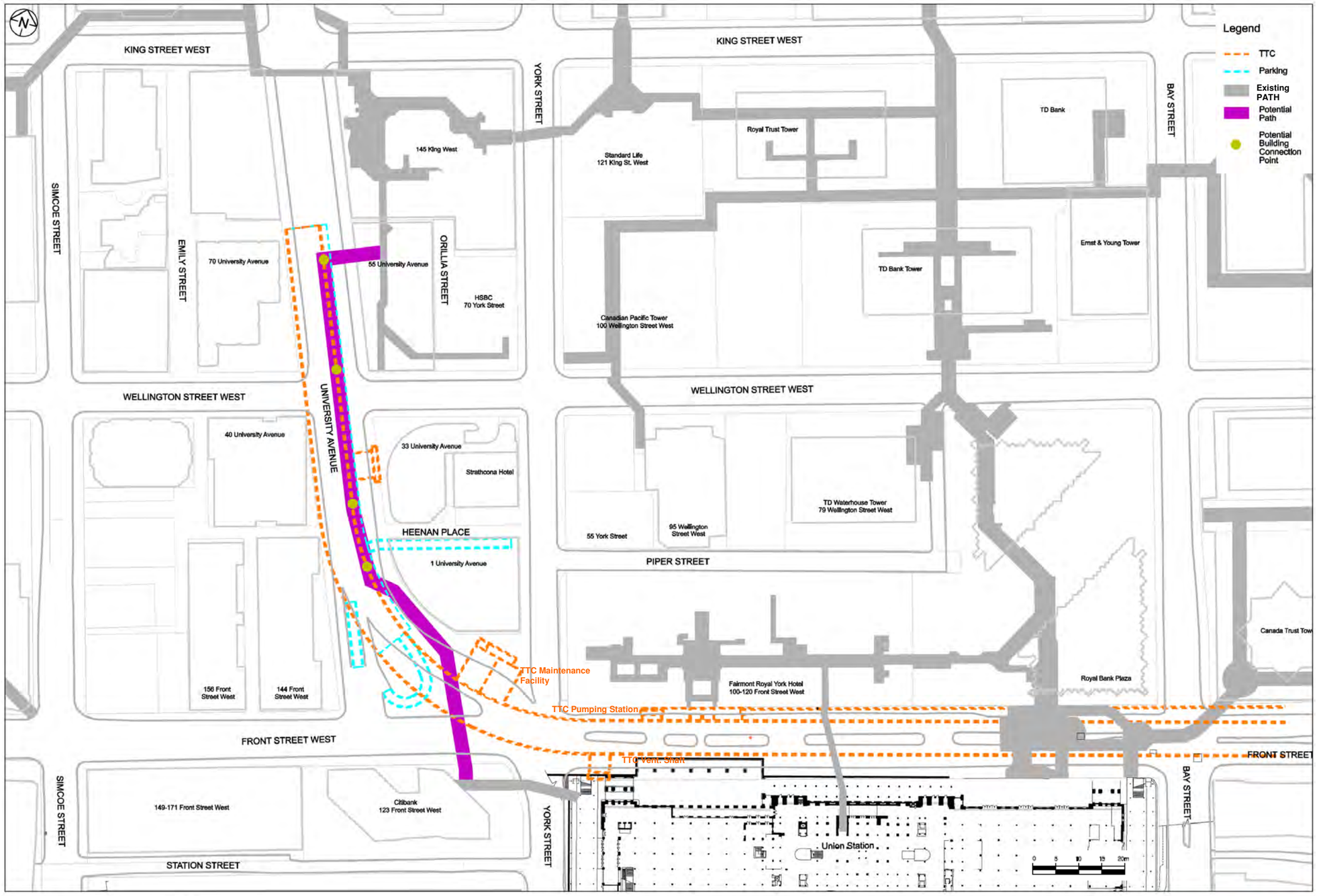


Figure 12b – Underground Alternative 2b – University Avenue

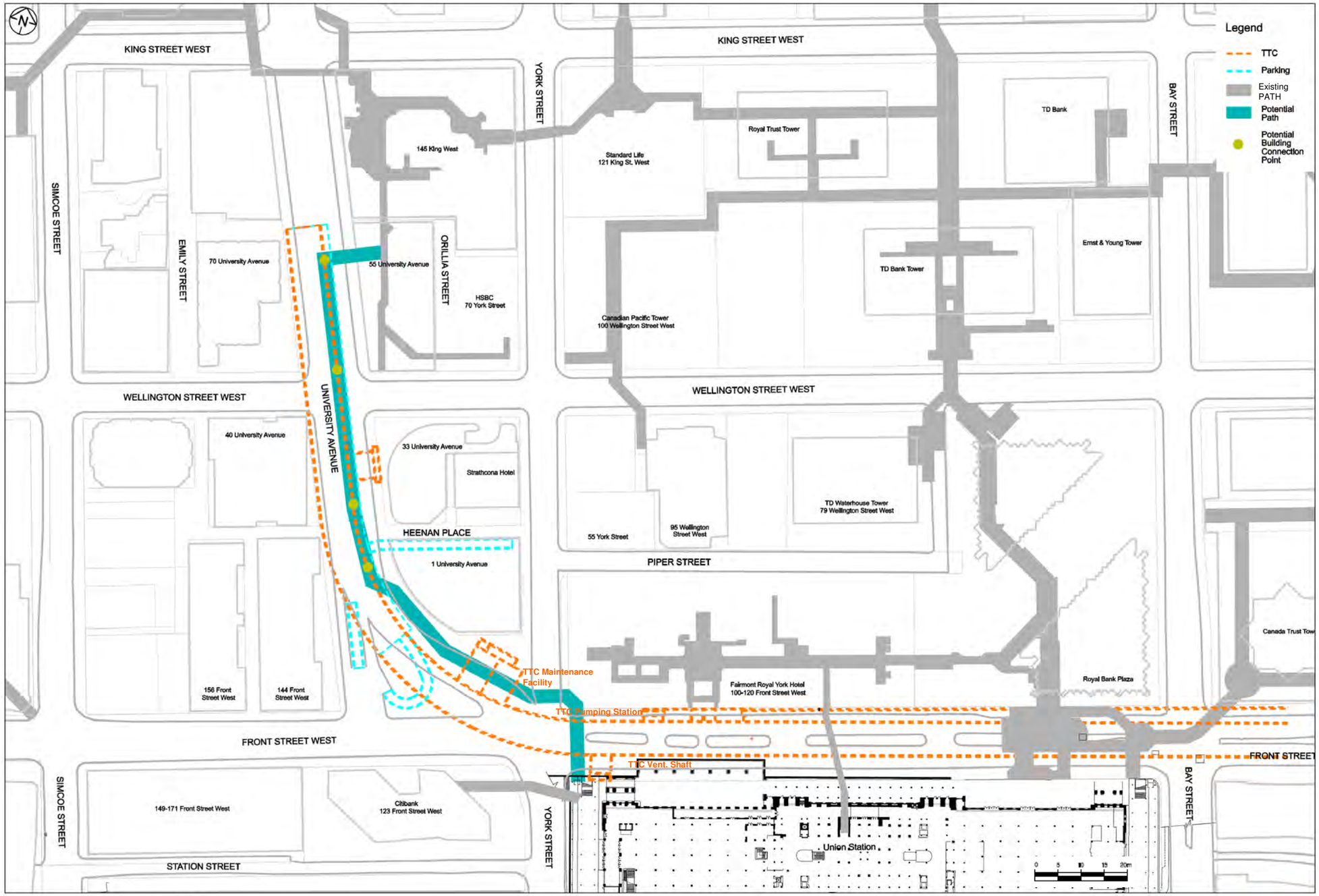


Figure 12c – Underground Alternative 3 – York Street

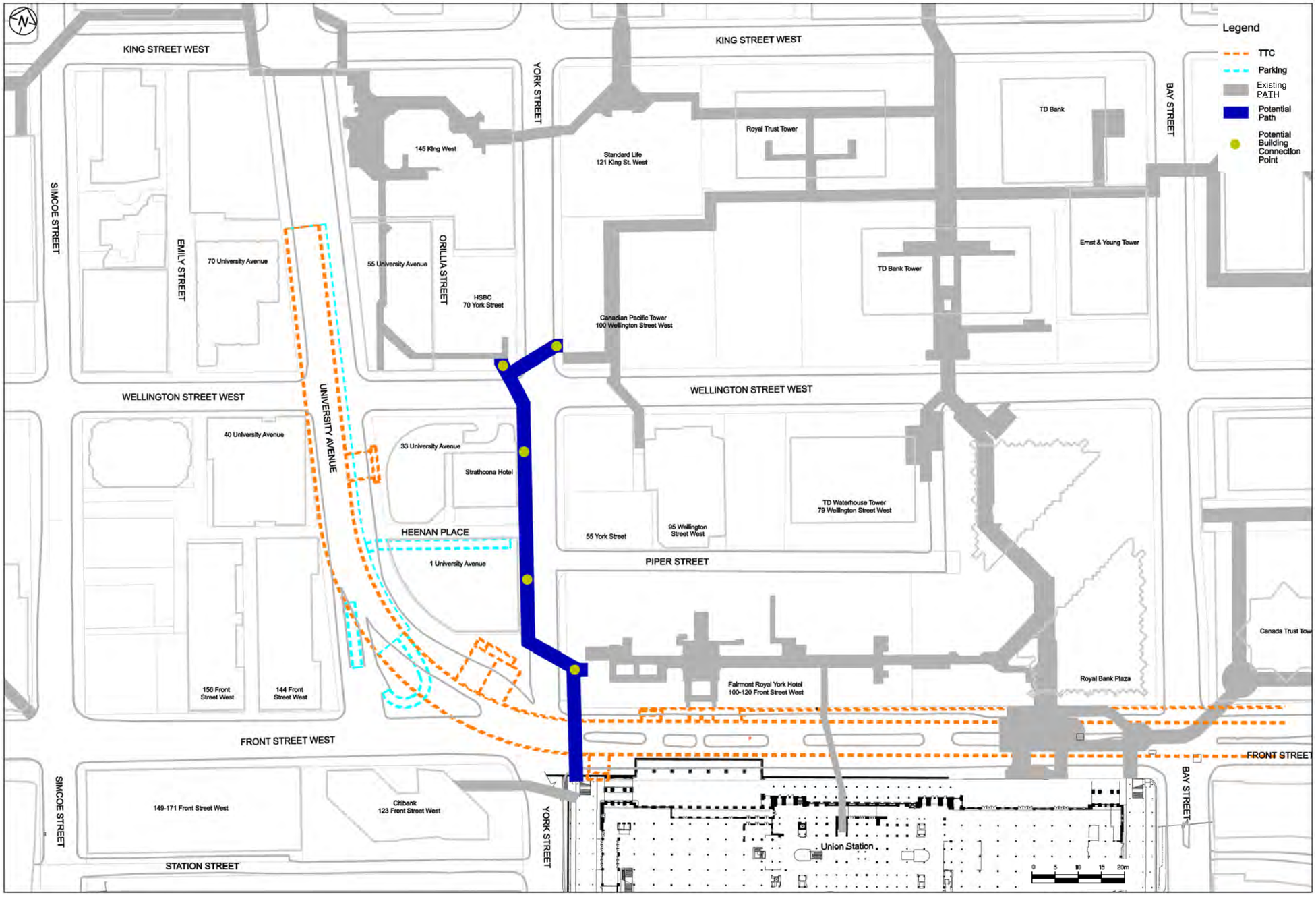


Figure 12d – Underground Alternative 4a – Royal York Hotel to York Street

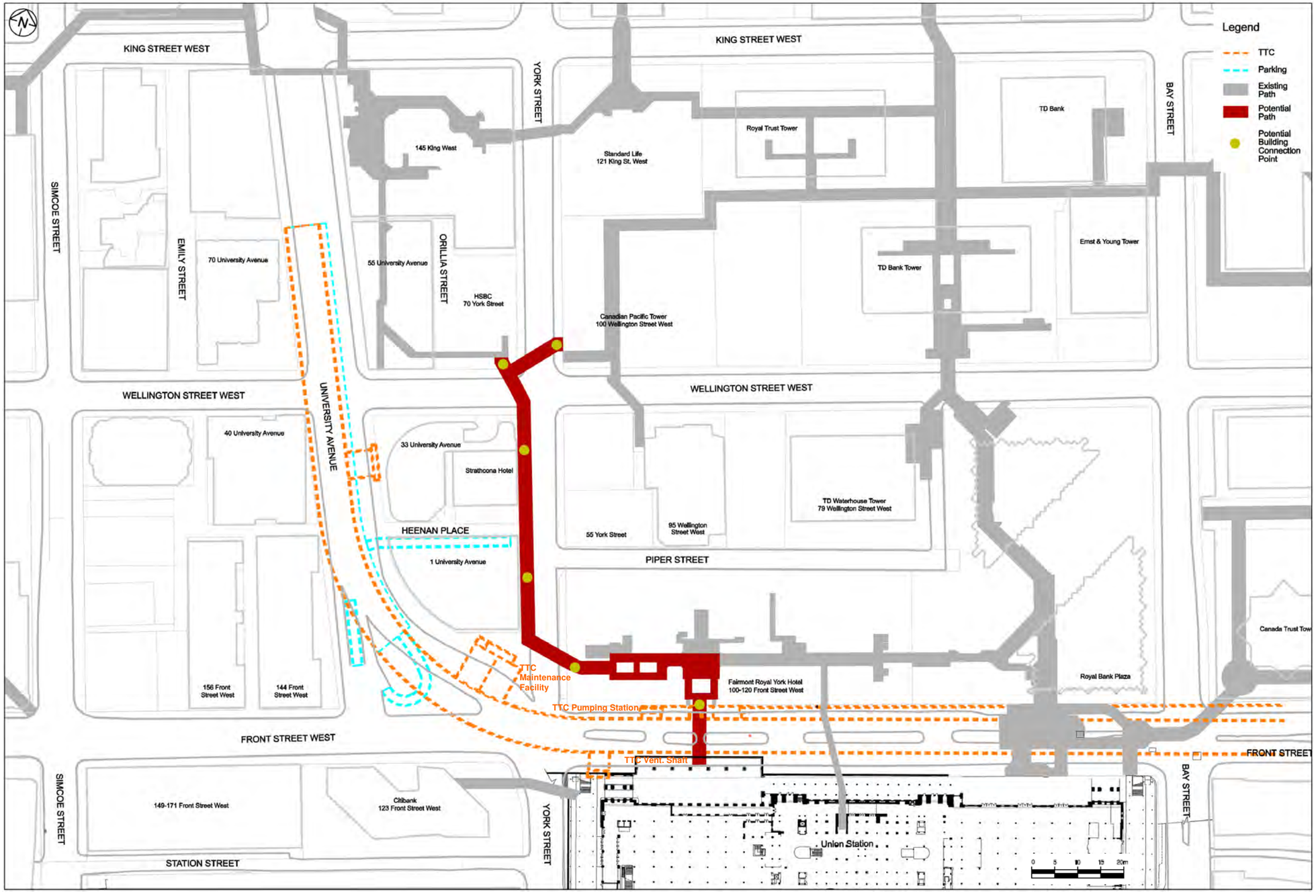
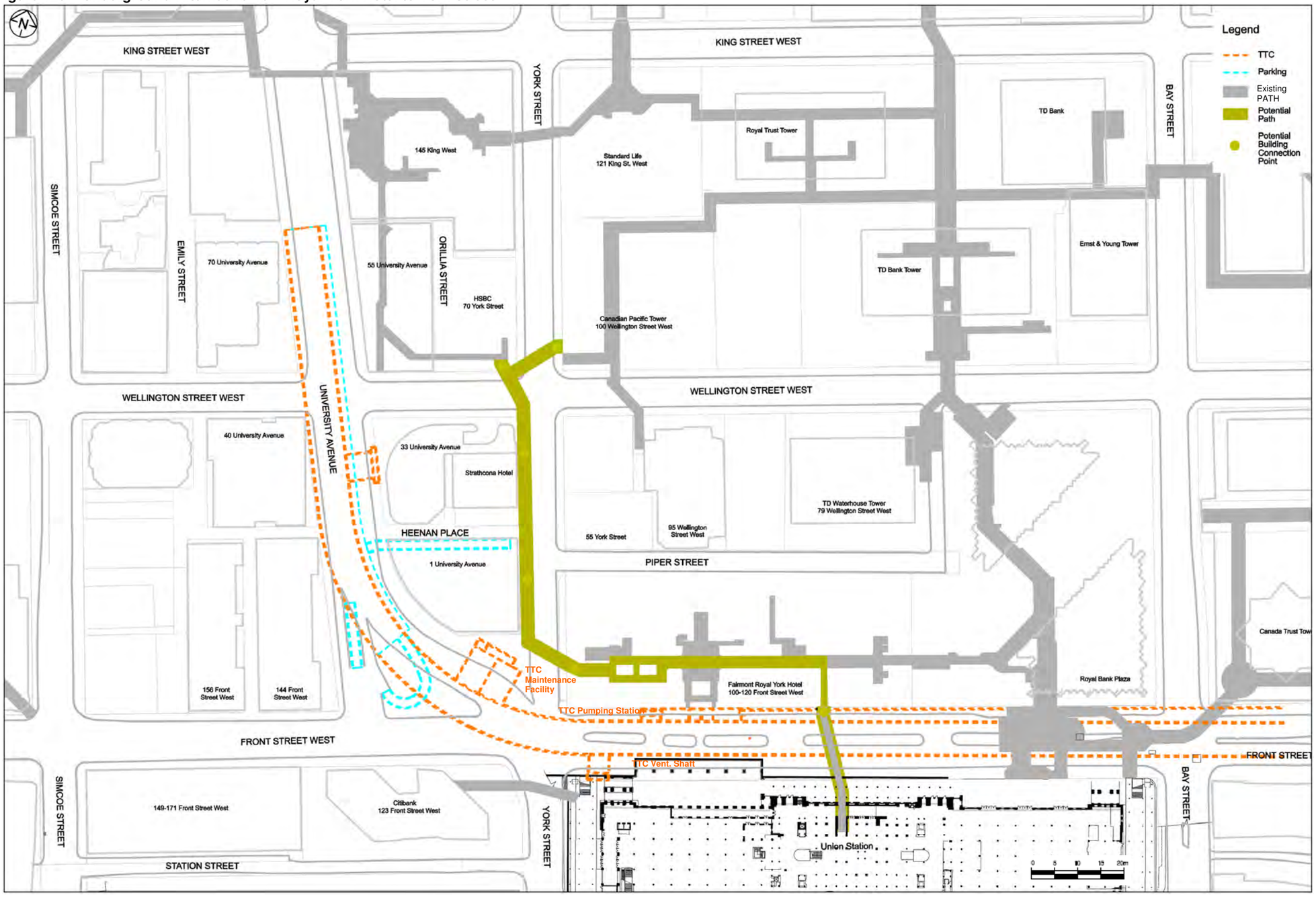


Figure 12e – Underground Alternative 4b – Royal York Hotel to York Street



6.1.4 Evaluation Results

The underground alternative design concepts were analyzed to identify differences in their net effects on the environment as detailed in Table 8 and Table 9, which provide a summary of evaluation of each of the underground alternative design concept.

The assessment and evaluation resulted in Alternative 3 – York Street - being carried forward as the preferred alternative design concept. The proposed York Street Alternative Design:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of the Union Station revitalization;
- provides expanded pedestrian capacity and effectively accommodates a range of pedestrian demands (more effective distribution and connectivity, weather protection and direct route to demand areas northwest of Union Station);
- provides pedestrians with a safe and comfortable environment for commuting to and from Union Station;
- meets all accessibility requirements;
- minimizes long-term effects on adjacent and surrounding businesses;
- seeks to minimize potential disruptions and impacts to utilities, vehicular and transit operations; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties.

It should be noted that disruptions and impacts to utilities, vehicular and transit operations are anticipated with tunnel construction under York Street. Efforts or measures to minimize impacts and disruptions have been identified in the EA process and will be pursued with the study stakeholders in further detail during the detailed design and construction stages of this project.

Table 7 – Evaluation Criteria, Indicators, and Measures Underground Alternatives

EVALUATION CRITERIA	INDICATOR	MEASURE
Planning and Policy Context		
Conformity with City of Toronto policy documents	Conformity with policies of City of Toronto Official Plan	Supports the Official Plan policies regarding transportation/ land use, role of Union Station, enhanced public realm, protection of the natural environment and natural heritage system
	Conformity with policies of Central Waterfront Secondary Plan	Supports the Central Waterfront Secondary Plan policies regarding transportation/ land use, role of Union Station, enhanced public realm
Agreement with plans for Union Station	Agreement with the objectives of Union Station Master Plan	Supports the Union Station Master Plan policies and actions regarding transportation, enhanced public realm and supports "Big Moves" as defined in the Master Plan
	Agreement with the objectives of Union Station District Plan	Supports the Union Station District Plan policies and actions regarding transportation, enhanced public realm and pedestrian priority initiatives
Consistency with provincial direction	Consistency with applicable provincial legislation and guidelines	Supports the Provincial Policy Statement, Places to Grow Act and the Greater Golden Horseshoe Plan
Transportation Environment		
Accommodate demand and attract new users	Maximizes accommodation of existing and forecast pedestrian demands associated with station revitalization and GO Transit's expansion plans	Increases the overall underground walkway width available to pedestrians travelling between Union Station and the downtown core
	Maximizes potential to redistribute passengers flows within Union Station from the current northeast quadrant to the Northwest quadrant in conjunction with GO Transit's new York Street Concourse	Provides additional underground walkway capacity that is situated near the northwest corner of the station at the intersection of Front and York Streets
Accessibility to disabled	Provides for barrier free access/ design	Ramps are no steeper than 1:20
	Meets City of Toronto Accessibility guidelines	Does not provide impediment to meeting guidelines
Provides connectivity with the existing PATH network	Provides direct and convenient connection to areas of current and future demand northwest of Union Station	The degree to which the orientation of the new underground route is aligned with urban density to the north and west of the station
	Provides for desirable and logical underground connections to the existing PATH network	Proportion of pedestrians that will likely use a new PATH connection based on traffic signal avoidance, directness of route, and origin/destination within Union Station
	Minimizes walking distances to primary destination areas northwest of Union Station	Directness and number of connections made to existing PATH infrastructure, especially with the financial district and Metro Hall area
	Provides flexibility and adaptability for future expansion/ and or staging of PATH connections	Future expansion within areas of right of way, minimizing the need for structural modifications and/or change of use of the existing underground structures
Provides connectivity with buildings currently lacking a PATH connection	Maximizes potential underground connections to existing buildings	Number of buildings which can be connected to the new PATH tunnel
	Provides flexibility and adaptability for future expansion/ and or staging of PATH connections	Number of new connections to the buildings allowing future access to other existing PATH ways
Effects on Traffic / Intersection Operations (existing and future demands)	Maintains or improves overall level of service at intersections	Intersection capacity and delay
	Maximizes non-auto uses in study area for trips to and within study area	Pedestrian facility network capacity
	Minimizes potential conflicts between vehicles, pedestrians and cyclists	Permissive turn capacity and delay
Urban Design / Public Realm Environment		
Provides public animation and interaction	Maximizes opportunities to provide retail or other amenities	Has potential to add flanking space on same level for amenities Has short distances between entrances to several buildings or retail areas
	Maximizes potential locations to provide natural light	Passes under or beside areas accessible to daylight not completely needed for surface walkways or traffic
	Maximizes public safety and interaction throughout the day	Avoids traffic/pool interactions and provides safe pedestrian routes
Provides high level of finish and detail	Maximizes opportunities to establish higher level of design (treatments and pedestrian comfort)	Provides sufficient width and height to design a spacious and gracious interior
Ease of use for pedestrians	Minimizes changes in vertical circulation	Number of stairs along new underground PATH tunnel
Geotechnical/Engineering Environment		
Effects on Existing Buildings	Minimizes construction impacts on existing structures	Structures requiring permanent significant structural modifications during and after construction
	Minimizes impacts on building operations (HVAC, Storage, other)	Total floor area of the existing structures affected by construction of the new PATH
	Minimizes vibration impacts on structures due to construction activities	Number of buildings and/or underground structures located in close proximity to the construction areas
Effects on Construction Feasibility	Minimizes construction constraints, complexity	Minimum traffic disruption, duration of construction, constructability without major complications
	Minimizes conflicts with existing utility services	Quantity, feasibility and cost of relocations of utilities and/or support of utilities
Effects on Traffic Flow	Minimizes delays and impacts during construction	Dependent on traffic disruption, lane closure requirements
Effects on the TTC	Minimizes impacts on Toronto Transit Commission structures and operations (Subway and Streetcar)	Causes modifications to the existing TTC tunnel

EVALUATION CRITERIA	INDICATOR	MEASURE
Socio-economic Environment		
Effects on property and business access	Minimizes physical effects on residential and commercial properties	Extent (area) of existing uses within footprint of route alignment
	Maximizes PATH accessibility for residents and business	New underground connections to the existing PATH network New underground connections to existing buildings
	Minimizes effects on parking and loading areas	Measure of parking spaces lost and landing areas affected
Effects on Parking availability in commercial retail areas	Minimizes number of public on street / off-street parking spaces affected	Measure of parking spaces permanently lost
Economic effects on adjacent businesses	Supports business activity and employment	Proximity of existing retail space to underground route Extent (area) of route that has sufficient space for retail development
	Maximizes business attractiveness due to improved access / connectivity	Connections to PATH network
Economic effects on residential property	Maximizes the potential to positively impact assessment value	Access to PATH network
Effects during construction	Minimizes nuisance effects (noise, dust, and vibration)	Proximity of retail uses to construction Number of uses with outdoor component Proximity of office building entrances to construction
Cultural Environment		
Effects on built heritage, cultural and archaeological features	Minimizes the number of heritage features affected	
	Maximizes opportunities to enhance built heritage and cultural features	
Natural Environment		
Effects on Air quality	Minimizes potential vehicle exhaust emissions and the relative impact of the emissions that contribute to climate change	Since no vehicles, this indicator/measure is not required
Effects on Stormwater Management	Minimizes adverse impacts to existing stormwater facilities (Wet Weather Flow)	Conflict with existing stormwater management facilities.
Effects on groundwater	Dewatering during construction	Dewatering should not be an issue as we are in a built environment (water level)
Effects on contaminated soils	Disturbance of contaminated soils	Excavating in areas of potential contamination
Cost		
Effects on City / GO Transit Budget	Minimizes construction costs	Measured in dollars
	Minimizes additional utility costs (upgrading, relocation etc)	Measured in estimated costs
Opportunity for cost sharing	Maximizes opportunities for cost sharing between private / public interests	Building connections
Opportunity for revenue generation for the city	Maximizes revenue opportunities to offset capital and operating construction costs (connection fee)	Retail opportunities within tunnel

Table 8 – Analysis of Alternative Design Concepts

Evaluation Criteria	Alternative 1 Do Nothing	Alternative 2a University	Alternative 2b University	Alternative 3 York	Alternative 4a Royal York Hotel to York	Alternative 4b Royal York Hotel to York
Policy and Planning Environment ▪ Conformity with City of Toronto policy documents ▪ Agreement with plans for Union Station ▪ Consistency with provincial direction	This alternative does not conform to the City of Toronto Official Plan, as it does not support expansion of the pedestrian realm or PATH system, nor does it help to maximize Union Station's capacity as a transportation centre. Similarly, it is not in agreement with the objectives of the Union Station Master Plan or the Union Station District Plan. It is not consistent with Provincial policy.	This alternative conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station.	This alternative conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station.	This alternative conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station	This alternative conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station.	This alternative conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station.
Transportation Environment ▪ Accommodate demand and attract new users ▪ Accessibility to disabled ▪ Provides connectivity with the existing PATH network ▪ Provides connectivity with buildings currently lacking a PATH connection ▪ Effects on Traffic / Intersection Operations (existing and future demands)	There is no potential for this alternative to accommodate pedestrian demand and attract new users. Does not provide connectivity with the existing PATH network or to buildings currently lacking a PATH connection. In terms of pedestrian movement, this alternative does not help to improve the overall level of service at intersections for pedestrians, or provide additional pedestrian capacity. It will not help to minimize potential conflicts between pedestrians, cyclists, and motorized vehicles.	Compared to Alternative 2b, there is less potential to accommodate pedestrian demand and attract new users, as this alternative – due to various constraints would not achieve the desired 5 metres of pedestrian walkway width throughout the entire length of tunnel. This alternative provides limited connectivity to surrounding buildings. Alternative has limited usefulness for areas east of York Street. It does not require ramps to provide accessibility for all potential users	There is high potential for this alternative to accommodate pedestrian demand and attract new users, as it provides the desired 5 metres of pedestrian walkway width. This alternative provides limited connectivity to surrounding buildings. Alternative 2b serves the area northwest of the station well, and will provide easy access to surface routes to areas east of York St. In terms of pedestrian movement, this alternative helps to improve the overall level of service at intersections for pedestrians, and provides additional pedestrian capacity. It will also help to minimize potential conflicts between pedestrians, cyclists, and motorized vehicles. There are no accessibility issues associated with this alternative.	Alternative 3 has high potential to accommodate pedestrian demand based on the available width within the York Street right-of-way for a 5m width of underground walkway. The location of the walkway entrance at the northwest corner of Union Station will serve to effectively redistribute passenger flows within the station. This alternative provides potential connections to three buildings within the existing PATH network, and allows for potential connections to buildings that are currently not connected to the PATH network. Alternative serves the area northwest of the station well, and will provide easy access to surface routes to areas east of York Street. Furthermore, it is expected that a high proportion of pedestrians would use the entire route based on the relative location of their destinations. In terms of pedestrian movement, this alternative helps to improve the overall level of service at intersections for pedestrians, and provides additional pedestrian capacity. It will also help to minimize potential conflicts between pedestrians, cyclists, and motorized vehicles. There are no accessibility issues associated with this alternative.	Alternative 4a has moderate potential to accommodate pedestrian demand as it provides the desired 5m of underground walkway width; however the spiral staircase in the Royal York PATH level would likely constrain pedestrian movement. The location of the walkway entrance near the northwest corner of Union Station will serve to redistribute passenger flows within the station, albeit not as effectively as other alternatives. This alternative provides potential connections to four buildings within the existing PATH network, and allows for potential connections to buildings that are currently not connected to the PATH network. Alternative is circuitous in serving the area to the northwest. Furthermore, it is expected that a low proportion of pedestrians would use the entire route based on the relative location of their destinations. In terms of pedestrian movement, this alternative helps to improve the overall level of service at intersections for pedestrians, and provides additional pedestrian capacity. It will also help to minimize potential conflicts between pedestrians, cyclists, and motorized vehicles. Alternative 4b requires elevators to meet the City of Toronto's Accessibility guidelines.	Alternative 4b has limited potential to accommodate pedestrian demand based on the less than 5m walkway width available due to constraints from historical structures underneath Front Street. Alternative provides limited potential to redistribute passenger flows within Union Station as the connection located too far to the east of the new York Street concourse. This alternative provides potential connections to three buildings within the existing PATH network, and allows for potential connections to buildings that are currently not connected to the PATH network. Alternative is circuitous in serving the area to the northwest. Furthermore, it is expected that a low proportion of pedestrians would use the entire route based on the relative location of their destinations. In terms of pedestrian movement, this alternative helps to improve the overall level of service at intersections for pedestrians, and provides additional pedestrian capacity. It will also help to minimize potential conflicts between pedestrians, cyclists, and motorized vehicles. Alternative 4b requires elevators to meet the City of Toronto's Accessibility guidelines.
Urban Design / Public Realm Environment ▪ Provides public animation and interaction ▪ Provides high level of finish and detail ▪ Ease of use for pedestrians	Alternative 1 does not provide any opportunities to enhance the public realm associated with the PATH system.	There is considerable potential with Alternative 2a to provide retail services or other amenities within the space currently occupied by the TPA garage. Unlike Alternative 2b, there are no opportunities to provide natural light within the corridor.	There is considerable potential with Alternative 2b to provide retail services or other amenities within the space currently occupied by the TPA garage. There are opportunities to provide natural light within the corridor at potential connections with 1 University Avenue and the Royal York Hotel.	There is limited potential with Alternative 3 to provide retail services or other amenities due to the width of the walkway and the location of underground services. However, the walkway could connect to a number of buildings with retail uses, including the Royal York and Strathcona Hotels. The alternative presents the opportunity to provide natural light where it could potentially connect to street level on the west side of the Royal York Hotel.	There is limited potential with Alternative 4a to provide retail services or other amenities due to the location of underground services. However, the walkway could provide direct access to retail uses within the Royal York Hotel and indirect or street level access to other uses along York Street. There is no opportunity to provide natural light within the underground walkway.	There is limited potential with Alternative 4b to provide retail services or other amenities due to the location of underground services. However, the walkway could provide direct access to retail uses within the Royal York Hotel and indirect or street level access to other uses along York Street. There is no opportunity to provide natural light within the underground walkway.

Evaluation Criteria	Alternative 1 Do Nothing	Alternative 2a University	Alternative 2b University	Alternative 3 York	Alternative 4a Royal York Hotel to York	Alternative 4b Royal York Hotel to York
Geotechnical / Engineering Environment ▪ Effects on Existing Buildings ▪ Effects on Construction Feasibility ▪ Effects on Traffic Flow ▪ Effects on Utilities ▪ Effects on the TTC	Given that there is no construction associated with Alternative 1, there are no geotechnical issues or engineering constraints or effects.	Significant structural issues have been identified with the potential conversion of all or part of the parking garage structure to a pedestrian walkway. Structural issues identified include available headroom, age and condition of the parking structure and potential loading constraints on the subway tunnel below. In terms of construction feasibility, construction of this alternative would avoid disruption of traffic, as it would involve modifications to an existing TTC underground structure; however, it could disrupt subway service due to the extensive remedial structural work that would be required. There would be significant impacts to existing utilities on Front Street and along University Avenue. Storm and sanitary sewer impacts in particular could potentially be challenging to mitigate.	Significant structural issues have been identified with the potential conversion of all or part of the parking garage structure to a pedestrian walkway. Structural issues identified include available headroom, age and condition of the parking structure and potential loading constraints on the subway tunnel below. In terms of construction feasibility, construction of this alternative would avoid disruption of traffic, as it would involve modifications to an existing TTC underground structure; however, it could disrupt subway service due to the extensive remedial structural work is that would be required. There would be significant impacts to existing utilities on Front Street and along University Avenue. Storm and sanitary sewer impacts in particular could potentially be challenging to mitigate.	Alternative 3 has minimal effects on existing buildings, as it is located primarily within the York Street right-of-way. Alternative would require modifications to the west entrance to the Royal York Hotel. Potential for vibration impacts on buildings along York Street during construction. Alternative would likely require temporary closure of the existing PATH tunnels located at 70 York Street and immediately south of the property located at 100 Wellington Street West. In terms of construction feasibility, traffic would be reduced to a maximum of two lanes along York Street during construction with possible full road closures at key phases. There would be significant impacts to existing utilities on Front Street and along University Avenue. Storm and sanitary sewer impacts in particular could potentially be challenging to mitigate. No effects on TTC operations are anticipated.	Alternative 4a would require modifications to the concourse level of the Royal York Hotel - new concourse level entrance and reconfigured concourse area. Potential for vibration impacts on buildings along York Street during construction. In terms of construction feasibility, traffic would be reduced to a maximum of two lanes along York Street during construction with possible full road closures at key phases. Alternative would likely require temporary closure of the existing PATH tunnels located at 70 York Street and immediately south of the property located at 100 Wellington Street West. There would be significant impacts to existing utilities on Front Street and along University Avenue. Storm and sanitary sewer impacts in particular could potentially be challenging to mitigate. No effects on TTC operations are anticipated.	Alternative 4b would require major modifications to the existing PATH tunnel between Union Station and the Royal York Hotel, therefore resulting in its temporary closure during construction. In terms of construction feasibility, traffic would be reduced to a maximum of two lanes along York Street during construction with possible full road closures at key phases. Alternative would likely require temporary closure of the existing PATH tunnels located at 70 York Street and immediately south of the property located at 100 Wellington Street West. There would be major impacts to existing utilities on Front Street and along University Avenue. Storm and sanitary sewer impacts in particular could potentially be challenging to mitigate. No effects on TTC operations are anticipated.
Socio-economic Environment ▪ Effects on property and business access ▪ Effects on parking availability in commercial retail areas ▪ Economic effects on adjacent businesses ▪ Economic effects on residential property ▪ Effects during construction	Given that there is no construction associated with Alternative 1, there are no Socio-economic effects.	Alternative 2a would likely result in the full closure of the Toronto Parking Authority Garage to vehicular traffic (323 spaces) and loss of significant parking revenues to the City of Toronto. Alternative would allow for the potential redevelopment of this space for retail uses. During construction, a number of restaurants and other retail uses in the vicinity of the intersection of Front Street and University Avenue will likely experience noise, dust, and vibration due to the proximity to construction. Other uses along University Avenue may experience minimal disruption to services.	Alternative 2a would likely result in the full closure of the Toronto Parking Authority Garage to vehicular traffic (323 spaces) and loss of significant parking revenues to the City of Toronto. Alternative would allow for the potential redevelopment of this space for retail uses. During construction, a number of restaurants and other retail uses in the vicinity of the intersection of Front Street and University Avenue will likely experience noise, dust, and vibration impacts due to the proximity to construction. Other properties along University Avenue may experience minimal disruption to services.	There are moderate effects on property and business access. Potential to economically benefit some businesses through improved access and connectivity. During construction, properties in the vicinity of the York Street will likely experience noise, dust, and vibration impacts due to the proximity to construction.	Existing back-of-house operations and ancillary retail areas within the Royal York Hotel concourse level would likely experience displacement or disruptions from noise, dust, and vibration during construction. Potential to economically benefit some businesses through improved access and connectivity. During construction, properties in the vicinity of the York Street will likely experience noise, dust, and vibration impacts due to the proximity to construction. Direct connection to Union Station and associated PATH expansions could re-invigorate the concourse or arcade level of Royal York Hotel.	Existing back-of-house operations and ancillary retail areas within the Royal York Hotel concourse level would likely experience displacement or disruptions from noise, dust, and vibration during construction. Potential to economically benefit some businesses through improved access and connectivity. During construction, properties in the vicinity of the York Street will likely experience noise, dust, and vibration impacts due to the proximity to construction. Direct connection to Union Station and associated PATH expansions could re-invigorate the concourse or arcade level of Royal York Hotel.
Cultural Environment ▪ Effects on built heritage, cultural and archaeological features	There are no potential changes to heritage buildings or features.	A new opening on the north west moat wall at Union Station will be created with the development of the new northwest PATH pedestrian connection. As such, all heritage approvals (City of Toronto, Parks Canada) will be obtained prior to construction.	A new opening on the north west moat wall at Union Station will be created with the development of the new northwest PATH pedestrian connection. As such, all heritage approvals (City of Toronto, Parks Canada) will need to be obtained prior to construction.	A new opening on the north west moat wall at Union Station will be created with the development of the new northwest PATH pedestrian connection. As such, all heritage approvals (City of Toronto, Parks Canada) will need to be obtained prior to construction.	A new opening on the north west moat wall at Union Station will be created with the development of the new northwest PATH pedestrian connection. As such, all heritage approvals (City of Toronto, Parks Canada) will need to be obtained prior to construction. There may be potential effects on the Royal York Hotel in order to accommodate the PATH.	There may be potential effects on the Royal York Hotel in order to accommodate the enhanced PATH connection.

Evaluation Criteria	Alternative 1 Do Nothing	Alternative 2a University	Alternative 2b University	Alternative 3 York	Alternative 4a Royal York Hotel to York	Alternative 4b Royal York Hotel to York
Natural Environment ▪ Effects on Air quality ▪ Effects on Stormwater Management ▪ Effects on groundwater ▪ Effects on contaminated soils	Given that there is no construction associated with Alternative 1, there are no potential effects on the natural environment.	Regarding potential effects on stormwater management, there is low potential for a conflict with existing stormwater management facilities. As no excavation of soils is required, there is no possibility of disturbing contaminated material.	Regarding potential effects on stormwater management, there is low potential for a conflict with existing stormwater management facilities. As no excavation of soils is required, there is no possibility of disturbing contaminated material.	Regarding potential effects on stormwater management, there is potential for a conflict with existing stormwater management facilities. Potential mitigating measures to address stormwater management issues would need to be explored in subsequent detailed design. There are no known soil contamination areas within the alignment.	Regarding potential effects on stormwater management, there is potential for conflict with existing stormwater management facilities. Potential mitigating measures to address stormwater management issues would need to be explored in subsequent detailed design. There are no known soil contamination areas within the alignment	Regarding potential effects on stormwater management, there is potential for conflict with existing stormwater management facilities. Potential mitigating measures to address stormwater management issues would need to be explored in subsequent detailed design. There are no known soil contamination areas within the alignment.
Cost ▪ Effects on City / GO Transit Budget ▪ Opportunity for cost sharing ▪ Opportunity for revenue generation for the city	This alternative has no construction or operations cost.	The potential cost of acquiring the Toronto Parking Authority garage and associated loss of parking revenue would result in a substantial increase to the overall cost of the project. Opportunities for cost sharing with benefiting property owners could be explored in further stages of the project. Potential to maximize revenue opportunities for the City if the parking structure was converted to retail in addition to the PATH connection.	The potential cost of acquiring the Toronto Parking Authority garage and associated loss of parking revenue would result in a substantial increase to the overall cost of the project. Opportunities for cost sharing with benefiting property owners could be explored in further stages of the project. Potential to maximize revenue opportunities for the City if the parking structure was converted to retail in addition to the PATH connection.	This alternative is one of the least costly in terms of construction and additional utility relocation costs. Opportunities for cost sharing with benefiting property owners could be explored in further stages of the project. Little opportunity to maximize potential revenue for the City given the reduced available space in the area of tunnel.	This alternative is one of the more costly in terms of construction and additional utility costs. Opportunities for cost sharing with benefiting property owners could be explored in further stages of the project. Little opportunity to maximize potential revenue for the City given the reduced available space in the area of tunnel.	This alternative is one of the more costly in terms of construction and additional utility costs. Opportunities for cost sharing with benefiting property owners could be explored in further stages of the project. Little opportunity to maximize potential revenue for the City given the reduced available space in the area of tunnel.

Table 9 – Evaluation of Underground Alternative Design Concepts –

	Alternative 1 Do Nothing	Alternative 2a (University)	Alternative 2b (University)	Alternative 3 (York) Preferred Underground Alternative Design Concept	Alternative 4a (Royal York to York)	Alternative 4b (Royal York to York)
Policy and Planning Environment						
Advantages	No advantages	Conforms to planning policies	Conforms to planning policies	Conforms to planning policies	Conforms to planning policies	Conforms to planning policies
Disadvantages	Does not conform to planning policies	No disadvantages	No disadvantages	No disadvantages	No disadvantages	No disadvantages
Transportation Environment						
Advantages	No accessibility issues with pedestrian movement	Limited accommodation of pedestrian demand and may attract some new users No accessibility issues	Accommodates demand and will likely attract new users No accessibility issues	Is well connected to existing PATH network Accommodates demand and will likely attract new users No accessibility issues	Is well connected to existing PATH network	Is well connected to existing PATH network
Disadvantages	Will not accommodate demand Does not connect buildings to PATH network	Provides limited connectivity to surrounding buildings	Provides limited connectivity to surrounding buildings	No disadvantages	Would require elevators to be fully accessible Does not provide direct connection to high demand areas This alternative is circuitous in serving areas northwest – likely a low proportion of pedestrians would use the whole route	Would require elevators to be fully accessible Does not provide direct connection to high demand areas This alternative is circuitous in serving areas northwest – likely a low proportion of pedestrians would use the whole route
Urban Design / Public Realm Environment						
Advantages	No advantages	Retail opportunities in existing parking garage Provides a spacious interior	Retail opportunities in existing parking garage Provides a spacious interior Provides natural light	Could provide animation through building connections Can be designed to provide natural light	Could provide animation through building connections	Could provide animation through building connections
Disadvantages	Does not provide for new retail or other amenities	No opportunities to provide natural light	No disadvantages	Limited opportunities for new retail or other amenities Will only provide minimum interior space / walkway width required for PATH	Limited opportunities for new retail or other amenities Will only provide minimum interior space / walkway width required for PATH No opportunities to provide natural light	Limited opportunities for new retail or other amenities Will only provide minimum interior space / walkway width required for PATH No opportunities to provide natural light
Geotechnical/Engineering Environment						
Advantages	No potential for negative effects on buildings No potential conflicts with utilities	Minimal traffic disruption and lane closures	Minimal traffic disruption and lane closures	Minimal effects on existing buildings Potential to economically benefit some businesses through improved access and connectivity No effects on TTC operations	No effects on TTC operations	No effects on TTC operations
Disadvantages	No disadvantages	Significant modifications to parking structure and subway tunnel Significant effects to existing utilities	Significant modifications to parking structure and subway tunnel Significant effects to existing utilities	Will result in temporary traffic disruption and lane closures during construction at key phases Significant effects to existing utilities Properties in the vicinity would likely experience noise, dust and vibration due to proximity to construction	Significant modifications to Royal York lower entrances and concourse level Will result in temporary traffic disruption and lane closures during construction at key phases Significant effects to existing utilities	Will result in temporary traffic disruption and lane closures during construction at key phases Significant effects to existing utilities Major construction effects to existing tunnel at Royal York
Socio-economic Environment						
Advantages	No short or long-term effects on existing uses	No advantages	No advantages Minimal nuisance effects on businesses	Moderate effects on businesses May economically benefit some businesses through improved access and connectivity	May economically benefit businesses in Royal York through improved access and connectivity May economically benefit some businesses	May economically benefit businesses in Royal York through improved access and connectivity May economically benefit some businesses

	Alternative 1 Do Nothing	Alternative 2a (University)	Alternative 2b (University)	Alternative 3 (York) Preferred Underground Alternative Design Concept	Alternative 4a (Royal York to York)	Alternative 4b (Royal York to York)
					through improved access and connectivity	through improved access and connectivity
Disadvantages	Will not improve accessibility for residents and businesses No opportunities to maximize business attractiveness No new retail	Will not avoid displacement of TPA garage Nuisance effects on businesses during construction at Front/University	Will not avoid displacement of TPA garage Nuisance effects on businesses during construction at Front/University	Nuisance effects to businesses along York Street	Displacement of at least one business in Royal York arcade Nuisance effects to businesses within Royal York Hotel and along York Street	Nuisance effects on businesses within Royal York Hotel and along York Street
Cultural Environment						
Advantages	No changes to heritage buildings or features	No changes to heritage buildings or features	No advantages	No advantages	No advantages	No advantages
Disadvantages	No disadvantages	No disadvantages	Will require changes to moat at Union Station	Will require changes to moat at Union Station	Will require changes to moat at Union Station Will require changes to Royal York Hotel	Will require changes to Royal York Hotel and existing PATH connection.
Natural Environment						
Advantages	No difference	No difference	No difference	No difference	No difference	No difference
Disadvantages	No difference	No difference	No difference	No difference	No difference	No difference
Cost						
Advantages	No cost	Potential revenue opportunities Some potential for cost sharing	Potential revenue opportunities Some potential for cost sharing	Most cost-effective option to construct High potential for cost sharing	Second most cost-effective option to construct High potential for cost sharing	Third most cost-effective option to construct High potential for cost sharing
Disadvantages	No revenue opportunities	Second least cost-effective option to construct due to property acquisition	Least cost-effective option to construct due to property acquisition	Limited No revenue opportunities	Limited revenue opportunities	Limited revenue opportunities
Summary of Evaluation						
	Does not accommodate demand, and therefore does not address problem / opportunity Does not conform to planning policies Does not provide any opportunities to support existing or future retail	Limited accommodation of pedestrian demand, may attract new users Minimizes traffic disruption and lane closures Potential for new retail development Will result in nuisance effects on businesses	Accommodates demand and will likely attracts new users Potential for new retail opportunities Minimizes nuisance effects on businesses No accessibility issues	Accommodates demand and attracts new users No accessibility issues Minimal effects on existing buildings	Does not provide direct connection to high demand areas Would require elevators to be fully accessible Limited retail development opportunities Will have effects on Royal York Hotel Will benefit businesses in Royal York Hotel through improved access and connectivity Minimizes traffic disruption and lane closures	Does not provide direct connection to high demand areas Would require elevators to be fully accessible Limited retail development opportunities Will have effects on Royal York Hotel Will benefit businesses in Royal York Hotel through improved access and connectivity Minimizes traffic disruption and lane closures

In conclusion, the assessment and evaluation resulted in **Alternative 3 – York Street** being carried forward as the preferred alternative design concept. The York Street Alternative Design Concept:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of Union Station revitalization;
- provides expanded pedestrian capacity and effectively accommodates a range of pedestrian demands (more effective distribution and connectivity, weather protection and direct route to demand areas northwest of Union Station);
- provides pedestrians with a safe and comfortable environment for commuting to and from Union Station;
- meets all accessibility requirements;
- minimizes long-term negative effects on adjacent and surrounding businesses;
- seeks to minimize potential disruptions and impacts to utilities, vehicular and transit operations; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties.

6.2 Surface Alternative Design Concepts

6.2.1 Identification and Description of Preliminary Design Concepts

Alternative surface design concepts **have not been pursued** for University Avenue. University Avenue design concepts were discounted early in the study for the following reasons:

- significant pedestrian capacity issues currently exist on York Street – particularly for the sidewalks immediately south of Wellington Street, where narrow sidewalks and falling ice hazards in the winter, contribute to pedestrian congestion and undesirable conditions.
- intersection and pedestrian realm improvements at the intersection of University/York Street and Front Street West, as envisioned for “special intersections” in the Union Station District Plan, will significantly improve pedestrian capacity and amenity that will be further developed as part of the Front Street Environmental Assessment work to be undertaken by the City of Toronto in 2008;
- York Street potentially provides for a more direct pedestrian route to demand areas north and west of Union Station
- York Street options minimizes potential disruptions to the vehicular network with significantly fewer vehicles utilizing York Street (as opposed to significantly higher volumes on University Avenue)

As such, the following at-grade / surface improvement design concepts were carried forward for consideration on York Street and presented to the public at Public Information Centre (PIC) #2 for comment. These design concepts are exclusively within the publicly owned right-of-way (streets) with the potential for connections to the new PATH tunnel under York Street where both desired and technically feasible

Surface Alternative 1 - Do Nothing - (refer to Figure 13a)

This base condition is intended to reflect existing conditions on the roadway network. No changes to the public realm or existing conditions are proposed for this alternative.

Surface Alternative 2 - Two Travel Lanes (One-way Northbound) - (refer to Figure 13b)

Alternative 2 considers closing the two easterly northbound lanes on York Street from Front Street to Wellington Street resulting in two travel lanes (one way northbound). Intersection configuration modifications are as follows:

Figure 13a –Surface Alternative 1

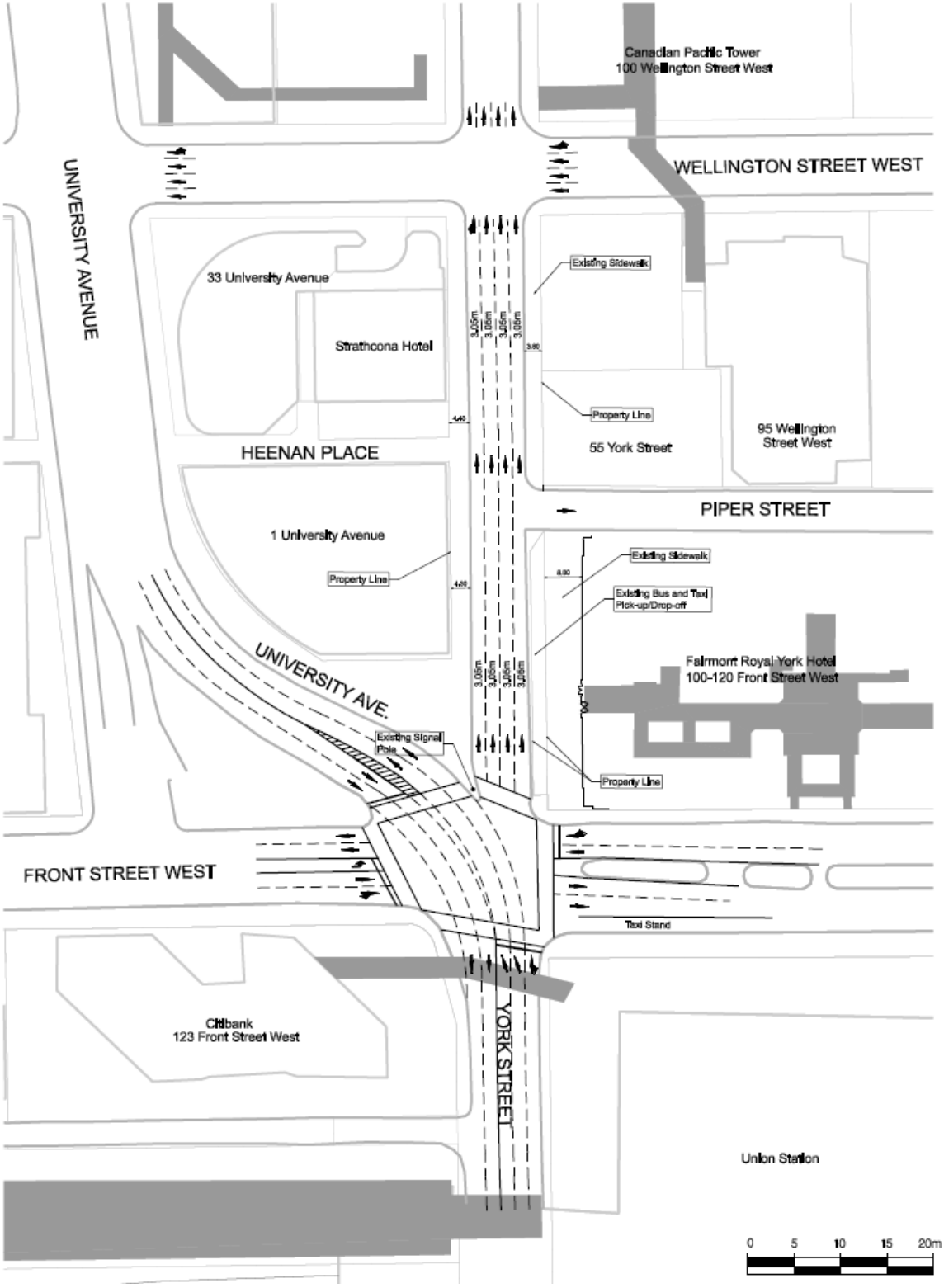
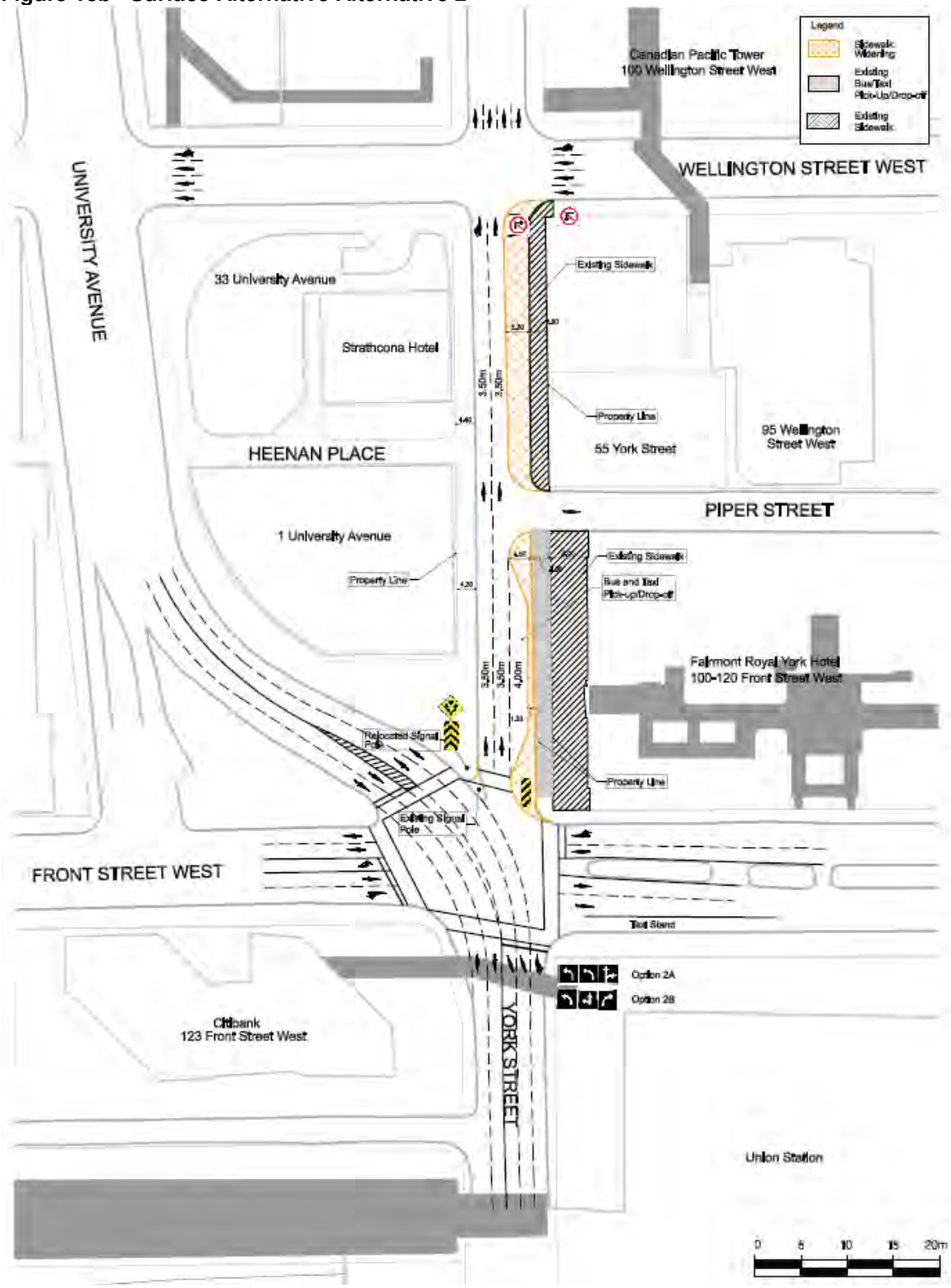


Figure 13b –Surface Alternative Alternative 2



- The northbound approach at the York Street / Wellington Street signalized intersection will be reduced from four lanes to two lanes. The modified northbound approach would consist of one northbound shared through/left turn lane, and one dedicated through lane.
- The north leg of the York Street / Front Street East / University Avenue will have two receiving lanes. Accommodating two receiving lanes on the north leg will require reconstruction of the "bull nose" between University Avenue and York Street.

Surface Alternative 3 – Two Travel lanes (One-way northbound) with lay-by - (refer to Figure 13c)

Alternative 3 considers closing the eastern most northbound lane on York Street from Front Street to Wellington Street. Intersection configuration modifications are as follows:

- The northbound approach at the York Street / Wellington Street East signalized intersection will be reduced from four lanes to three. The modified northbound approach would consist of one northbound shared through/left turn lane, and two dedicated through lanes.
- The north leg of the York Street / Front Street East / University Avenue will be reduced from three receiving lanes to two lanes with additional lay-by facilities:
    - along the east side by the Royal York Hotel to accommodate guest pick-up
    - along the west side to accommodate the existing taxi stand area and guest pick-up at the Strathcona Hotel

Surface Alternative 4 - Full Closure - (refer to Figure 13d)

Alternative 4 considers closing all four lanes of York Street to vehicular traffic and having York Street function as a pedestrian promenade from Wellington Street East to Front Street. This arrangement would result in Piper Street and Heenan Place being restricted to all but service vehicles. The existing underground parking garage egress located immediately south of Heenan Place would have limited access for maintenance or other emergency purposes only.

6.2.2 Assessment Methodology

The assessment methodology is identical to the methodology used for the underground alternative design concepts (as described in Section 6.1.2). The evaluation criteria, indicators, and measures vary somewhat from those used for the underground routes and are shown in Table 10.

6.2.3 Evaluation Results

The surface alternative design concepts were analyzed to identify differences in their net effects on the environment as summarized in Tables 11 and 12.

The assessment and evaluation resulted in Alternative 3 –- Two Travel lanes (One-way northbound) with lay-by - being carried forward as the preferred alternative design concept. This particular York Street Alternative Design:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of Union Station revitalization;
- minimizes negative effects on service levels;;
- reduces pedestrian crossing distances at intersections;
- readily accommodates increased pedestrian traffic and increase business attractiveness as a result;
- provides public realm enhancements through design and landscaping improvements; and
- maximizes public amenity opportunities and potential benefits to adjacent private properties

Figure 13c – Surface Alternative 3

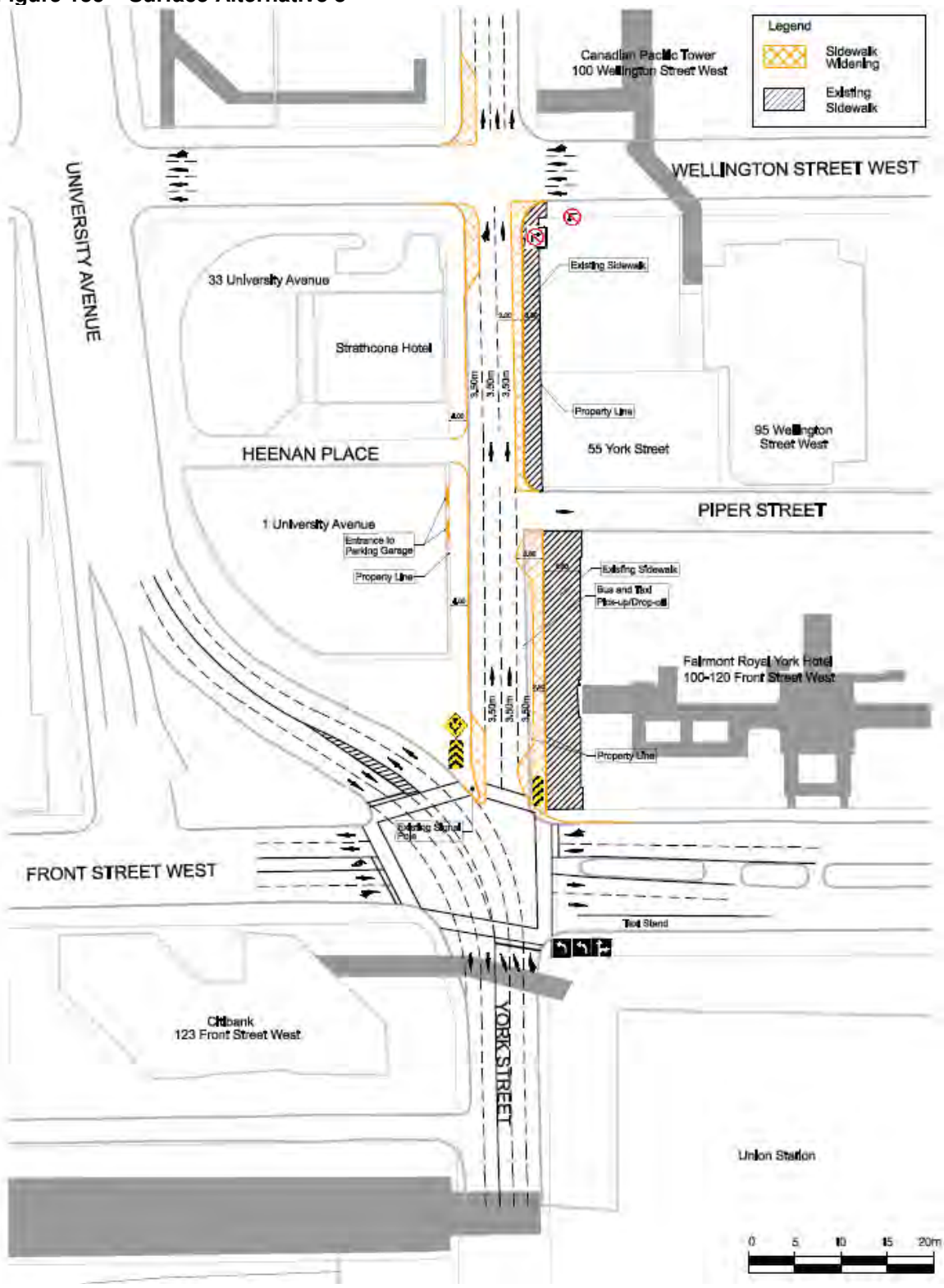


Figure 13d – Surface Alternative 4

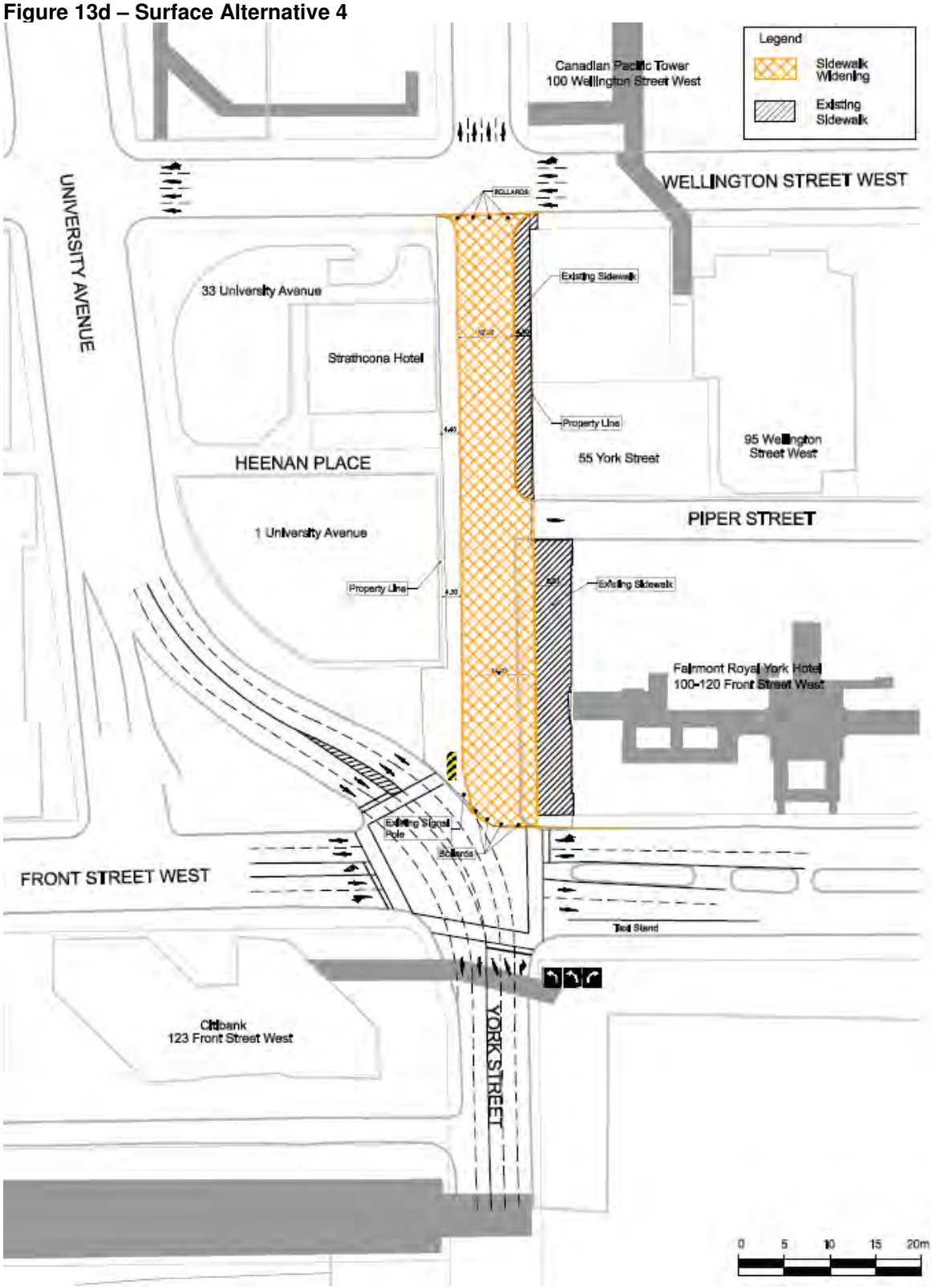


Table 10 – Evaluation Criteria, Indicators and Measures Surface Improvements Alternatives

EVALUATION CRITERIA	INDICATOR	MEASURE
Policy and Planning Environment		
Conformity with relevant policies and plans	Conformity with policies of City of Toronto Official Plan	Supports the Official Plan policies regarding transportation/ land use, role of Union Station, enhanced public realm, protection of the natural environment and natural heritage system
	Agreement with the objectives of Union Station Master Plan	Supports the Union Station Master Plan policies and actions regarding transportation, enhanced public realm and supports "Big Moves" as defined in the Master Plan
	Agreement with the objectives of Union Station District Plan	Supports the Union Station District Plan policies and actions regarding transportation, enhanced public realm and pedestrian priority initiatives
	Consistency with applicable Provincial legislation and guidelines	Supports the Provincial Policy Statement, Places to Grow Act and the Greater Golden Horseshoe Plan
Transportation Environment		
Ability to accommodate demand and attract new users	Maximizes accommodation of existing and forecast pedestrian demands associated with station revitalization and GO Transit's expansion plans	Measure of area for pedestrians
Accessibility to disabled	Provides for barrier free access/ design Meets City of Toronto Accessibility guidelines	Permits the application of barrier-free design standards Provides sufficient area to exceed standards
Potential effects on Traffic / Intersection Operations (existing and future demands)	Maximizes non-auto uses in study area for trips to and within study area	Pedestrian facility network capacity
	Maintains or improves overall level of service (on road segments and at key intersections)	Link capacity
	Maintains or improves connections to adjacent areas/transportation facilities	Facility/network capacity
Potential effects on Corridor Traffic Operations	Minimizes adverse effects on overall level of service on parallel routes	Diverted trips
Potential effects on Municipal operations	Provides ease of maintenance (snow removal, minor repairs)	Does it provide enough room for maintenance vehicles etc.
Potential effects on Emergency Vehicle Operations	Minimizes delays in emergency vehicle access to area	Dependent on number of available lanes
	Minimizes delays to emergency vehicle access on primary routes (University Ave)	Dependent on number of available lanes. York Street is not the main road in the area
Potential effects on Pedestrians and Cyclists	Minimizes potential conflicts between vehicles, pedestrians and cyclists	Pedestrian/vehicle conflict points and alternate routs
	Maximizes sidewalk widths (District Plan)	Measure of widths of future sidewalk on either side
	Minimize pedestrian crossing distances at intersections	Measure of distances at 4 quadrants of intersections
	Maximizes opportunities to accommodate cyclists	Are bike lanes provided
Urban Design / Public Realm Environment		
Potential to provide Public animation and interaction	Maximizes potential for new or enhanced public spaces and public art opportunities	Provides space for the enhancement of pedestrian areas
Potential to provide High level of finish and detail	Maximizes opportunity to establish higher level of design (treatments and pedestrian comfort)	Provides space for the application of high level design and amenity
	Maximizes potential for sidewalk enhancement/ improvements, including sustainable landscaping/ tree planting opportunities	Provides space for the enhancement of sidewalk enhancement and landscape
Potential Ease of use for pedestrians	Minimizes changes in vertical circulation	Number of stairs/grade changes
Geotechnical/Engineering Environment		
Potential Effects on Construction Feasibility	Minimizes construction constraints, complexity	Based on phases of construction as well as traffic shifting
	Minimizes conflicts with existing utility services	Quantity, feasibility and cost of relocations of utilities and/or support of utilities.
Potential Effects on Traffic Flow	Minimizes potential delays and impacts during construction	Number of open lanes during construction
Potential Effects on the TTC	Minimizes potential impacts on Toronto Transit Commission structures and operations (Streetcar)	Allows for uninterrupted streetcar operations
Socio-economic Environment		
Potential Effects on property and business access	Minimizes physical effects on residential and commercial properties	
	Minimizes effects on parking and loading areas	Number of existing parking spots lost and loading areas
	Maintains existing access locations	Number of accesses lost
Potential effects on Parking availability in commercial retail areas	Minimizes affects on number of public on street / off-street parking spaces affected	Number of parking affected
Potential economic effects on adjacent businesses	Supports existing and potential business activity and employment	
	Maximizes business attractiveness due to improved access / connectivity	
Potential economic effects on residential property	Maximizes the Potential to positively impact assessment value	
Potential effects during construction	Minimizes noise dust and vibration levels	Dependent on level of construction
Cultural Environment		
Potential effects on built heritage, cultural and archaeological features	Minimizes the number of heritage features affected	
	Maximizes opportunities to enhance built heritage and cultural features	Opportunity to include streetscape features
Natural Environment		
Potential effects on Air quality	Minimizes potential vehicle exhaust emissions and the relative impact of the emissions that contribute to climate change	Opportunity to create a local environmentally friendly street
	Maximizes attractiveness of walking as the preferred mode of transportation	Opportunity for streetscape and traffic calming
Potential effects on hydrologic cycle (surface water)	Minimizes impervious surface areas	Opportunity to increase in impervious surface area
Potential effects on groundwater	Potential for dewatering during construction	Does not apply to surface improvements
Potential effects on contaminated soils	Potential for disturbance of contaminated soils	Dependent on excavation of material
Cost		
Potential effects on City Budget	Minimizes construction costs	
	Minimizes additional utility costs (upgrading, relocation etc)	Number of utilities affected

Table 11 – Analysis of Surface Alternative Design Concepts

	Alternative 1 Do Nothing	Alternative 2 Two Travel Lanes (One-way Northbound)	Alternative 3 Alternative 3 –- Two Travel lanes (One-way northbound) with lay-by	Alternative 4 Full Closure
Policy and Planning Environment ▪ Conformity with relevant policies and plans	This alternative does not conform to the City of Toronto Official Plan as it does not support an enhanced public realm. Similarly, it is not in agreement with the objectives of the Union Station Master Plan or the Union Station District Plan. It is not consistent with the Provincial Policy Statement, as it does not ensure that the necessary infrastructure has been provided to accommodate projected public needs.	Alternative 2 conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station.	Alternative 3 conforms to all Municipal and Provincial policy, and is consistent with the plans for Union Station.	Alternative 4 does not effectively balance the needs of pedestrians with other users of the transportation system.
Transportation Environment ▪ Ability to accommodate demand and attract new users ▪ Accessibility to disabled ▪ Potential effects on Traffic / Intersection Operations (existing and future demands) ▪ Potential effects on Corridor Traffic Operations ▪ Potential effects on Municipal operations ▪ Potential effects on Emergency Vehicle Operations ▪ Potential effects on Pedestrians and Cyclists	Alternative 1 has very limited potential to accommodate pedestrian demand and accommodate new users. Alternative does not minimize potential conflicts between vehicles, pedestrians, and cyclists, nor does it minimize pedestrian crossing distances.	Alternative has high potential to accommodate pedestrian demand and accommodate new users as it provides increases in the area available for pedestrian realm improvements along York Street. Alternative provides sufficient capacity for vehicular traffic to minimize adverse effects on parallel routes, and still provides for ease of maintenance in terms of snow removal and street repairs. Alternative creates minimal constraints for snow removal and street repairs and is unlikely to result in delays in emergency vehicle access to the area. Provides an opportunity to minimize pedestrian crossing distances at intersections	Alternative has high potential to accommodate pedestrian demand and accommodate new users as it provides increases in the area available for pedestrian realm improvements along York Street. Alternative provides sufficient capacity for vehicular traffic to minimize adverse effects on parallel routes, and still provide for ease of maintenance in terms of snow removal and street repairs. Additional lay-by opportunities to improve traffic flow pick-up/drop-off passenger convenience and reduce potential bottlenecks. Alternative creates minimal constraints for snow removal and street repairs and is unlikely to result in delays in emergency vehicle access to the area. Provides an opportunity to minimize pedestrian crossing distances at intersections.	Alternative has the greatest potential to accommodate pedestrian demand and accommodate new users by providing a pedestrian-only street. Street closure would likely cause some incremental adverse effects on the overall level of service on parallel routes. It also creates constraints for snow removal and street repairs and may result in potential delays in emergency vehicle access to the area. This alternative minimizes potential conflicts between vehicles, pedestrians, and cyclists by creating a pedestrian-only area. Similarly, it minimizes or eliminates pedestrian crossing distances at intersections compared to the other alternatives.
Urban Design / Public Realm Environment ▪ Potential to provide Public animation and interaction ▪ Potential to provide High level of finish and detail ▪ Potential Ease of use for pedestrians	This alternative provides very limited opportunity for the enhancement of pedestrian areas, for the application of high level design and amenity, and for landscaping.	This alternative provides opportunity for the enhancement of pedestrian areas, for the application of high level design and amenity, and for landscaping.	This alternative provides additional space for the enhancement of pedestrian areas, for the application of high level design and amenity, and for landscaping.	This alternative provides the most space for the enhancement of pedestrian areas, for the application of high level design and amenity, and for landscaping. Design and programming of space would need to address safety or perceived safety issues associated with low activity periods of the day.
Geotechnical / Engineering Environment ▪ Potential Effects on Construction Feasibility ▪ Potential Effects on Traffic Flow ▪ Potential Effects on the TTC	There are no effects on the geotechnical / engineering environment from doing nothing.	Up to three lanes to be closed during the construction of Alternative 2. There will be minor impacts to existing utilities, including manholes, valves and other surface features.	Up to two lanes to be closed during the construction of Alternative 3. There will be minor impacts to existing utilities, including manholes, valves and other surface features.	Alternative 4 will be the most straightforward to construct because the entire street will be closed to traffic. There will be minor impacts to existing utilities, including manholes, valves and other surface features.
Socio-economic Environment ▪ Potential Effects on property and business access ▪ Potential effects on Parking availability in commercial retail areas ▪ Potential economic effects on adjacent businesses ▪ Potential economic effects on residential property ▪ Potential effects during construction	There will be no adverse effects on retail uses in the area. Conversely, there is very limited potential to increase pedestrian traffic and to increase the number of customers for businesses along York Street.	Construction of Alternative 2 will result in limited disruption to the entrances of retail uses along York Street. Allows for continued pick-up and drop off opportunities at Royal York Hotel by maintaining existing lay-by	Construction of Alternative 3 will result in limited disruption to the entrances of retail uses along York Street. Allows for continued pick-up and drop off opportunities at Royal York Hotel by maintaining existing lay-by and introduces new lay-by for hotel guests at Strathcona Hotel property.	Alternative 4 will result in the permanent removal of a drop-off location for the Royal York Hotel west entrance along with regular vehicular access to/from Piper Street and Heenan Place. In addition, there will be some disruption to the entrances of retail uses along York Street during construction. However, the creation of a pedestrian-only street could redistribute and increase pedestrian traffic and potentially increase the number of potential custumers for businesses at certain times of the day. Removes any opportunity for retail pass-by traffic activity
Cultural Environment ▪ Potential effects on built heritage, cultural and archaeological features	There is no difference between the alternatives.	There is no difference between the alternatives.	There is no difference between the alternatives.	There is no difference between the alternatives.
Natural Environment ▪ Potential effects on Air quality ▪ Potential effects on Stormwater Management ▪ Potential effects on groundwater ▪ Potential effects on contaminated soils	There is no difference between the alternatives.	There is no difference between the alternatives.	There is no difference between the alternatives.	There is no difference between the alternatives.
Cost ▪ Potential effects on City Budget	There is no cost associated with Alternative 1.	Second Highest	Highest	Third Highest

Table 12 –Evaluation of Surface Alternative Design Concepts

	Alternative 1 Do Nothing	Alternative 2 Two Travel Lanes (One-way Northbound)	Alternative 3 Alternative 3 – Two Travel lanes (One-way northbound) with lay-by Preferred Alternative Design	Alternative 4 Full Closure
Planning and Policy Environment				
Advantages	No advantages	Conforms to policies	Conforms to policies	Conforms to some policies
Disadvantages	Does not conform to policies	No disadvantages	No disadvantages	Does not balance needs of all users.
Transportation Environment				
Advantages	No effect on emergency vehicles Maintains existing traffic / intersection operations	High potential to accommodate pedestrian demand Minimizes adverse effects on traffic service levels Minimizes pedestrian crossing distances	High potential to accommodate pedestrian demand Minimizes adverse effects on traffic service levels Minimizes pedestrian crossing distances	High potential to accommodate pedestrian demand Greatly minimizes conflicts between vehicles, pedestrians, and cyclists Minimizes pedestrian crossing distances
Disadvantages	Does not accommodate forecasted pedestrian demands Does not maximize non-auto use within the study area Will not minimize conflicts between vehicles, pedestrians, and cyclists	No disadvantages	No disadvantages	Will not maintain traffic / intersection operations Will not provide direct access for emergency vehicles Will not minimize effects on snow removal and other maintenance operations
Urban Design / Public Realm Environment				
Advantages	No advantages	Provides opportunity for enhancement, design & landscaping	Provides opportunities for enhancement, design & landscaping	Maximum space for enhancement of pedestrian areas and amenities
Disadvantages	Provides minimal space for enhancement, design & landscaping	No disadvantages	No disadvantages	Perceived and real isolation during low activity periods
Geotechnical/Engineering Environment				
Advantages	No effects on utilities No lane closures	Minimizes effects on traffic flow Two lanes open during construction	Minimizes effects on traffic flow Two lanes open during construction	High potential to minimize construction constraints
Disadvantages	No disadvantages	Impacts to manholes, valves Minimizes construction constraints	Impacts to manholes, valves Minimizes construction constraints	Impacts to manholes, valves No potential to minimize effects on traffic flow (All lanes closed permanently)
Socio-economic Environment				
Advantages	No adverse effects	Potential to increase pedestrian traffic and business attractiveness as a result Loading areas access to be maintained during construction No parking affected No access locations lost Addresses circulation needs of adjacent businesses	Potential to increase pedestrian traffic and business attractiveness as a result Loading area access to be maintained during construction No parking affected No access locations lost Addresses circulation and drop-off/pick-up needs of adjacent businesses	High potential to increase pedestrian traffic and maximize business attractiveness as a result. Loading area access points to be maintained during construction Long term potential to attract new businesses to York Street Addresses circulation needs of adjacent businesses
Disadvantage	Does not maximize business attractiveness	Some disruption to the entrances of local businesses during construction	Some disruption to the entrances of local businesses during construction	Will permanently remove west door guest pick-up and drop off location for the Royal York Hotel Some disruption to the entrances of retail uses along York Street during construction. However, the creation of a pedestrian-only street could redistribute and increase pedestrian traffic and potentially increase the number of potential customers for businesses at certain times of the day.
Cultural Environment				
Advantages	No difference	No difference	No difference	No difference
Natural Environment				
Advantages	No advantages	No advantages	No advantages	No advantages
Disadvantages	No disadvantages	No disadvantages	No disadvantages	No disadvantages
Cost				
Ranking	There is no cost associated with Alternative 1.	Second Highest	Highest	Third Highest
Summary of Evaluation				
	Maintains traffic / intersection operations Minimizes pedestrian crossing distances Does not accommodate forecasted pedestrian demands Provides minimal space for enhancement, design and landscaping	Minimizes adverse effects on service level Minimizes pedestrian crossing distances Provides generous space for enhancement, design and landscaping of public realm	Minimizes adverse effects on service level Minimizes pedestrian crossing distances Provides good opportunities for enhancement, design and landscaping of public realm	Will not minimize effects on traffic flow Minimizes pedestrian crossing distances Maximum space for enhancement of pedestrian areas and amenities Will permanently remove a drop off location for the Royal York Hotel Will not minimize nuisance effects during construction Will not maintain existing access or pick-up / drop-off locations

7 Public and Agency Consultation

7.1 Consultation Activities

The public consultation program included two Public Information Centres (PICs), a stakeholder workshop, meetings with individual stakeholders, and associated notices and letters advertising the study. The details of these activities are provided below.

7.1.1 Notice of commencement and PIC #1

A notice of commencement and PIC #1 was provided through direct mailings to those stakeholders contained in the project's contact database, and through the newspaper advertisements in NOW Magazine on Thursday February 15, 2007 and Thursday February 22, 2007. Please refer to Appendix B for a copy of the notification material. The review agencies listed below were consulted because of their relevance to the project, in accordance with the Municipal Class EA, which provides guidelines for establishing contact with appropriate review agencies:

- Ontario Ministry of the Environment
- Ontario Ministry of Municipal Affairs and Housing
- Ontario Ministry of Economic Development and Trade
- Ontario Ministry of Culture
- Ontario Ministry of Tourism
- Ontario Secretariat for Aboriginal Affairs (now the Ministry of Aboriginal Affairs)
- Indian and Northern Affairs Canada
- Parks Canada

7.1.2 Alternatives stakeholder workshop

A half-day workshop was held on January 30, 2007 to review and build on the preliminary alternative solutions developed by the project team. This workshop engaged a wide variety of interested stakeholders, including property owners, property managers, and members of the Union Station Revitalization Public Advisory Group. Please refer to Appendix C for minutes of the workshop

7.1.3 Public Information Centres

Public Information Centre #1

Public Information Centre (PIC) #1 was held on February 26, 2007 at Union Station in the GO Transit east concourse. PIC #1 introduced the study and its elements and to provided attendees with the opportunity to offer their comments and discuss them directly with representatives from the City of Toronto, GO Transit and their consultants. The PIC followed an informal "drop-in" format with display boards presenting the project information (a copy of the display material is provided in Appendix D). Four PIC display panels were displayed in the Union Station East Concourse for information purposes until March 15, 2007 along with a request for comments on the project.

A total of 35 people attended the PIC. Attendees were encouraged to provide written comments on comment sheets provided at the PIC and one completed comment sheet was received (see Appendix E for a copy of the PIC sign-in sheets and the comment sheet). Based on comments received at the PIC, a new northwest pedestrian connection was seen to be a welcomed idea. Most of the questions at the PIC pertained to how soon the project would be completed, whether there would be any other public information centres, and where the connection from Union Station would be located.

Public Information Centre #2

PIC #2 was held on July 10, 2007 at Union Station in the Great Hall to introduce the Alternative Design Concepts for underground routes and surface public realm improvements and to provide attendees with the opportunity to offer their comments and discuss them directly with representatives from the City of Toronto, GO Transit and their consultants. A notice of PIC #2 was provided through direct mailings to those stakeholders contained in the project's contact database, and through the newspaper advertisements in NOW Magazine. Please refer to Appendix F for a copy of the notification material and contact lists.

The PIC followed an informal "drop-in" format with display boards presenting the project information (a copy of the display material is provided in Appendix G). A total of 117 people attended the PIC. Attendees were encouraged to provide written comments on comment sheets provided at the PIC and the Project Team received nine comment sheets during the commenting period. The majority of comments supported Alternative 3 (York St. underground PATH connection) as the preferred Underground Alternative. Of the comments received regarding the surface improvements, the majority agreed with Alternative 2 (Widen Sidewalks and reduce York Street to 2 lanes) as the preferred surface alternative. A number of people expressed interest in seeing new PATH connections developed south of Union Station as well (see Appendix H for a copy of the PIC sign-in sheets and comment sheets).

Most of the general questions at the PIC pertained to how soon the project would be completed (see Table 12 below).

7.1.4 Stakeholder Meetings

Meetings were requested by the following private property stakeholders during the study to understand the study process and to identify potential opportunities, issues or impacts:

- Fairmont Royal York Hotel - 100 Front Street West
- The Cadillac Fairview Corporation Limited – 66 Wellington Street W.
- The Toronto Club – 107 Wellington Street
- Strathcona Hotel – 60 York St.
- Toronto Parking Authority (University Avenue Garage) - 40 York Street
- Brookfield Properties Corporation – 70 York St.
- Oxford Properties – 123 Front St. / 1 University Ave.
- 33 University

7.2 Consultation Record

The consultation record (Table 13) provides a summary of the comments received in writing or verbally throughout the duration of the project. It also documents how the project team addressed each comment.

Table 13 – Comment / Response Table

Review Agency/Public Member	Summary of Comments Received	Consideration of Comments Received
Notice of Commencement/PIC # 1		
Ministry of Culture	The Ministry indicated that they would appreciate the opportunity to review additional and more detailed materials as the project progresses.	Included as a review agency for the project
Ministry of Environment	Provided general comments to assist the proposed undertaking: • If construction encounters groundwater, then assessment is required • Dust and Noise control measures should be addressed • Soils should be tested for contaminants • Mitigation measures should be clearly referenced in the ESR and regularly monitored during the construction stage • ESR should provide clear documentation of planning process	Groundwater, Dust, Noise and potential for contaminated soil were all taken into consideration during the assessment and evaluation of alternatives. Appropriate mitigation measures have been identified and will be explored in further detail during detail design.
Ministry of Economic Development & Trade	Respectfully declined invitation to attend the public Information Centres	No action required
PIC # 2		
Fairmont Royal York	Royal York concerned with the location of the surface connection to the new tunnel, as it will partially block the entrance to the hotel.	Project team followed up with a meeting with the hotel to clarify the design of the connection, during which owner concerns were addressed. Owner confident any necessary modifications to the hotel can be made to reduce impacts to sight lines.
Bill Dalton (IBI Group)	Mr. Dalton asked to be added to the project mailing list to advise of any new information and upcoming meetings	Name was added to the mailing list
The Strathcona Hotel	Expressed concerns at the PIC about the potential for the preferred surface - alternative to minimize or eliminate the hotel's only loading access point on York St.	The project team made a modification to Surface Alternative 2, which would establish a lay-by (Bus and Taxi Pick-up/Drop Off) similar to what is provided in front of The Royal York Hotel.
Cadillac Fairview Corporation Limited	Expressed concern of losing a retailer in the event that new connection is made at the food court level of the TD Centre.	Tunnel alignment modified to avoid impact
Brookfield Properties	Expressed concern about the potential of losing parking spaces as a result of new connection Loss of parking at P3 level may be easier to accept	Project team revisited the tunnel alignment with new plans provided by Brookfield and determined that while the connection would be made at a parking level, no parking spaces would be lost.
Toronto Parking Authority	TPA does not favour either of the two options that would transform the parking structure for pedestrian usage Would want to be compensated for loss at fair market value	The two options under the parking garage were not carried forward as the preferred route
Oxford Properties	Expressed interest in a connection to the new PATH tunnel for both 1 University and 123 Front Street.	Project team proceeded with finalizing the planning of a connection to 1 University Avenue.
33 University	Expressed concern that a connection to 33 University through the building will be difficult in the event that parking spaces are lost	Met with representatives of 33 University and explained that other options for a connection are available if the parking spaces remain an issue. Project Team to work with the property management in determining the most suitable connection during later design stages.
Public Member (Comment Sheet) PIC #2	Stated that they would like to see bike lanes on the preferred alternative for York Street	Project team responded to comment by clarifying that there are no existing bike lanes on the roads where improvements are proposed. As a part of the road improvements, wider lanes will be constructed which will better accommodate bikes.
Public Member (Comment Sheet) PIC #2	Supported Alternative 3 for the underground routes because of the improved accessibility	No action required

8 Description of the Proposed Undertaking

After analysis of the evaluation matrix and with input from public, private and government stakeholders, a new underground connection combined with surface improvements is the preliminary preferred design solution. In particular, the solution:

- supports current City Council direction and policy with respect to promoting public transit and other more sustainable modes of transportation as well as the goals and objectives of Union Station revitalization;
- provides expanded pedestrian capacity and effectively accommodates a range of pedestrian demands (more effective distribution and connectivity, weather protection and direct route to demand areas northwest of Union Station)
- provides pedestrians with a safe and comfortable environment for commuting to and from Union Station
- maximizes public amenity opportunities and potential benefits to adjacent private properties

The proposed undertaking is a combination of a new underground PATH connection along York Street between Union Station and Wellington Street (detailed in Section 8.1) and at-grade public realm improvements that increase pedestrian capacity and amenity (detailed in section 8.2). Renderings of the proposed PATH tunnel are provided in the igures 14A and 14B.

A summary of the undertaking is provided below:

Tunnel Component

- Construct a new five metre wide by three metre high concrete PATH tunnel using an open cut and cover method with nine metre deep excavations, requiring temporary support for excavations to prevent any negative impact on the existing infrastructure. The heavy congestion of existing utilities within the project area presents a serious challenge for co-ordinating all the relocations and temporary supporting that would be required in order to construct the tunnel. For the purposes of this EA, preliminary discussions were held with all major utilities, which allowed them to provide input into the selection of the proposed tunnel alternative. Further discussions will be required with the various utilities during the next stages of the tunnel design and construction to determine the details regarding mitigation, relocation, costing and support efforts required.
- Starting at the existing stair enclosure building at the northwest corner of Union Station, align the tunnel such that it runs northwest across Front Street over the existing TTC subway tunnel and along the east side of York Street to the intersection with Wellington Street. At the intersection it turns east to connect to the existing underground PATH tunnel.
- Undertake modifications to the following structures to allow for construction: the existing stair enclosure building on the northwest side of Union Station and the TTC Subway Pumping Station.
- Allows for potential underground connections to the following buildings: 100-120 Front Street West (Royal York Hotel), 1 University Avenue, 33 University Avenue/60 York Street (Strathcona Hotel), and 70 York Street (HSBC Building).
- Use a combination of a cast-in-place concrete structure, which would require ‘in situ’ work including installation of formwork, placing reinforcing bars and pouring concrete, and pre-cast concrete segments to construct the portion of the underground tunnel that is reinforced concrete founded on native soil/shale bedrock
- Use pre-cast concrete box with concrete caisson foundations at each end, and pre-cast concrete wall-beams forming tunnel walls that would be erected on top of the pile caps and supported by concrete

caisson foundations at each end to construct the 21 metre span across the existing subway structure and adjacent pumping station.

- provide public art in the tunnel facility consistent with the City policy for new infrastructure projects.

It should be noted that disruptions and impacts to utilities, vehicular and transit operations are anticipated with tunnel construction under York Street. Efforts or measures to minimize impacts and disruptions have been identified in the EA process and will be pursued with the study stakeholders in further detail during the detailed design and construction stages of this project.

Figure 14a – Artist's rendering of new PATH tunnel interior (looking north)

Figure 14b – Artist's rendering of new PATH tunnel interior (looking south)

Surface Component

- Following tunnel construction, replace York Street's existing roadway configuration with a configuration consisting of two vehicle travel lanes of 3.5 metres in width, proposed lay-bys of 3.0 metres to the south of Piper Street on both sides, and a 3.5 metre bay on the west side north of Heenan Place.
- Widen the sidewalks (as a result of reduced traffic lanes) to a minimum of 11.5 metres from Front Street to Piper Street, and 6.4 metres from Piper Street to Wellington Street on the east side, and 4.0 metres from Front to Heenan Place and 3.5 metres from Heenan Place to Wellington Street on the west side.
- Provide curb extensions at the intersections of York Street and Front Street as well as York Street and Wellington Street.
- Provide a portal via staircase accessing the proposed PATH extension below York Street in the expanded pedestrian boulevard djacent to the west entrance of the Royal York Hotel
- Provide landscaping and urban design enhancements that correspond with the recommendations found in the 2006 Union Station District Plan

It should be noted that the proposed alternative design concept for at-grade or surface improvements are subject to further detailed engineering and traffic operations review during the final design and construction phase of this project..

8.1 Underground PATH Connection

8.1.1 Route Alignment

The new underground tunnel would be constructed within the area with numerous existing utilities and services, including an Enwave chamber and buried 1050mm diameter combined sewer along the centre of York Street, which constrain the new tunnel alignment and its depth below grade. The new tunnel would start at the existing stair enclosure building at the northwest corner of Union Station. The tunnel runs northwest across Front Street over the existing TTC subway tunnel and continues along the east side of York Street to avoid conflicts with the existing combined sewer, up to the intersection with Wellington Street. At Wellington, the tunnel turns east and would be connected to the existing underground PATH tunnel crossing Wellington Street on the east side of York Street. At Front Street to avoid conflict with the existing services, the tunnel gradually slopes down from a shallow depth (floor slab at approximately 4.4 metres below grade) at the crossing over the TTC subway tunnel to approximately 5.7 metres depth at the connection to the Royal York Hotel and 8.7 metres depth at the connection to the building at 1 University. The tunnel would follow the grade raise northward at a depth of 8.7 metres.

Based on more detailed information that was available for the preferred alternative design concept, the overall horizontal alignment was modified from that originally envisioned as a part of Alternative Design Concept 3 to reduce the extent of utility impacts and more specifically with the existing 1050mm diameter combined sewer along York Street.

The overall profile was also changed to a lower elevation to reduce the extent of utility impacts. This resulted in a need to introduce greater elevation transitions in the form of additional stairs. This in turn affected the proposed access points to adjacent properties, as discussed in sections 8.1.2.1 and 8.1.2.2.

8.1.2 Engineering Design

It was established that the new underground PATH tunnel would have minimum clear width of 5.0 metres and a clear height of 3.0 metres. The new underground facility will be completely accessible and conform to all relevant accessibility guidelines. A preliminary analysis indicated that the tunnel walls and slabs would be approximately 500mm thick. Two types of the tunnel structure would be provided:

1. Underground Tunnel: Reinforced concrete structure founded on native soil/shale bedrock (refer to drawing ST-1).
2. Underground Tunnel over Subway: The reinforced concrete box would span approximately 21.0 metres over the existing 15.4 metre wide subway tunnel and adjacent underground pumping station. The new tunnel structure would be supported by caisson foundations bearing on bedrock so that loads from the new tunnel are not imposed on the existing subway structure below (refer to drawing ST-1). The City will work in close consultation with the TTC as more information becomes available during later design stages, to reduced impacts (if any) and implement mitigation measures.

8.1.2.1 Modifications to Existing Structures

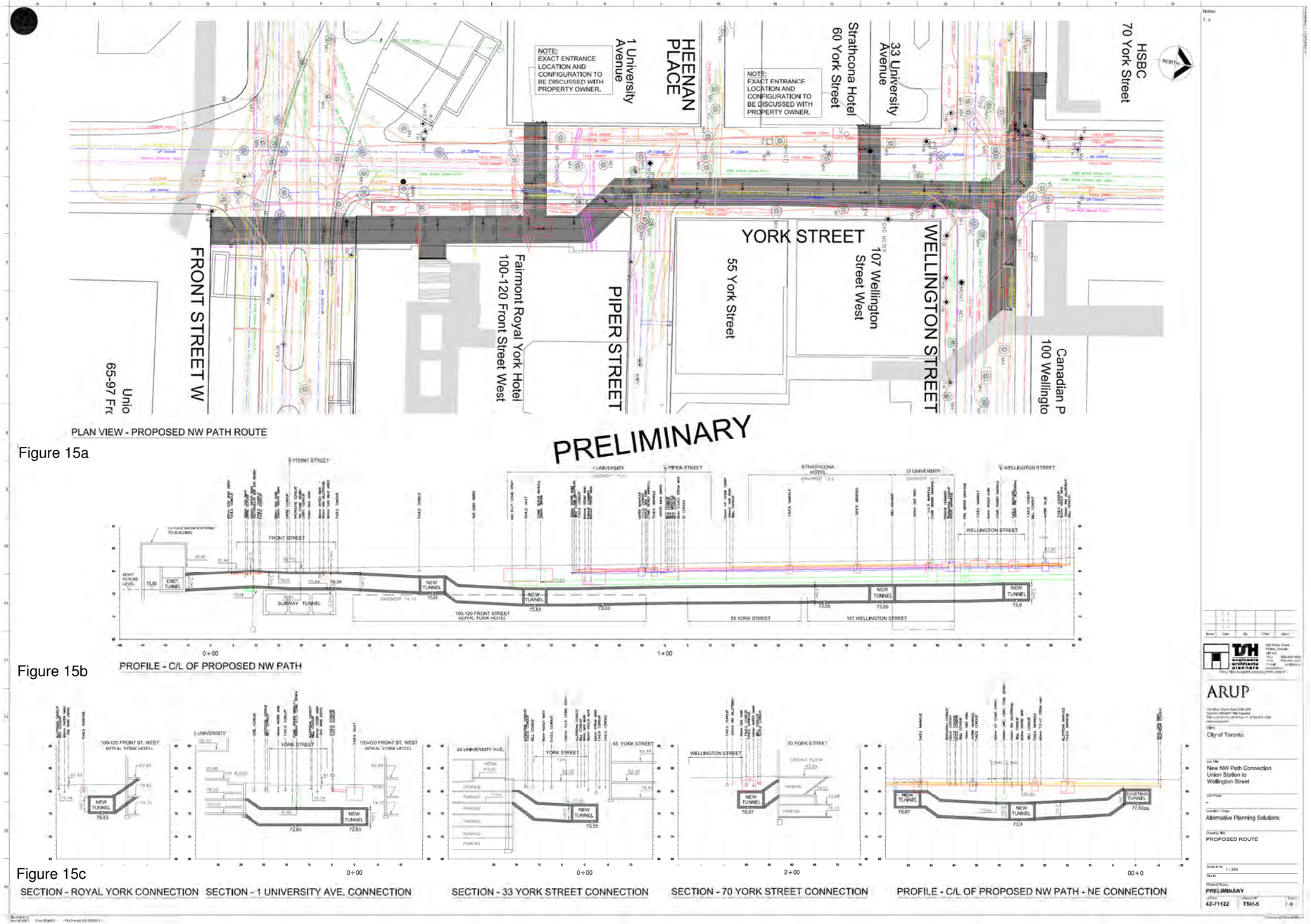
Planning and design of the new PATH tunnel crossings and connections to existing structures described in this section were limited to a planning level of detail augmented with a subsurface utility engineering review. The City of Toronto will need to finalize the details of the crossings and connections during later design studies in consultation with effected parties as more detailed information becomes available. As well, proponents of other parallel initiatives (such as the proposed GO Transit improvements to Union Station, the proposed addition of a second platform at Union Subway Station and Via Rail's renovation of its space at Union Station) will need to co-ordinate their work in consultation with the City as they finalize the design and implement these other facilities, which may affect the design and construction of the new PATH tunnel.

To avoid conflict with the existing steam tunnel crossing below Front Street, the new PATH structure was aligned on the west side of the steam tunnel at a minimum construction distance allowing installation of temporary shoring. The steam tunnel layout shall be confirmed prior to detailed design stage of the project. A survey shall be carried out to verify exact location of the steam tunnel relative to the TTC subway ventilation shaft, its dimensions and elevations. Based on the above findings, the new tunnel alignment would be refined accordingly.

The following modifications to the existing structures would be required to allow construction of the new tunnel:

- Existing Stair Enclosure Building on the northwest side of Union Station – As part of the Union Station Revitalization project modifications to the moat are being considered. Details of the connection of the proposed PATH tunnel to Union Station and the moat area will be coordinated with ongoing Union Station revitalization initiatives being pursued by the City of Toronto and co-ordinated.
- TTC Subway Pumping Station – The existing pumping station, an underground reinforced concrete structure servicing the subway drain system, would require modification to allow construction of the PATH tunnel. Modifications would include demolition of the existing concrete access shaft, underground well expansion with new access shaft, relocating pumps to the new well, localized modifications to the drain system to allow connection to the new well. New reinforced concrete access shaft with openings at street level would be placed within a minimum 2.5 metre space between the existing steam tunnel and the new PATH tunnel.

Figure 15 – Drawing ST-1 Plan, Profile and Cross Sections of Proposed PATH Tunnel



8.1.2.2 Connecting to the Existing Buildings and PATH Tunnel

Planning and design of potential connections to existing buildings along the new PATH Tunnel described in this section were limited to a planning level of detail. While potential connections are provided from the new PATH tunnel to the existing buildings (typically to the basement or other sub-floors), the location of the connections from the tunnels would need to be finalized during later design studies in consultation with the property owners as more detailed information becomes available. In situations where these connections are desired, property owners will need to work in consultation with the City to finalize their access facilities to the tunnel connections within the buildings during later design stages, including (but not limited to) accessibility, interior alterations (i.e., new stairwells, elevators, escalators, hallways, walkways) required to channel pedestrian traffic to/from PATH connections within the buildings. With the exception of the two tunnel terminus links, none of the mid-block tunnel links are essential to the design. It is anticipated that if any of these optional connections are pursued, a suitable cost recovery plan would be negotiated with the benefiting property owner.

The following properties/ or buildings represent potential opportunities for connections to the new PATH tunnel:

Existing Tunnel at 123 Front Street (Citigroup) – Construction of the new PATH tunnel may disrupt the operation of and/or require modification to the existing underground tunnel connecting Union Station at the northwest side to the Citigroup building located at 123 Front Street West. The east entrance to the existing tunnel connecting Union Station with the Citigroup at 123 Front Street West is currently through a stair enclosure building at the moat level (an elevation of 76.8 metres) and stairs leading from the moat to the tunnel floor at an elevation of 74.8 metres. The new tunnel construction would allow for the required dimensions at the existing PATH tunnel connection. Alternatively, the new PATH tunnel could be connected to the existing PATH tunnel at floor elevation 74.8 metres. However, as the existing tunnel clear height is approximately 2.6 metres, the minimum 3.0 metre headroom at the connection would not be achieved. Structural modifications would include a new entrance opening in the existing tunnel's north wall. It should be noted that any proposed connection at the Citigroup PATH tunnel would be subject to complying with any and all PATH agreements between the City of Toronto and the property owner, including granting of permissions if applicable.

These opportunities and impacts will need to be studied in greater detail during later design stages and with affected stakeholders. As well, design and construction of the new tunnel would need to be co-ordinated with Union Station Revitalization initiatives, such as the potential to cover the moat area and implement a new staircase to access the intersection of Front Street West and York Street.

100-120 Front Street West (Royal York Hotel) – The new PATH tunnel could be connected to the Royal York Hotel. Preliminary study and discussions with the hotel indicate that a connection to the west entrance at the "Arcade" level is feasible. For this scenario, new stairs would be required for the connection, as the Arcade floor level is approximately 3.4 metres above the PATH tunnel floor slab at this location. Accessibility considerations would also need to be considered in the design of this potential connection. A new entrance opening in the existing exterior basement wall as well as new opening in the Arcade floor slab to allow new stairs would be also needed. A portal to street level (discussed in greater detail in section 8.2) on the west side of the hotel and on the east side of York Street is also proposed.

1 University Avenue – A connection to the building at 1 University Avenue is possible at parking level P2, which has a floor elevation approximately 2.2 metres above the new tunnel floor slab. New stairs and entrance opening in the exterior basement wall would be required. The connection layout and location (shown on drawing S-1) are approximate and would need to be finalized in consultation with the property owner. Depending on the final location of the connection, an existing Sprinkler/Water Metre Room may need to be relocated. The headroom available level P2 may not be sufficient to achieve the 3 metres specification for the new PATH tunnel. Modification to Level P1 may be required in order to implement the

tunnel. The minimum required headroom for the PATH may be achievable by raising the upper floor slab above new PATH tunnel.

33 University Avenue/60 York Street (Strathcona Hotel) – The location of the potential connection of the new PATH tunnel to both buildings will require review in detail during next stages of the project. Discussions with 33 University Avenue (a residential condominium) and the project team identified the building's interest in having the PATH tunnel connect directly to the building's interior. Two options were devised since impacts of the initial option, Option 1 (a direct connection), may not be feasible due to potential impacts to parking spaces, where the PATH tunnel would connect. A preliminary estimate indicates that approximately five parking spaces may need to be removed to enable this optional connection. Subsequently, a second option was generated which includes an indirect street level connection. The property contacts at 33 University remain interested in a connection and agreed with the project team to assess the connection options during later design stages as more information becomes available to determine the most appropriate solution.

70 York Street – The new PATH tunnel could potentially be connected to the existing building at the concourse level with the floor elevation approximately 2.4 metres above the new PATH tunnel. New stairs and accessibility considerations would be required as well as new entrance opening in the exterior basement wall.

Existing underground PATH tunnel at Wellington Street –The floor of the new PATH tunnel floor at York/Wellington intersection would be approximately 3.3 metres below the floor slab of the existing tunnel connecting Canadian Pacific Tower with 107 Wellington Street building. New stairs and other accessibility considerations would be required for the new opening in the existing PATH tunnel.

8.1.3 Property Acquisition

The "core" tunnel is sited within the City of Toronto road right-of-way, with the exception length of tunnel sited underneath the sidewalk on the west side of the Royal York Hotel. The amount of property required for the tunnel from the Royal York Hotel is approximately 400 square metres.

As discussed in section 8.1.2.2, the only private link that is considered essential to the proposed undertaking is at 70 York Street. This link is required to connect to the existing PATH. The amount of property required for this connection to 70 York Street is approximately 20 square metres.

Property requirements of other connections to private properties that could be investigated further in later design stages (depending on the interests of the owners in pursuing the connections at that time) are:

- 1 University Avenue – 4 square metres (approximately)
- 60 York Street (Strathcona Hotel) – 2 square metres (approximately)
- 33 University Avenue – 2 square metres (approximately)

The areas noted above include the physical footprint of the tunnel only. Property required for construction and maintenance, will need to be determined in later design stages in consultation with the properties.

Representatives of these properties affected were contacted over the course of the study. It was agreed with all affected parties that the details of property acquisition would be addressed in later design stages.

8.1.4 Construction Phase

8.1.4.1 Types of Tunnel Construction

During the initial stages of the study it was established that a typical box tunnel with five metres clear width and three metres clear height would be adopted for review of the underground PATH alignment options.

A large portion of the underground tunnel would be a reinforced concrete structure founded on native soil/shale bedrock. This type of tunnel could be constructed using the following methods:

- Cast-in-place concrete structure - This method would require 'in situ' work including installation of formwork, placing reinforcing bars and pouring concrete. The work would have to be planned in stages to allow time for curing of concrete and removing formwork. Alternatively, in order to shorten the construction time, fast-track concrete (high-early-strength concrete) could be used to achieve specified strength in a shorter period of time ranging from few hours to several days.
- Pre-cast concrete segments, post-tensioned - Precast concrete tunnel segments could be prefabricated in advance while other construction work is carried out. Time required for installation of the pre-cast segments on site would be relatively short.

Part of the new tunnel would span approximately 21 metres across the existing underground subway structure and adjacent pumping station. The following construction methods could be used:

- Pre-cast concrete box approximately 21 metres long would bear on concrete caisson foundations at each end. The weight of the 21 metres long concrete box would be ±500 tons, and special construction methods and equipment would be needed for installation.
- Pre-cast concrete wall-beams forming tunnel walls would be erected on top of the pile caps supported by concrete caisson foundations at each end. Cast-in-place tunnel floor slab would be supported by concrete ledge at the bottom of the wall-beam and roof slab would span between the tunnel walls.

8.1.4.2 Shoring, Temporary Works

The proposed construction is located in the area with numerous existing services and structures. Temporary support for excavations would be required and would be designed to prevent any negative impact on the existing infrastructure. Presence of various buried utilities and services would demand special consideration in the design and construction of the tunnel and temporary works.

It is anticipated that the construction of the underground box structure would be carried out using open cut and cover method. The tunnel, with floor slab at approximately 8.7 metres below grade, would require approximately 9 metres deep excavations.

Based on the available information (geotechnical report for TTC Union Station Platform Expansion, prepared by Jacques Whitford, dated August 30, 2007), shale bedrock in this area may vary from elevation 74 metres to 73 metres. The soil material consists of fill material (sand and/or silty clay fill) overlying silty clay till over weathered bedrock. The groundwater level is about 74 metres. The actual soil conditions in the area of new tunnel alignment are not known at this time. In-depth geotechnical investigations should be carried out early in the design stage of the project to verify depth of fill, horizontal layering of silty sand/sandy silt and groundwater conditions, and to provide detailed recommendations related to temporary shoring and dewatering methods, if required.

For the purposes of this environmental assessment, a conventional shoring system including soldier piles and lagging was considered. To ensure groundwater control and to maintain dry excavations, a shoring system using a continuous caisson wall or positive dewatering such as well points could be provided.

Where the new tunnel would be constructed in close proximity to the existing building structures and the tunnel floor slab would be below building's foundations (Royal York Hotel, 55 York Street, 107 Wellington Street), the following construction methods could be used:

- Underpinning the existing footings;

- Temporary shoring of excavations designed for soil horizontal pressure taking into the account loads imposed by the building's foundations (the new tunnel wall would be designed to withstand all permanent horizontal loads including loads imposed by the existing building);
- Permanent shoring system consisting of caisson wall designed for horizontal earth pressure and loads imposed by the existing building's foundations.

8.1.5 Operations Phase

Initially, the City of Toronto would be responsible for the day-to-day operations and maintenance of the tunnel, including cleaning, providing and maintaining services from utilities, security, maintaining and repairing mechanical and electrical systems such as ventilation, utilities and operating the facilities in accordance to the Ontario Building Code and Ontario Fire Code. t is likely operations and maintenance will be arranged in the longer term, consistent with other City agreements to manage the existing PATH system.

8.2 Surface Public Realm Improvements – York Street

8.2.1 Engineering Design

Consistent with the Union Station District Plan, the overall streetscape improvement concept for York Street is to shift the balance from a vehicle oriented street to a pedestrian environment better suited to the high volumes of foot traffic to and from Union Station. A plan and cross sections of the streetscape plan is provided in Figures 16a and 16b below.

Travel lanes will be reduced from four to two through lanes (with lay-bys) to allow for greater sidewalk widths. The outer two lanes will be converted to drop off and pick up lanes, with some short- term delivery parking permitted on the west side. The drop off and pick up lanes will accommodate passenger bus, taxi and drop off traffic for the two hotels on the street: the Royal York and the Strathcona. The proposed travel lanes will be 3.5 metres in width, while the proposed lay-bys would be 3.0 metres to the south of Piper Street on both sides, with a 3.5 metre bay on the west side north of Heenan Place.

The proposed sidewalk width will vary along the length of the street and from side to side. On the east side, which will handle a larger portion of the peak hour pedestrian traffic, the sidewalks will generally be larger than a typical downtown street with a minimum of 11.5 metres from Front Street to Piper Street in front of the Royal York Hotel, and 6.4 metres from Piper Street to Wellington Street. On the west side, the sidewalks are typical of a Toronto downtown street, with 4.0 metres from Front to Heenan Place, and 3.5 metres from Heenan Place to Wellington Street.

At the intersections of York Street and Front Street as well as York Street and Wellington Street curb extensions are proposed for the following purposes: to indicate that the bays are not through lanes and to reduce pedestrian crossing distance in the east-west direction. An additional curb extension is proposed for the west side of York Street on the north side of the York and Wellington intersection. This is possible with the removal of the western most through lane to the south.

A portal via staircase accessing the proposed PATH extension below York Street could potentially be located in the expanded pedestrian boulevard adjacent to the west entrance to the Royal York Hotel. This would provide access and egress to both the PATH system in a north and south direction as well as to the concourse/arcade level of the hotel. The staircase would be situated to the north of the Royal York entrance so as not to interfere with the historical building façade and canopy. A decorative railing or canopy over the staircase would provide an attractive addition to the streetscape while enforcing the character of the Royal York as well as the entire Union Station District.

The general character of materials and furnishings should correspond with the recommendations found in the 2006 Union Station District Plan. Pavement, trees, bollards, signage, and the lighting strategy should blend seamlessly with other streetscaping elements found throughout the Union Station District.

It is also recommended that street trees be planted in a continuous root zone trench, per the City of Toronto Urban Forestry standards. A proper irrigation system would ensure that the plantings receive at minimum the appropriate amount of water for healthy growth.

The proposed alternative design concept for surface improvements is subject to further detailed engineering and traffic operations review during the design and construction phases of the project.

Figure 16a – Streetscape Plan and Functional Transportation Plan – York Street Plan

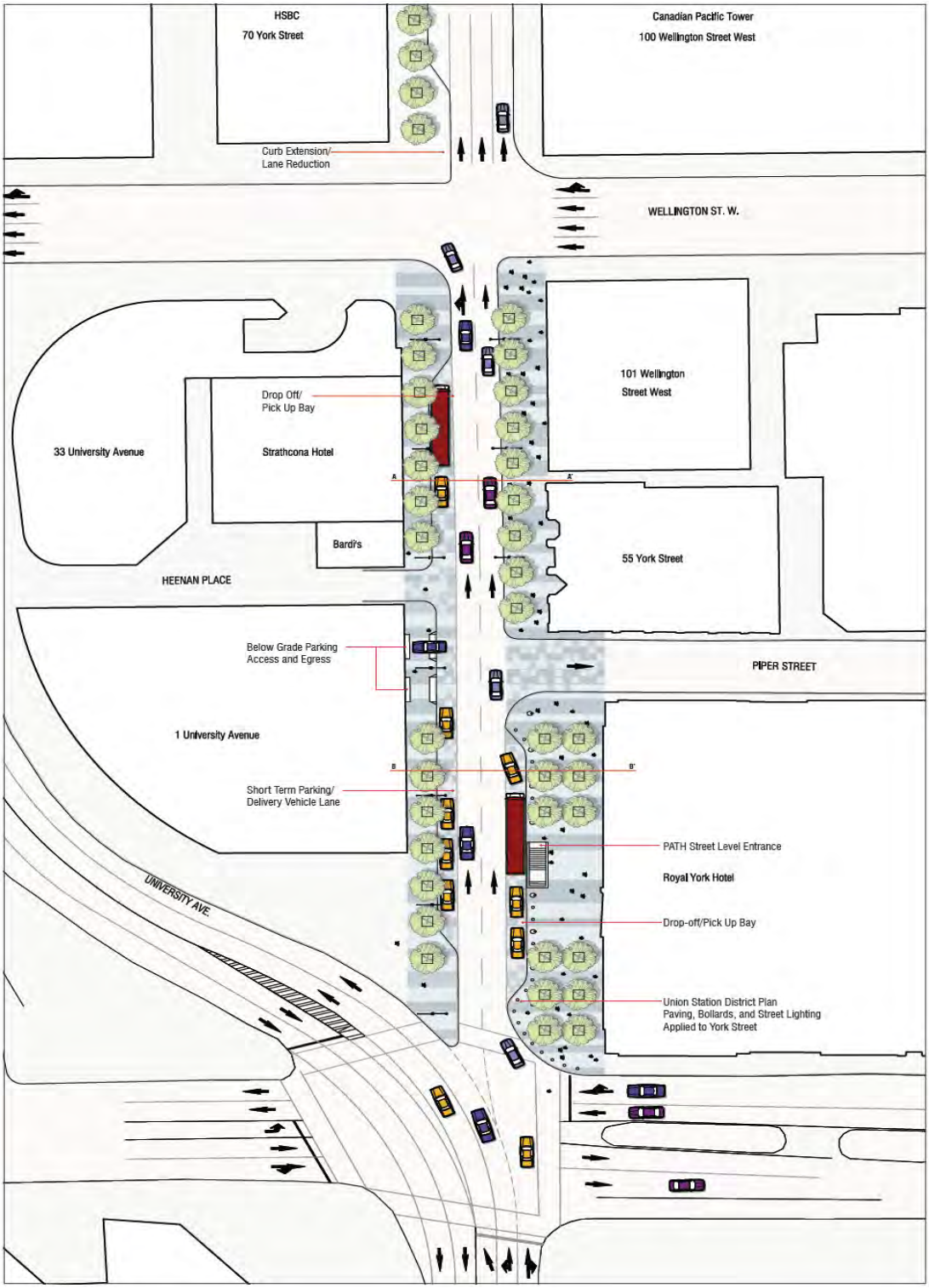
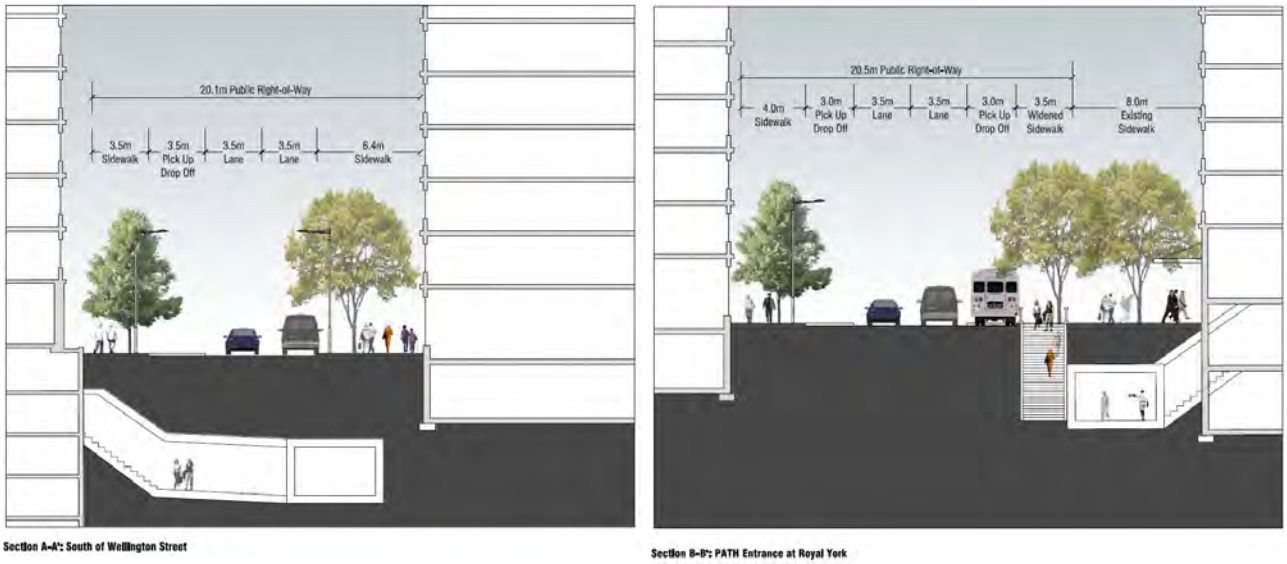


Figure 16b – Streetscape Plan and Functional Transportation Plan – York Street Cross Sections



8.2.2 Property Acquisition

Surface improvements would be constructed primarily within the existing City of Toronto road right-of-way, with the exception a small component owned by the Royal York Hotel.

Representatives of properties that may or will be impacted were consulted over the course of the study. It was agreed that the details of property acquisition would be addressed in design implementation plans to be developed once the study has received environmental clearance.

8.2.3 Construction Phase

Construction of the surface improvements will be staged and coordinated with the tunnel construction with the objective of keeping at least one lane open on York Street. As well temporary lane closures on Front Street, Piper Street, Heenan Place and Wellington may be required to accommodate construction. The objective would be to limit such closures to off-peak hours. Construction staging will be studied in greater detail during later design stages, in consultation with affected stakeholders and landowners. As well a traffic management report will be prepared to address the need for any closures and detours.

8.2.4 Operations Phase (including maintenance)

The City of Toronto will be responsible for street and sidewalk cleaning, snow removal, maintaining services such as sanitary sewers, water mains, storm water management, traffic signals as well as maintenance of landscaping and other street fixtures.

8.3 Preliminary Construction Cost Estimates

A preliminary construction cost estimate was prepared based on current available unit pricing for material and labour and on plans and specifications produced for the tunnel and surface improvements at a planning level-of-detail. The cost estimates presented below are preliminary and subject to revision.

Project	Cost ($2007)
Surface – Public Realm Improvements on York Street	$ 2,500,000
Surface /Below Grade – Surface Connection Outside Royal York Hotel	$ 1,000,000
Below Grade – Connections to Private Properties	$ 1,000,000
Below Grade – New PATH Tunnel	$ 60,500,000
TOTAL	**$ 65,000,000**

Included in the estimates are allowances for Design and Engineering Services (25%) and Construction Administration (10%).

9 Detailed Assessment of Environmental Effects

9.1 Potential Effects

9.1.1 Technical – Transportation Infrastructure

Modifications to the Existing Structures

The potential connections from the proposed PATH tunnel to adjacent properties were limited to a planning level of investigation, as per the requirements of this environmental assessment. Additional study will be required during later design stages to finalize the details of these connections, and in consultation with the owners of the affected properties. As well, it will be the undertakings of the individual properties to finalize access to the new PATH tunnel connections within the buildings. The City, however, will co-ordinate with and work with the individual properties as they finalize their plans. Specifically, mitigation and commitments to future work include:

- Existing Stair Enclosure Building on the northwest corner of Union Station – The Union Station Revitalization project includes modifications to this structure and existing moat. In finalizing details of the new PATH tunnel in later design stages, the City will need to co-ordinate with other elements of the Union Station Revitalization project.
- Existing Steam Tunnel – The new PATH tunnel alignment would need to be refined as necessary during later design stages after undertaking a survey to verify the location and extents of the steam tunnel.
- TTC Subway Pumping Station – Modifications to this facility, as a result of the new PATH tunnel construction will need to be studied in greater detail in consultation with the TTC during later design stages.
- Existing Tunnel at 123 York Street – Citigroup – Potential disruptions and modifications to the existing underground tunnel connecting Union Station to 123 Front Street will need to be studied in greater detail in consultation with affected parties, including property owners and the Union Station Revitalization project, which proposes changes to the moat and stair enclosure building that could impact this tunnel.
- 100-120 Front Street West – Royal York Hotel – The City will need to continue to work in consultation in finalizing any potential connection from the new PATH tunnel to the Royal York Hotel, as well as work with the hotel in any considerations of providing access to the connection from within the hotel.
- 33 University/60 York Street (Strathcona Hotel) – Consultation undertaken as a part of this environmental assessment, indicated that while there remains interest in a connection to these properties, the property and impacts of the new PATH tunnel will need to be studied in greater detail to determine the most optimal connection(s) to the buildings.
- Additional Structural and Foundations Investigations – Further study will be required to determine the extent of any additional support measures for existing building foundations, as well as any shoring or dewatering methods that could be required. Such measures would be undertaken in accordance with the Ontario Building Code, applicable City of Toronto policies and practices and under applicable permits.

Traffic Operations

Construction of the new tunnel could be carried out in stages to reduce impact on pedestrian and vehicular traffic. Construction of the tunnel across Front Street would require temporary closures of Front Street to traffic east of the York Street to allow installation of 21 metre long box tunnel over the subway structure. Traffic along York Street (south of Front Street), Front Street (west of York Street) and University Avenue could be maintained. Disruption to the subway tunnel operations is not anticipated.

Construction of the tunnel along York Street between Front Street and Piper Street would have an impact on pedestrian access to the West Entrance to the Royal York Hotel. The access ramp at 1 University Avenue leading to the underground parking garage, Heenan Place and buildings located on the west side would be accessible, as only east part of the York Street would be closed to the traffic to allow construction activities.

Construction at Piper Street would require temporary re-routing traffic to Wellington Street to allow construction at the intersection with York Street. Construction of the tunnel at Wellington Street would impact streetcar operations as well as vehicular access to the HSBC (70 York Street) and to Canadian Pacific Tower (100 Wellington Street). Vehicular traffic would be temporarily restricted or limited to one side of the street due to the construction work.

A preliminary traffic study was undertaken as a part of this environmental assessment and is appended as Appendix I. Acceptable operations would be provided with the preferred plan and would not adversely affect the existing traffic operations within the study area.

9.1.2 Social / Cultural Environment

Air Quality

Net air quality impacts would be negligible, as there are no recommended increases in roadway capacity for this project. Local increases in diesel emissions and particulate matter (i.e., construction dust) are expected during construction due to construction equipment and activity. As well, diversion of traffic due to temporary closures and detours may result in local increases in vehicle emissions on other streets.

Mitigation measures would include: monitoring dust emissions during construction; use of dust control and suppression measures such as water application where warranted; avoiding unnecessary idling of construction equipment; employing the City's by-laws and practices regarding hours of construction; preparing traffic management plans to address the redistribution of rerouted traffic.

Noise and Vibration

Net noise and vibration impacts would be negligible, as there are no recommended increases in road capacity for this project. Noise and vibration impacts, however, are expected during construction. Construction staging, placing limits on the hours of construction and assigning truck routes are designed to reduce impacts on the local community and are specified within the City's construction contracts.

Land Use

During construction of the underground tunnel, retail uses located on York Street will experience nuisance effects and may experience limited access due to the proximity to construction. Access to the drop-off area and loading area for the Royal York Hotel may be limited at times during construction. Regarding the surface improvements, the reduction to two lanes will result in limited disruption to the entrances of retail uses along York Street. To ensure that retailers and other businesses are aware of the timing of construction, it is recommended that notices be circulated to all adjacent businesses at least two weeks prior to the start of any construction.

The location of the staircase accessing the proposed PATH extension below York Street will result in a reduction in the width of the pedestrian boulevard on the west side of the Royal York Hotel. However, this effect should be offset by the curb extensions at the intersection of York Street and Front Street and the overall improvement to pedestrian circulation in the immediate area.

9.1.3 Natural Environment

Tunnel construction and streetscape improvements to York Street will likely require the removal of all existing street trees (a total of 16 trees) from Front Street to Wellington Street West. The trees are under

varying degrees of stress and do not meet the current City of Toronto planting standards. In addition, the widening of the pedestrian boulevards, relocation of curbs and improvements to roadway structural elements will compromise the root zone of existing trees. These factors will further minimize their chances of reaching a suitable size to positively contribute to the urban forest.

The proposed streetscape improvements recommend the planting of trees within a continuous root zone trench, ideally with structural soil and irrigation. It is proposed that trees be replaced at a ratio of 2:1 (i.e., approximately two trees will be planted for every tree removed). This is in keeping with the improved standards promoted by the City's Urban Forestry and will provide a better opportunity for vigorous and successful growth. All removals and replanting work will be undertaken in compliance with the City's tree protection by-laws.

In addition, as York Street will be reconstructed there may be an opportunity to implement stormwater management practices to mitigate impacts to the hydrologic cycle/surface water as per the "City of Toronto Wet Weather Flow Program, List of CSO/Stormwater Control Alternatives", July 2003 and the "Draft Guideline of Stormwater Management Options for Roadway Reconstruction Projects", June 2005.

9.1.4 Cultural Environment

The final design and construction of the underground PATH connection will require modifications/ intervention to the existing north-west moat wall at Union Station. During construction, every effort should be taken to preserve and respect heritage elements related to the moat and immediate areas. It should be noted that any interventions to the original condition of Union Station requires the approval of Parks Canada.

9.1.5 Utilities – Relocation / Support Strategies

The heavy congestion of existing utilities within the project area presents a serious challenge for co-ordinating all the relocations and temporary supporting that would be required in order to construct the tunnel.

For the purposes of this EA, preliminary discussions were held with the major utilities, which allowed them to provide input into the selection of the proposed tunnel alternative. Further discussion would be required with the various utilities during the next stage of the tunnel design in order to determine the details regarding the relocation/support efforts required.

The following is a brief summary of the potential relocations that would be required for each of the utilities. All work relocations/supports must be completed based on the City's and various Utilities standards for each specific utility and in consultation with the utility companies. At this stage it should be considered preliminary and should be discussed and finalized with each of the various utilities during the next stage of the project. Preliminary costs estimates for utility relocations at this stage are approximately $4 million $\pm$. These costs are reflected in the cost estimates provided in section 8.3 of this report.

Toronto Sewers

The 1050mm x 1575mm Interceptor sewer on the south side of Front Street would create a major pinch point for tunnel alternatives. The location and invert for the 1050mm x 1575mm Interceptor sewer on the south side of Front Street would remain the same; however, the profile would need to be modified to allow for the tunnel to run above it.

The 750mm combined sewer on Front Street would need to be diverted outside of the project area prior to construction of the new tunnel. This study recommends investigation of two feasible options to be considered during later design stages: Option #1 involves relocating sewer to the south, through the moat and tie into the existing storm sewer, which originates under the rail bridge over York Street just south the Front Street intersection. Option #2 involves the diversion of the sewer to the north and the construction of a siphon to where crossing the existing steam tunnel and proposed PATH tunnel.

The chamber south of Wellington where the 1350mm and the 450mm combine into the 1050mm may require reconstruction. Consideration should be made to relocating the chamber to north of Wellington Street, and continuing the 1050mm sewer north through the intersection to the new chamber.

The 450mm combined sewer on Piper Street, and the 600mm sewer along Wellington would be crossed by the new tunnel. The sewers would have to be supported or temporarily removed and pumping established during construction.

The final details for the sewer relocations/reconfigurations will need to be determined during detailed design. Additional discussion will be required with Toronto Technical Services in order to finalize the strategy.

Toronto Water Mains

The 300mm and 600mm water mains along Front St. are scheduled for replacement in 2009. Discussions with the City indicated that both water mains would need to remain, and that the preference would be to route the water mains under the new tunnel to avoid the need for any heat tracing.

The 300mm water main along York Street would require temporary support at the crossings, and a strategy to support or temporarily remove the longitudinal section under directly above the tunnel. The associated fire hydrants and services would also require temporary relocation.

The 150mm water main along York Street would require temporary support at the crossings.

The 300mm water main along Wellington Street would require temporary support at the crossing.

Toronto Hydro Structures

There are several Toronto Hydro structures that would be impacted by the construction of the new tunnel. Two structures running along Front Street would have to be broken out, supported and reconstructed following construction of the tunnel. The final configuration of the ducts would need to be modified due to the limited cover over the tunnel.

The Toronto Hydro Vault structure serving the Royal York Hotel would be directly impacted by the tunnel construction. Further investigation is required to determine if it is more economical / feasible to temporarily support the vault during construction or to relocate the vault chamber prior to construction.

There are multiple Toronto Hydro ducts and chambers running along the east side of York Street which would require support during construction.

There are four Toronto Hydro chambers and several duct structures on Wellington Street West, which would be impacted by construction of the tunnel. The chambers and duct structures would need to be broken out and temporarily supported during construction, then re-built in the same location following construction. Further discussion will be required with Toronto Hydro to determine the strategies that would need to be implemented to accommodate temporary chambers.

Street Lighting and Traffic Signals

Street lighting along York Street, as well as traffic signal plant at the York Street/Wellington Street and York Street/Front Street intersections would be impacted by both the tunnel and surface improvement recommendations.

Street lighting and traffic signal plant are located within the existing Toronto Hydro structures. Therefore, relocation of the street lighting and traffic signals will also be dependent on the relocation requirements for the Toronto Hydro structures.

Enbridge Gas

Enbridge currently has both active and abandoned plant within the project area. An abandoned 500mm gas main on the north side of Front, and the abandoned 500mm and 600mm gas mains on the south side of Front Street would require removal to facilitate construction of the new tunnel. Abandoned gas mains along York Street would also require removal within the construction area of the new tunnel.

The existing 300mm gas main along Front Street would need to be relocated and temporarily supported over the excavation area.

Bell Telephone

Bell Canada currently has duct structures on either side of the road along York Street. The duct on the west side would require temporary support during construction. The duct structure on the east side of York Street would need to be excavated out and supported along the entire length of the impacted area along York. The existing Bell chamber at the Piper intersection would be excavated out and cable supported during construction.

The Bell structure running along the north side of Wellington Street West would need to be excavated out and temporarily supported.

Ontario Hydro

Ontario Hydro has an existing plant running along Front Street and along York Street. Additional consultation is required with Ontario Hydro to determine the appropriate measures for support or relocation of the existing cables along Front Street, as well as the impact on the cables running along York Street. If the York Street cables are to remain in place - special consideration would have to be given when supporting their structure during construction, as unique insulation requirements or other conditions may be necessary while the pipes are exposed and supported. As a part of this environmental assessment study, Ontario Hydro was contacted to gather typical support details, however none have been received to date. Additional discussion and meetings would be required during the next stages of the project.

Enwave

The proposed tunnel is aligned such that it should not impact the large Enwave structure in the middle of York Street. Heating and cooling pipes running from the large structure along York Street, however, would need to be temporarily supported during the construction of the tunnel. In addition, some sections of pipe outside the Royal York hotel may require relocation to avoid conflict with the tunnel. Further discussion with Enwave and investigation are required to determine the exact impacts, extent and method of temporary support during the next phase of design.

Rogers

Rogers fibre / coax cables are present within Toronto Hydro and Bell Canada structure on both York and Front Streets. It is also present in a joint trench on Front Street with GT and TELUS. Structures along Front Street (Toronto Hydro and the Joint Trench) would need to be relocated prior to construction of the tunnel, and temporarily supported during construction. The final configuration of the ducts would need to be modified due to the limited cover over the tunnel.

Telus

The joint trench that Telus inhabits on Front Street West would have to be relocated prior to construction of the tunnel, and temporarily supported during construction. The final configuration of the ducts would need to be modified due to the limited cover over the tunnel. Structures located on both York and Wellington Streets would need to be temporarily supported during construction.

Group Telecom

The joint trench Group Telecom shares with Rogers and Telus on Front Street West would have to be relocated prior to construction of the tunnel, and temporarily supported during construction. The final configuration of the ducts would need to be modified due to the limited cover over the tunnel. The structure located on York Street would need to be temporarily supported during construction.

Allstream (Formerly AT&T)

There are three Allstream structures located on Front Street, two of which are previously owned by Unitel and labelled as such in the DMOG mapping. The other is an abandoned water main in which an Allstream fibre is now routed. All of these structures would have to be relocated prior to construction of the tunnel, and temporarily supported during construction.

Allstream also exists in abandoned water main structures running up both York Street and across Wellington Street within the construction area. These structures would have to be supported during construction.

It should be noted that efforts to minimize impacts and disruptions to utilities have been identified in the EA process and will be pursued with the study stakeholders in further detail during the detailed design and construction stages of this project.

10 Summary of Mitigation and Future Commitments

As the project moves forward to later design stages there will likely be a need to gather additional information in key areas to further identify potential conflicts and implement the solutions. There could be the requirement for test holes in order to determine the exact size and depth of some of the utilities. It will also be very important to have additional discussions with the utilities to further delineate details regarding costs and schedules for the relocations. All work relocations/supports must be completed based on the City of Toronto and various utility companies' standards for each specific utility.

Table 14 – Summary of Mitigation and Future Commitments

Anticipated Effects	Mitigation / Future Commitments
Modifications to existing structures	Additional study during later design stages to finalize the details of these connections, and in consultation with the owners of the affected properties
Nuisance effects from dust, noise, and vibration	Monitoring dust emissions during construction; use of dust control and suppression measures; avoiding unnecessary idling of construction equipment; employing the City's by-laws and practices regarding hours of construction; preparing traffic management plans to address the redistribution of rerouted traffic; assigning truck routes
Reduced access / visibility for retailers along York Street	Mailing of notices to retailers and other businesses to inform them of the timing of construction, coordination/communications throughout the construction period.
Removal of street trees	Replanting of trees within a continuous root zone trench at a ratio of 2:1
Modifications to built heritage, including existing moat at Union Station	Restoration of condition of moat to the extent necessary to preserve and respect heritage elements and address Union Station heritage interventions to the satisfaction of Parks Canada. Undertaking a Cultural Heritage Resource Assessment during detailed design.
Relocation of utilities	Further discussion with the various utilities during the next stage of the tunnel design in order to determine the details regarding the relocation/support efforts and costs required
Building Settlement and potential for dewatering	In-depth geotechnical and foundations investigations during later stages of the project to verify depth of fill, horizontal layering of silty sand/sandy silt and groundwater conditions, and to provide detailed recommendations related to temporary shoring and dewatering methods
Potential for contaminated soils	Phase 1 Environmental Site Assessment to determine likelihood of soil contamination
Property	Negotiations with affected property owners. Where necessary, undertake property acquisition and compensation in accordance with Ontario Expropriations act.
Surface Water	Adopt storm water management practices in accordance to municipal and provincial guidelines and practices
Groundwater	Conduct detailed groundwater and soils analysis to confirm whether a permit to take water is required.
Business Disruption	Hold ongoing discussions with property owners and tenants during design development. Implement traffic management plan including signage and temporary parking (if required). Use on-site community liaison staff to communicate with the local businesses during construction.
Aesthetics	Install and maintain fencing and screening at construction sites. Employ good housekeeping practices.
Archaeological Resources	Should any potential archaeological artifacts be uncovered during construction, the Heritage Operations Unit of the Ministry of Culture will be contacted immediately

11 References

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Appendix A - Subsurface Utility Engineering Services (SUE) Report

The City of Toronto

Union Station NW Path

Report
Subsurface Utility Engineering Services

Project # 7200850187

October 2007

Subsurface Utility Engineers

TSH TBE Joint Venture

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Appendix

1.0 Executive Summary

TSH/TBE Subsurface Utility Engineers (TSH/TBE) completed a Subsurface Utility Engineering (SUE) investigation for the City of Toronto (the City) on York Street from Front Street to Wellington Street. The investigation was completed in accordance with ASCE 38-02 – Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data. The field investigation was completed over the summer of 2007. The purpose of the investigation was to clearly identify the location of the existing underground utilities in order to facilitate the selection of the route for the new PATH tunnel.

TSH/TBE collected existing utility records information from the various Utilities and from the City's DMOG mapping. The records research covered the entire area under consideration along Front Street, University Avenue and York Street. When the proposed route was narrowed down to York Street, TSH/TBE made recommendations for a three stage approach to the collection of the field data:

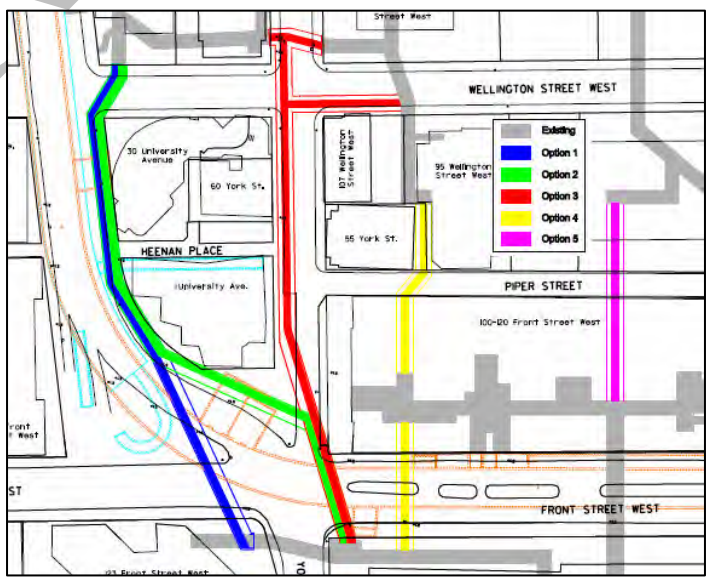
- Phase I - Manhole / Catchbasin Investigation
- Phase II - Utility Designating
- Phase III -Vacuum Excavation

Approval was provided to proceed with Phase I and II. It was determined that Phase III would be completed at a later stage of the design.

The investigation was successful in gathering the utility information for the project in order to evaluate the proposed route for the tunnel. TSH/TBE anticipates that as the design progresses and key conflict areas are identified additional information will be gathered.

2.0 Project Background

The City of Toronto plans to install a new PATH network connection from Union station to the existing PATH tunnel on Wellington Street. The project will involve the construction of an underground tunnel approximately 3m x 5m in size. The tunnel construction will have a major impact on the existing utilities in the area which made it important to create an accurate depiction of the existing conditions.



The limits of the records investigation encompassed the wide area of all 6 original proposed routes. The field investigation was limited to the area of the preferred route along York Street.

3.0 Investigation Methodology

The following methodology provides a step by step summary of the procedures used by TSH/TBE to complete the utility investigation.

Step #1: The first step in the investigation, as with any other SUE investigation, was to collect all available utility records. TSH/TBE used both the DMOG drawings from the City as well as information collected from the individual utilities. The investigation area covered the entire area encompassed by all the options being assessed.

Step #2: The second step was to gather invert elevations for manholes within the area of the proposed route along York Street. Invert measurements were not possible at all locations due to the geometry of the chambers or the depths of the structures. All manholes were surveyed and tied into the coordinates for the drawing.

Step #3: The third stage was to collect quality level B information in the area of the proposed route along York Street. Designating was completed using single and multi-frequency electromagnetic cable locate equipment. Where possible direct connect designating was used; however where access was not possible, inductive designating was also utilized. The designating efforts focused on telecommunications, electrical, gas, and water.

Step #4: The utility information was imported into a composite utility drawing using the City's DMOG drawings as a base. The final drawing has the utility information shown at the appropriate quality level, ranging from D to B, as defined in the ASCE Standard. The use of quality levels will provide the designer/engineer with confidence in the information and provide the bidders with confidence in the location of the utilities so that they can provide competitive bids.

4.0 Conclusions / Recommendations

The SUE investigation for this project provided key information to be used during the design of the new PATH tunnel. The investigation area is very congested with utilities which made mapping a challenge. Some utilities could not be field verified and are therefore left on the drawing at QL-D. In addition to verifying the location of the existing utilities and adding an increased level of accuracy to the existing records, the investigation identified a few discrepancies in the initial information provided on the DMOG mapping.

One major discrepancy was the existence of a large Toronto Hydro structure and chambers along Wellington Road which did not show up on the DMOG map. This structure will have a definite impact on the proposed tunnel alignment.

The data currently shown on the drawing should provide the designers adequate information to move forward with the project design. TSH/TBE recommends that following additional steps be completed during the next stage of the design:

- Test holes should be completed to determine the exact horizontal and vertical location and the nature/material type of the key utilities that will be crossed or approached by the new tunnel;
- Dimensions of the vaults in the critical project areas should be verified;
- The alignment of the steam tunnel across Front Street should be verified with survey data; and
- The location of the TTC vent shafts should be verified.

The utility drawing in Appendix A should be maintained and updated as new utilities are added in order to provide the City with a complete up to date inventory of what is present within the roadway. The information should be relayed to the DMOG mapping group in order to compare to and update their existing drawing.

APPENDIX A
SUE UTILITY DRAWING

Subsurface Utility Engineers
VHTE
Joint Venture

KING STREET WEST

KING STREET WEST

YORK STREET

SIMCOE STREET

EMILY STREET

ORILLIA STREET

BAY STREET

WELLINGTON STREET WEST

WELLINGTON STREET WEST

UNIVERSITY AVENUE

HEENAN PLACE

PIPER STREET

FRONT STREET WEST

SIMCOE STREET

STATION STREET

YORK STREET

BAY STREET

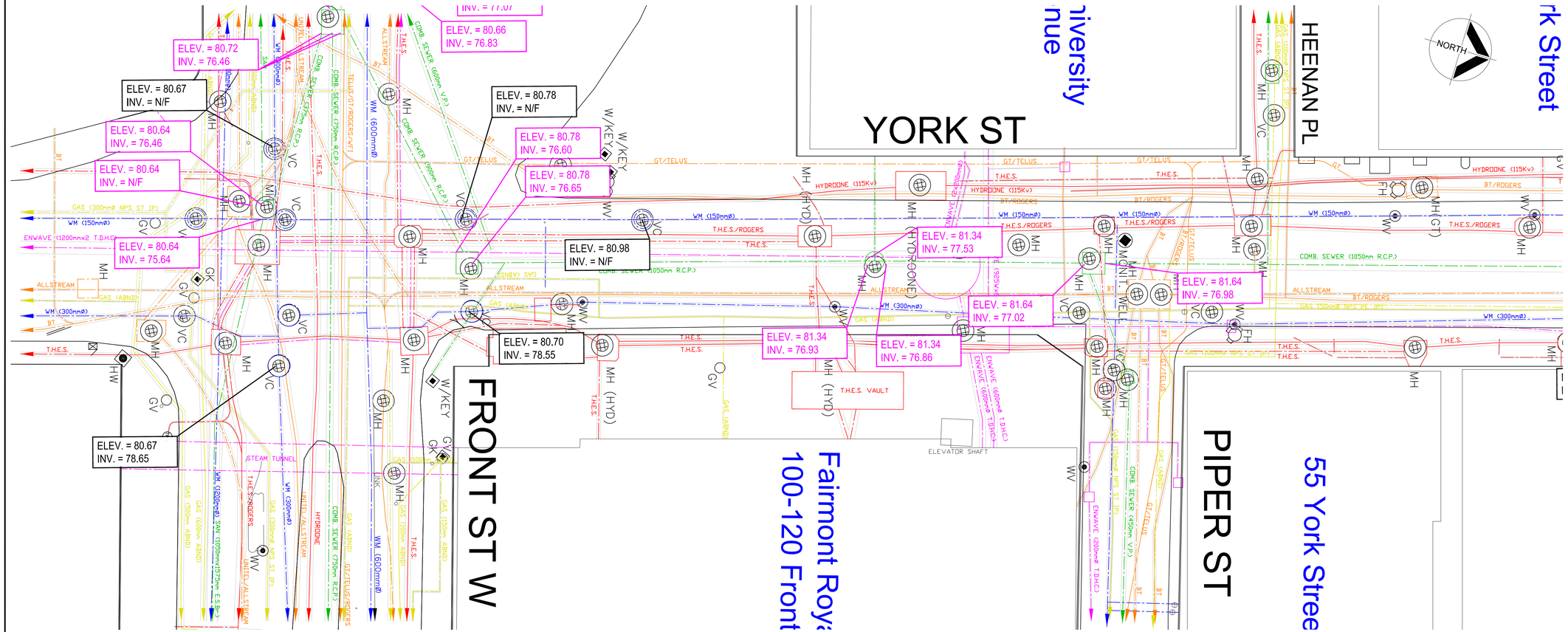
Union Station

Drawing U-1 - Existing Utilities

0 5 10 15 20m

ARUP

TORONTO



PRELIMINARY

GENERAL NOTES

1. TSH/TBE'S SUE FIELD INVESTIGATION WAS PERFORMED SEPTEMBER 2007. CHANGES TO UTILITIES THAT OCCURRED FOLLOWING OUR INVESTIGATION MAY NOT BE SHOWN. CONSIDERATION SHOULD BE GIVEN TO UPDATING THIS PLAN PRIOR TO FINAL DESIGN AND CONSTRUCTION.

2. LIMIT OF INVESTIGATION: INTERSECTION OF FRONT STREET AND YORK STREET. YORK STREET FROM FRONT STREET TO WELLINGTON STREET. WELLINGTON STREET FROM YORK STREET TO 60m± EAST ON WELLINGTON.

3. FIELD VERIFICATION OF UTILITIES WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE AND CABLE LOCATE EQUIPMENT.

4. EMPTY CONDUITS, SERVICES TO BUILDINGS, ABANDONED FACILITIES SUCH AS STREET LIGHT CABLES, WITHIN THE INVESTIGATION AREA MAY NOT BE SHOWN ON THE DRAWING.

5. TSH/TBE WILL USE ALL AVAILABLE MEANS IN AN ATTEMPT TO DETERMINE THE LOCATION OF UNKNOWN UTILITIES HOWEVER CANNOT BE RESPONSIBLE FOR FINDING ALL UNKNOWN UTILITIES.

6. SURVEY OF UNDERGROUND UTILITIES WAS COMPLETED BY SHAEFFER & DZALDOV LIMITED. TSH/TBE IS NOT RESPONSIBLE FOR THE ACCURACY OF SURFACE FEATURES.

7. INFORMATION SHOWN IN BRACKETS ON DRAWING ARE BASED SOLELY ON RECORDS INFORMATION.

8. SEE PROJECT REPORT FOR ADDITIONAL INFORMATION.

LEGEND

GAS	GAS
FOC	FIBRE OPTIC CABLE
BT	BELL
TV	CABLE TV
BE	BURIED ELECTRIC
WM	WATER
SAN	SANITARY SEWER
STM	STORM SEWER
UNK	UNKNOWN
———	QUALITY LEVEL "B"
- - -	QUALITY LEVEL "C"
—·—	QUALITY LEVEL "D"
⌖	TEST HOLE (QL-A)
( )	BRACKETS INDICATE INFORMATION OBTAINED FROM RECORDS

NOTES

THE UTILITY INFORMATION SHOWN ON THIS DRAWING WAS COLLECTED IN ACCORDANCE TO ASCE STANDARD 38-02. THE INFORMATION IS SHOWN BY QUALITY LEVEL WHICH INDICATES THE LEVEL OF EFFORT USED TO DETERMINE THE LOCATION OF THE DATA

INCREASED QUALITY

QUALITY LEVEL "D" – INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

QUALITY LEVEL "C" – INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY LEVEL "D" INFORMATION.

QUALITY LEVEL "B" – INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE UTILITIES.

QUALITY LEVEL "A" – PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASURMENT OF SUBSURFACE UTILITIES.

No.	DATE	BY	ISSUES / REVISIONS
1			

THE ENGINEER'S SEAL HEREON IS TO CERTIFY THAT THE UTILITIES SHOWN HAVE BEEN INVESTIGATED IN ACCORDANCE WITH STANDARD SUE INDUSTRY PRACTICES. ALL OTHER INFORMATION HEREON HAS BEEN PROVIDED BY OTHERS AND IS NOT A PART OF THIS CERTIFICATION.

Subsurface Utility Engineers
TSH TBE Joint Venture
300 WATER STREET
WHITBY, ONTARIO
L1N 9J2
TEL: 905-668-8822
FAX: 905-668-0221
WWW.TSHTBE.CA

CLIENT:

CITY OF TORONTO

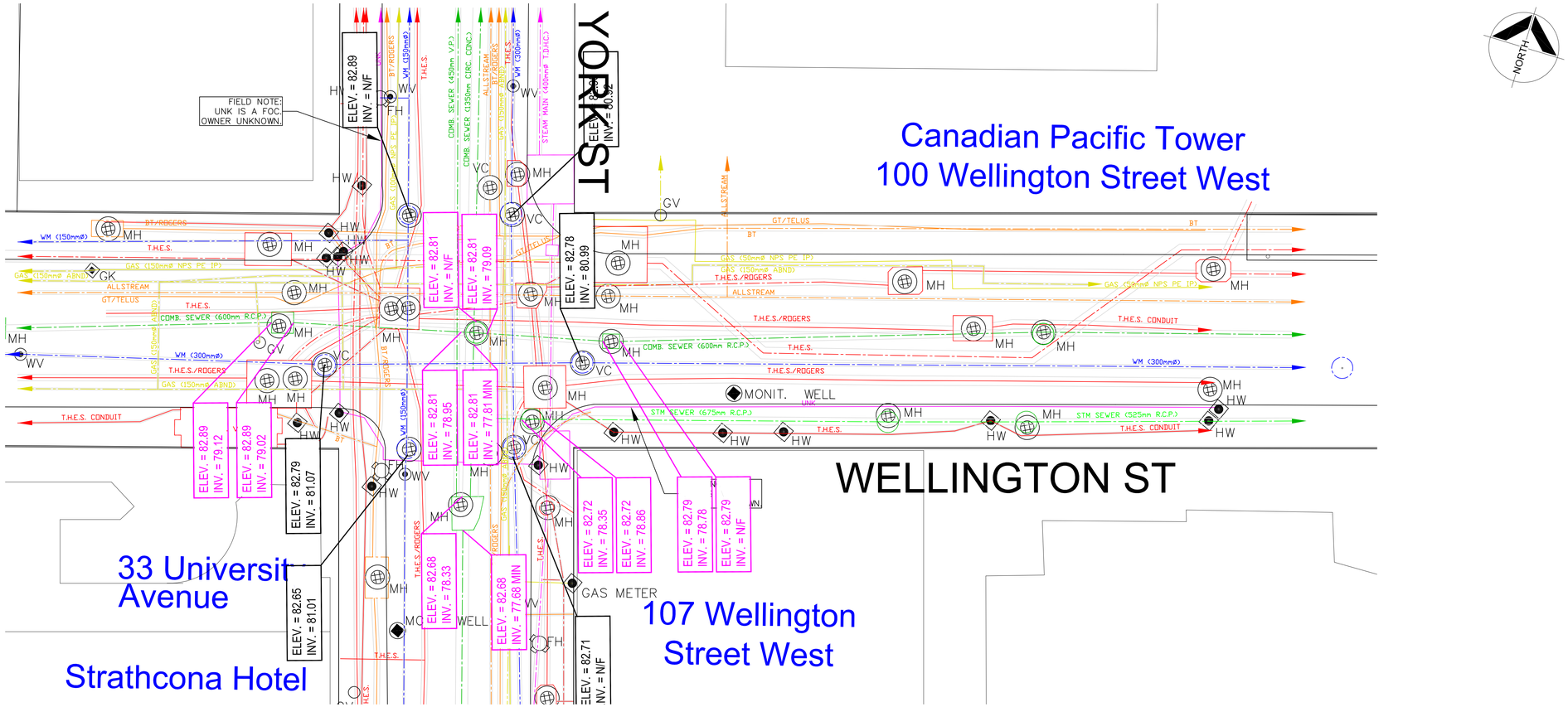
PROJECT:

NEW NW PATH CONNECTION
UNION STATION TO WELLINGTON STREET

DRAWING:

SUBSURFACE UTILITY INVESTIGATION

DRAWN BY:	CHECKED BY:	PROJECT No. :
M. CAVANAUGH	J. BRADBURN	7200850187
DESIGNED BY:	APPROVED BY:	DRAWING No.
	L. ARCAND	P1
SCALE: 1:200	DATE: OCTOBER, 2007	



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CLIENT:

CITY OF TORONTO

PROJECT:

NEW NW PATH CONNECTION
UNION STATION TO WELLINGTON STREET

DRAWING:

SUBSURFACE UTILITY INVESTIGATION

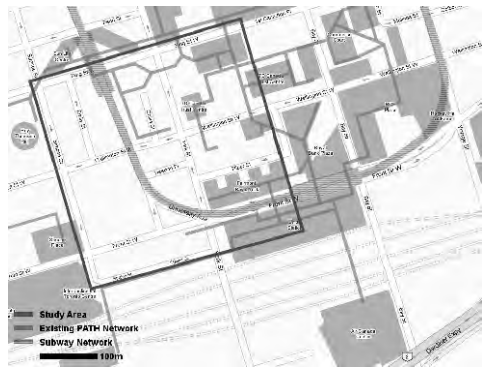
DRAWN BY:	CHECKED BY:	PROJECT No. :
M. CAVANAUGH	J. BRADBURN	7200850187
DESIGNED BY:	APPROVED BY:	DRAWING No.
	L. ARCAND	P2
SCALE:	DATE:	
1:200	OCTOBER, 2007	

Appendix B - Notice of Study Commencement/Public Information Centre #1

Notice of Study Commencement and Public Meeting
Northwest PATH Connection
(Union Station to Wellington Street)
Class Environmental Assessment

The Study

The City of Toronto and GO Transit are currently undertaking a Municipal Class Environmental Assessment Study (Schedule "C) for a new underground northwest PATH pedestrian connection that will extend from Union Station to the existing PATH system in the vicinity of Wellington Street. The City of Toronto and GO Transit have retained the consulting firm Arup Canada Inc. to assist with the study.



The purpose of this new PATH connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new northwest PATH connection will also serve to more effectively disperse underground pedestrian activity in the PATH system which is currently oriented to the north east quadrant of Union Station. This redistribution will occur in conjunction with the development of a new GO Transit west concourse at Union Station that will mirror the existing east concourse.

The Process

The study is being undertaken in accordance with the *Municipal Class Environmental Assessment* (June 2000) process for a **Schedule 'C'** project. Consultation will be an integral component of this study and your ideas and input will be invited as the Environmental Assessment process takes place. An upcoming public meeting will provide members of the public with an opportunity to meet the study team and learn about the issues to be addressed by the study, and potential alternative solutions. The public meeting will take place:

Date: Monday, February 26, 2007
Time: 4:30 p.m. to 7:00 p.m.
Location: Union Station (GO Transit East Concourse)

Comments

During the Class EA, the *s*tudy *t*eam will be collecting comments and information regarding this project from the public in accordance with the requirements of the *Ontario Environmental Assessment Act.* If you wish to receive further information or to be added to the project mailing list, please contact one of the following:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax:: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt
Project Manager
ARUP Canada Inc.
180 Bloor Street East Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@aurp.com

For more information, click on www.toronto.ca/union_station.

TORONTO

Appendix C - Minutes from Stakeholders Workshop

Job title	New Northwest PATH Connection	Job number	96126-00
Meeting name & number	Alternatives Workshop 1/07	File reference	9-04
Location	Union Station Room No. 228A/B/C	Time & date	13:30 January 30, 2007
Purpose of meeting	Stakeholder Workshop - Alternative Solutions and Routes		

Present

Project Team:

Tim Laspa (City of Toronto)
Andrew McAlpine (ARUP)
David Pratt (ARUP)
Marc Rose (Gartner Lee Limited)
Scott Mitchell (City of Toronto)
Jeff Batemen (City of Toronto)
John Bryson (City of Toronto)
Erin Morrow (ARUP)
Edward Terry (Gartner Lee Limited)
David Hopper (GO Transit/HDI)

Stakeholders:

John Spano (Oxford Properties)
Susan Dutton (Avison Young)
Sandra Tofani (Bell Canada)
Richard Avery (IBI Group/Royal York)
David Chalmers (40 University)
Christopher Parkinson (Toronto Club)
Brendan Cullin (Strathcona Hotel)
Catya Covassin (TD Centre)
Tannea Helmta (City of Toronto)
Graham Flude (Royal York Hotel)
Michael Saunders (City of Toronto)
Adam Snow (GO Transit)
James Parach (City of Toronto)
Pie Mammone (TTR)
Jodie Parmer (City of Toronto)
Janice Etter (USRPAG)
Jim Davidson (TD Centre)
Dan Francey (GO Transit)

Apologies

Circulation: Those present

Prepared by: Edward Terry

Date of circulation: February 7, 2007

Date of next meeting

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

1. Introduction

1.1 D. Pratt (ARUP) & M. Rose (GLL) made introductory remarks and introduced the project team.

2. Project overview

2.1 T. Laspa (City of Toronto) presented an overview of the purpose of the project / and policy context and Council's direction to proceed with the initiative

2.2 M. Rose provided an overview of the Schedule "C" Class EA process and outlined the study area

3. Possible solutions and initial routes

3.1 A. McAlpine (ARUP) presented the possible solutions for a new PATH connection and identified initial routes outlining various opportunities and constraints

3.2 Q & A's

Q: Is York Street option complicated because of the Enwave deep water-cooling system?

A: The Enwave pipe is 14m deep. The issue would be examined in further detail as the study progresses.

Q: What is the eastern boundary of the study area?

A: Mid-block between York St. & Bay St.

Q: What is the width of the public Right-of-Way on York Street?

A: Approximately 20m

Q: Suggestion to expand study area further west to provide route for new RBC building?

A: The City is taking planning steps to deal with new PATH connections outside of the study area through the development review process.

4. Evaluation Framework

4.1 M. Rose presented the proposed evaluation framework criteria

4.2 Additional criteria to include:

- Above-Grade pedestrian routes/surface conditions
- Under the category of Cultural Environment include – Quality of pedestrian environment
- # of buildings connected to new route(s)
- Vehicular and Pedestrian capacity
- Length, distance and directness of route

Quality of Environment & way finding

4.3 Should weightings be placed on evaluation framework criteria?

- Higher weightings to pedestrian realm issues
- Long term overall benefit more important than shorter-term disruptions anticipated through Construction process
- Does solution solve the problem - should be the important question

4.3 Stakeholders agreed that it is difficult to weight criteria at this point of the study

5. New solutions and routes

5.1 Attendees split up into break out groups to identify new solutions and routes

5.2 Reconvened to present ideas to the entire group:

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

Group A (See Figure 1)

- Discussed the benefits of a York Street route (provides great opportunities for connectivity to the existing system)
- Pedestrian route(s) should connect to as many buildings as possible along York Street
- Potential for route(s) to pass through the north west portion of Royal York Hotel Potential for Strathcona Hotel connections
- Toronto Club is a heritage designated property

Figure 1

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

Group B (See Figure 2)

- Red route (York Street) would need to be animated

- A new route through Royal York may be problematic when trying to connect to 95 Wellington just north of it
- Hybrid solution – come through Royal York and then to York St - Royal York will help animate part of the route

Figure 2

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

Group C (See Figure 3)

- Need to include retail component
- Need some surface route improvements
- Enhance retail opportunities in Royal York Hotel
- Suggestion: full concourse under Front with a variety of smaller routes heading north
- More buildings need to be connected for project buy-in
- Back-of-house activities at Royal York poses a challenge as you move further east

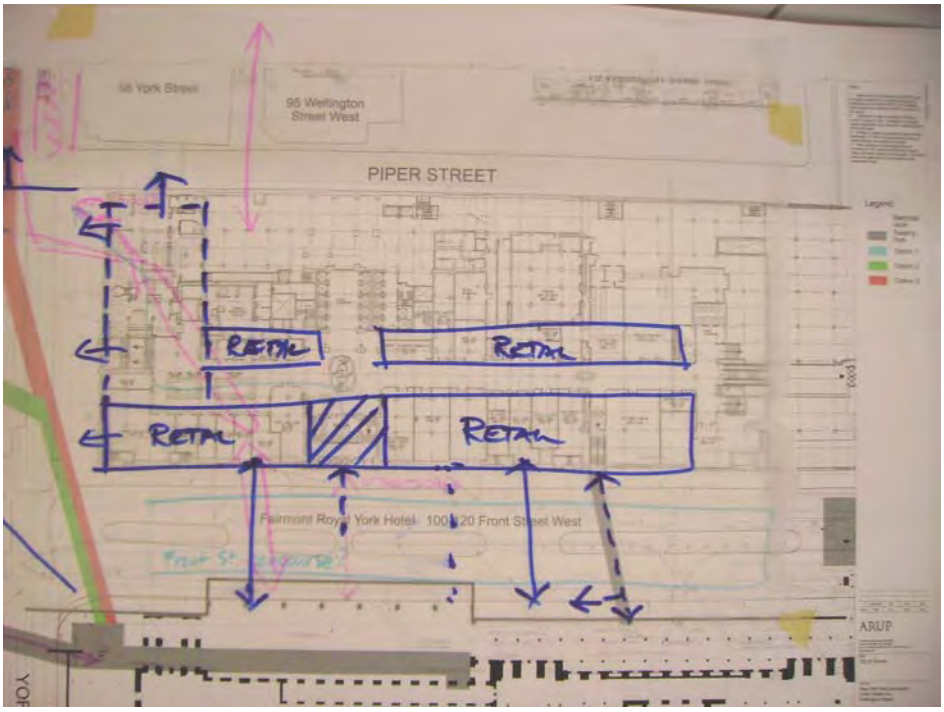


Figure 3

5.3 Post Discussion:

- **Front Street -** is a major challenge with utility locations
- **Deal breaker -** not being connected to buildings
- **Safety, Security and maintenance** - are a concern for sections of a PATH extension within the public right-of-way
- **Cost sharing** – would property owners be willing to share cost
- Just being connected is a big advantage, retail is secondary

6. Next Steps

6.1 M. Rose described the next steps in the process and explained how stakeholders could stay involved wit the Project including the City's website

6.2 T. Laspa thanked attendees for their participation

Appendix D – Public Information Centre #1 - Display Boards

New Northwest PATH Connection
Union Station to Wellington St.

Public Information Centre

TORONTO

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Welcome to the Public Information Centre for the New Northwest PATH Connection Municipal Class EA

- Please sign in on the sheet provided. Then feel free to walk around and view the displays.

- If you have any questions, our representatives will be pleased to discuss the project with you.

- Comment sheets are provided for those who wish to provide comments in writing.

- Please either place your completed sheets in the Comment Box or mail/fax them to one of the identified Project Team Members (see below) by March 16th, 2007.

- Thank-you for your involvement in this project.

- For additional information, please contact one of the following Team Members:

Tim Laspa
Project Manager
Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
Arup Canada Inc.
160 Bloor Street East Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

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Purpose of the Public Information Centre

The purpose of this PIC is to introduce you to this project, inform you of our progress to date, and obtain your comments.

The major elements presented today are:

- Study Overview & Background
- Overview of the Municipal Class Environmental Assessment Process
- Problem/Opportunity Statement
- Alternative Solutions Being Considered
- Existing Study Conditions
- Initial Evaluation of Alternative Solutions
- Preliminary Recommended Solution
- Next Steps

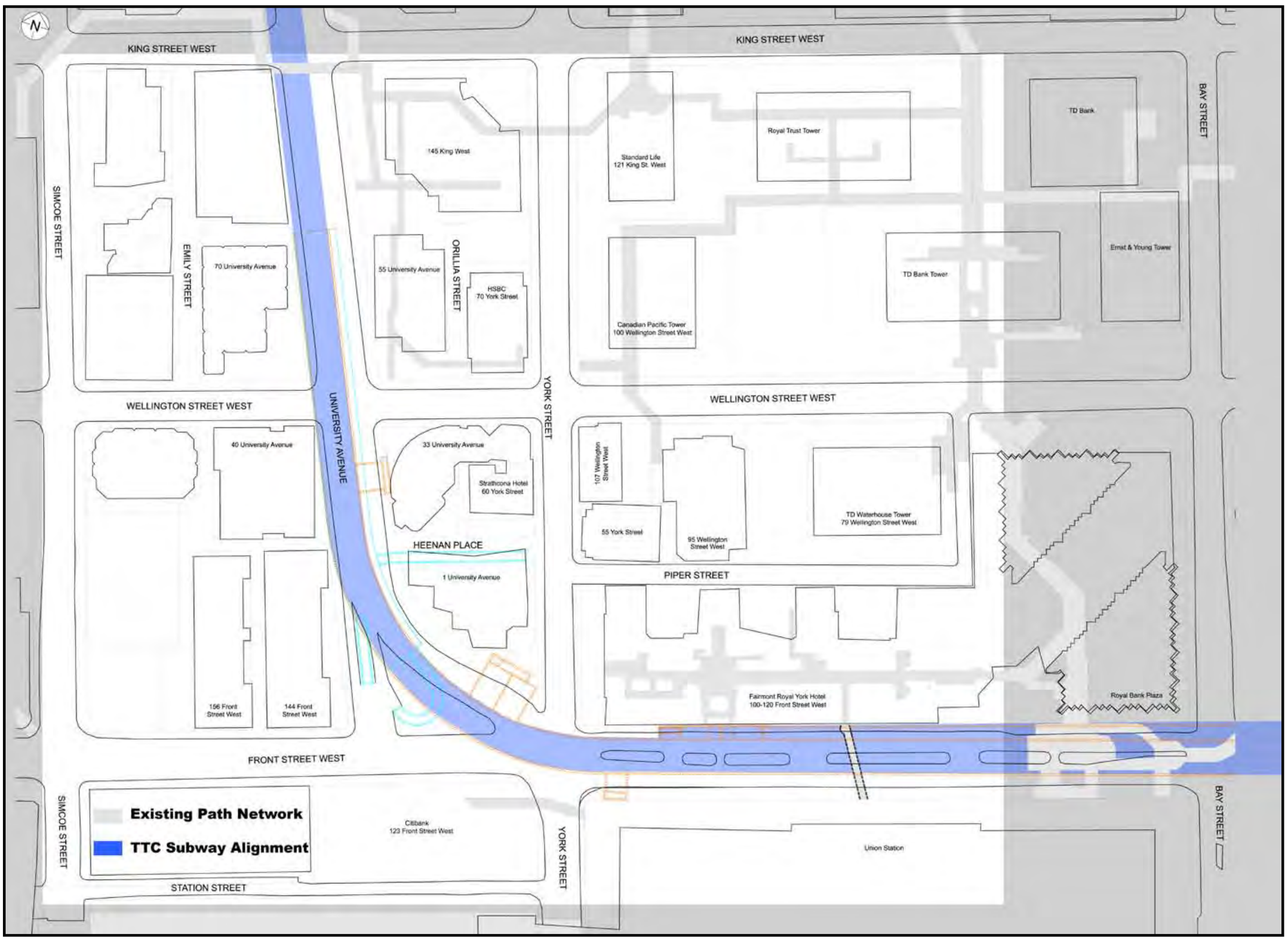
Study Overview

Introduction

- The City of Toronto is undertaking this study to provide additional pedestrian connections from Union Station to the surrounding area.

- The study is following the Schedule ‘C’ requirements of the Municipal Class Environmental Assessment (2000) planning process.

Study Area



Background

- In August 2000 the City of Toronto purchased Union Station from the Toronto Terminals Railway Company (TTR)

- The City of Toronto purchased Union Station in August 2000 with three objectives:
  - Promote Union Station as a multi-model transportation hub
  - Preserve Union Station's heritage
  - Revitalize the existing station facility

- As part of the ongoing Union Station revitalization initiative, City Council has approved a Master Plan (2004) for the building, and a District Plan (2006) for the surrounding area.

- As part of the input to the aforementioned Plans, City Transportation Planning staff commissioned a series of pedestrian studies, one of which was to address the preliminary engineering feasibility of constructing a pedestrian tunnel under Front Street in the vicinity of University Avenue. The preliminary findings of the 2005 pedestrian study indicated that it is possible to construct a new underground pedestrian tunnel under Front Street which could be extended north under York or University Avenue and/or link to adjacent buildings and existing PATH connections in the vicinity of Wellington Street.

- Following from that work in June 2006, City Council directed staff take the necessary action on a priority basis, to commence an Environmental Assessment (EA) for the creation of a new northwest PATH connection in accordance with the design directions noted in the Union Station District Plan.

- Following Council's direction, the City of Toronto is undertaking a Municipal Class Environmental Assessment Study (Schedule 'C') for additional connections (Union Station to Wellington Street) and, with assistance form GO Transit, have retained the consulting firm Arup Canada to assist with the study.

Overview of the Class Environmental Assessment Process

- The Municipal Class Environmental Assessment (2000) (Class EA) process, which is approved under the Environmental Assessment Act, enables the planning of municipal infrastructure projects in accordance with a proven procedure for protecting the environment.

- The study is being undertaken in accordance with the first three Phases of the Class EA process for a Schedule ‘C’ project.

- The Schedule ‘C’ Class EA process includes public and review agency consultation, an evaluation of alternative solutions, an evaluation of alternative design concepts, an assessment of the effects on the environment, and identification of reasonable measures to mitigate any adverse effects.

- There is an opportunity at any time during the Class EA process for public input, including this Public Information Centre (PIC).

- Upon Completion of the Class EA, an Environmental Study Report (ESR) will be available for public review.

Overview of the Class Environmental Assessment Process

PHASE 1

Identify & Describe the Problem/ Opportunity

WE ARE HERE

Alternative solutions are different ways or approaches of solving the problem identified in Phase 1. For this project, alternative solutions include all reasonable and feasible approaches for improving pedestrian connections from Union Station

PHASE 2

Evaluate Alternative Solutions & Establish the Preferred Solution

PIC – February26th, 2007

Alternative design concepts describe ways of developing and designing the project to implement the preferred solution from Phase 2. For this project, alternative design concepts will describe the specific location of improvements to pedestrian connections and what such improvements would look like.

PHASE 3

Identify Alternative Design Concepts, Potential Environmental Effects and the Preferred Concept

PIC
June

Prior to filing the Environmental Study Report, there will be a City of Toronto Staff Report presented to the Planning and Growth Management Committe (item for deputation) and City Council.

PHASE 4

Prepare Environmental Study Report Documenting Phases 1-3

File Environmental Study Report

30 CALENDAR DAY
PUBLIC REVIEW PERIOD

Opportunity for Part II Order

PHASE 5

Complete Drawings & Documents - Proceed to Construct, Operate & Monitor Project

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ARUP

Planning Framework - Policy Direction

- The City of Toronto's Official Plan
  -Supports the need to improve downtown accessibility and mobility, including improving pedestrian circulation in the downtown core.
  -An urban environment and infrastructure will be created that encourages and supports walking throughout the City through policies and practices that ensure safe, direct, comfortable, attractive and convenient pedestrian conditions, including safe walking routes to schools, recreation areas and transit." (Section 2.4(8)).

- The Union Station Master Plan
  -Supports additional connections between Union Station and the PATH network to address future pedestrian demand.
  -Encourages a more porous Union Station that provides improved and efficient pedestrian movement that will enhance the commuting experience.

The Problem - Pedestrian Demand

- Existing morning peak commuter period (1 hour):
  -Approximately 14,000 pedestrians currently exit northbound to Front Street
  -At the same time, approximately 19,000 pedestrians use the existing PATH system.

- Future conditions:
  -exits to Front Street are projected to increase to approximately 24,000 movements. Approximately 13,000 of these pedestrians will continue to travel north, of which an estimated 4,700 to 6,100 will be oriented to the north and west.
  -During the same time, pedestrian flow in the existing PATH will increase to approximately 36,000 movements

- Significant volumes will occur at other peak times, and will also experience increases.

- The Front Street / York Street/University Avenue intersection will, at a maximum, accommodate an estimated 3,900 northbound pedestrians per hour.

- The current facilities and operations will not meet projected pedestrian demands nor provide any opportunity for redistribution of other existing PATH users who may be oriented north and west of the Station.

The Opportunity

- Additional pedestrian facilities, either above ground or subsurface or a combination thereof, are opportunities that will be examined.
- The objective is to provide additional capacity, amenity and routing options to accommodate station related pedestrian activity.

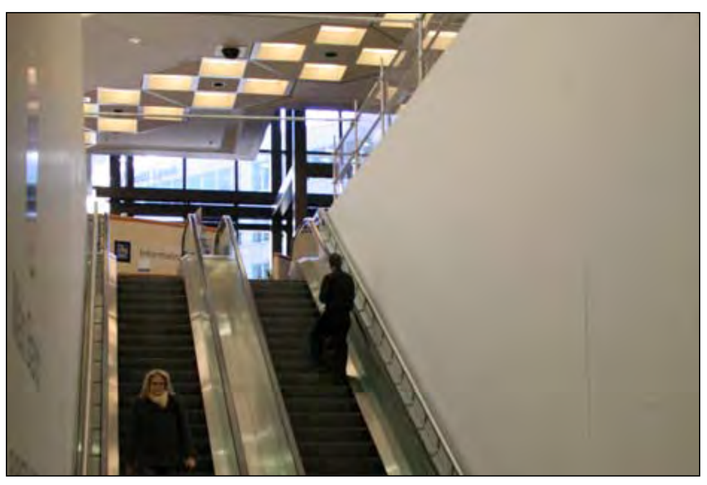
Alternative Solutions Being Considered

1. Do Nothing
No Changes or improvements would be made to the existing PATH system. Acts as a comparitive benchmark.

2. Above ground routes with streetscape improvements
Improvements would be made to the public realm at street level. Such improvements could include widening sidewalks and providing other pedestrian amenities.

3. Improvements to existing underground routes
Sections of the existing PATH system would be widened to accommodate more people.

4. New underground routes
New underground routes would be created by travelling under public rights-of-way and/or through private property. Depending on the location, there would be opportunities to incorporate retail space and public amenities into the routes.

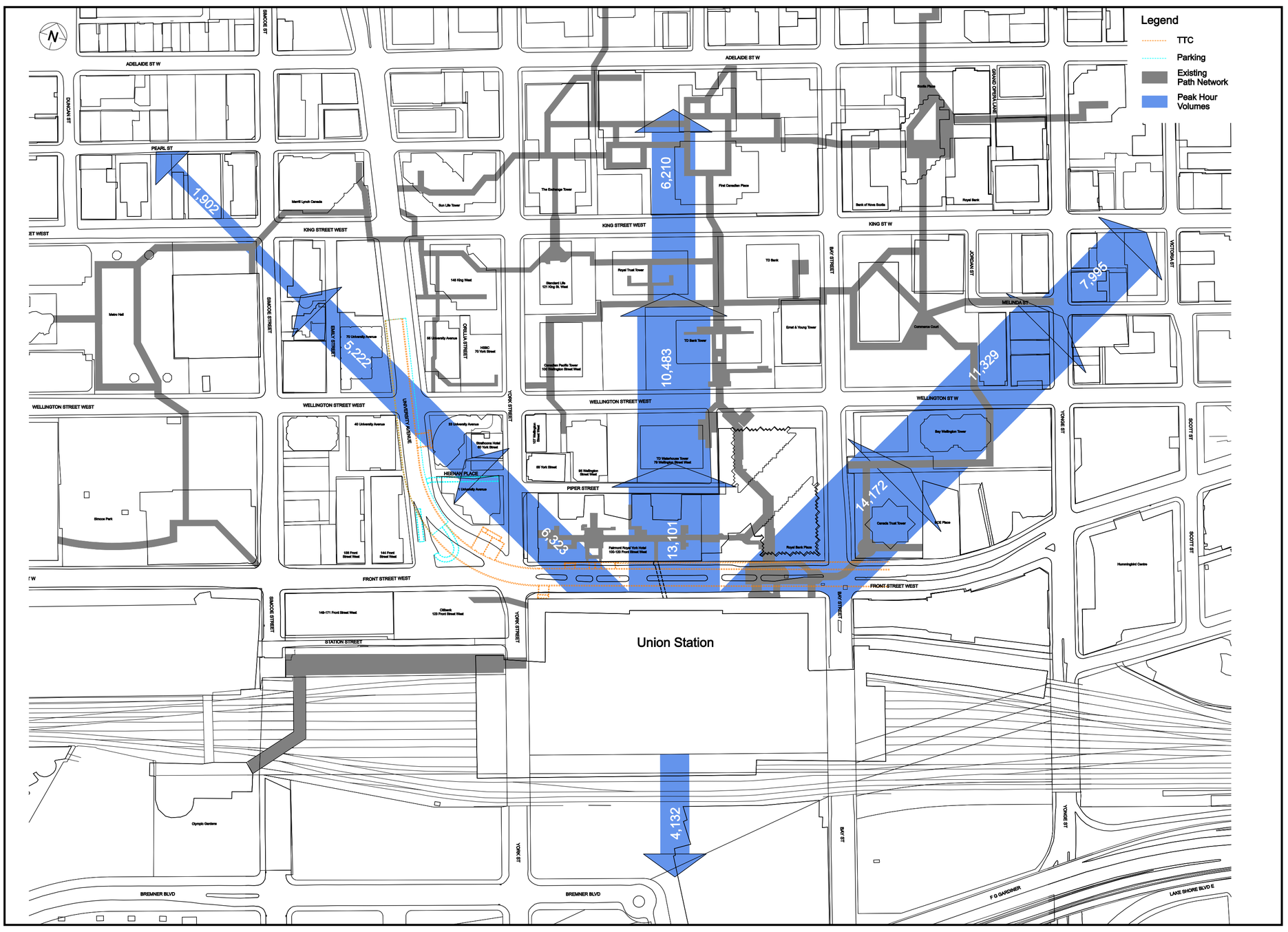


5. New underground routes connecting to above ground routes
New routes would be created by connecting underground and above-ground routes. Pedestrians travelling these routes would be routed through both underground and above ground sections.

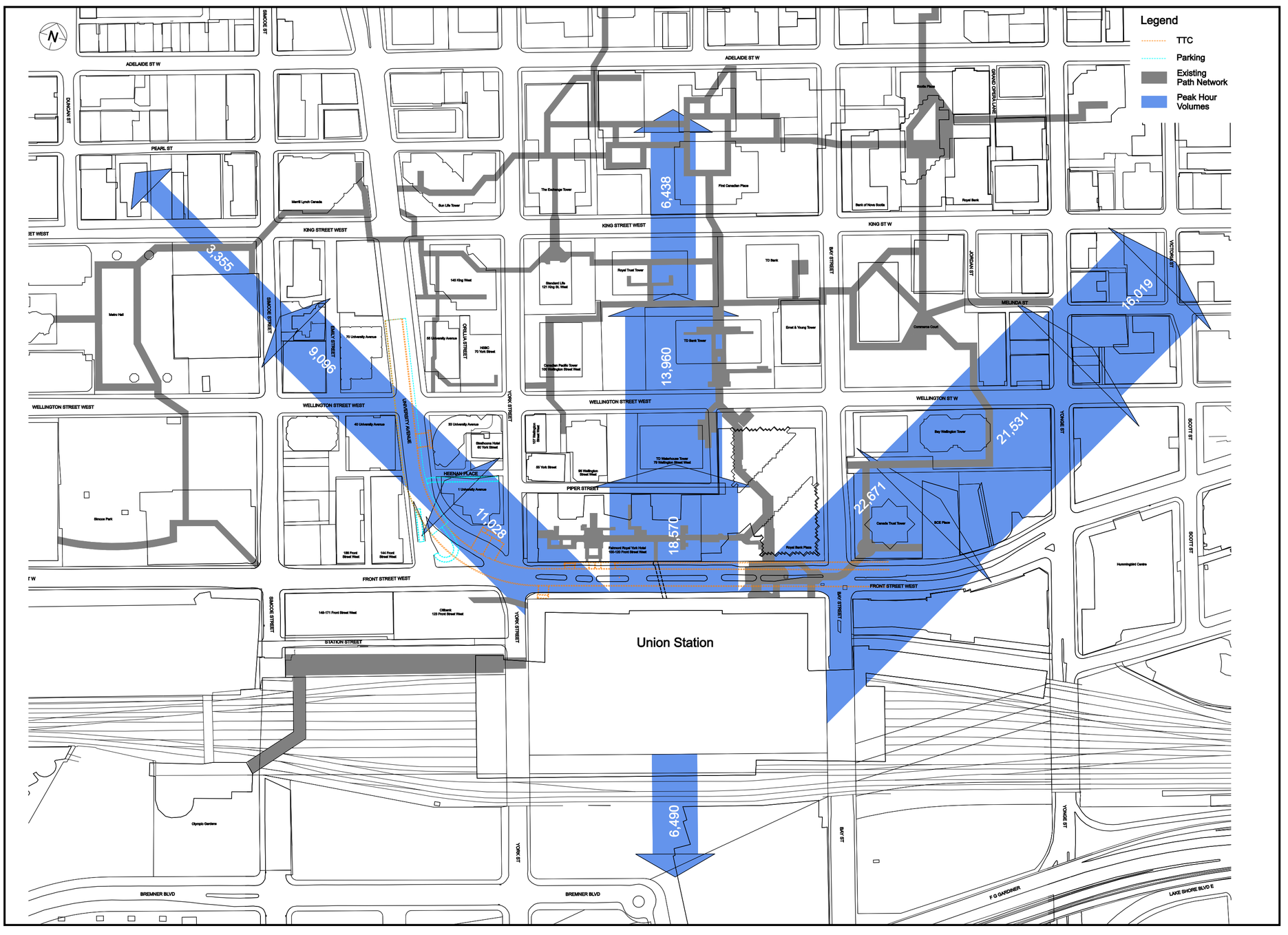
6. New underground routes in parallel to above ground routes
New underground routes would be created along with above-ground routes. Pedestrians would have an opportunity to walk at street level or underground.

Base Conditions

2003 Morning peak hour volumes by destination

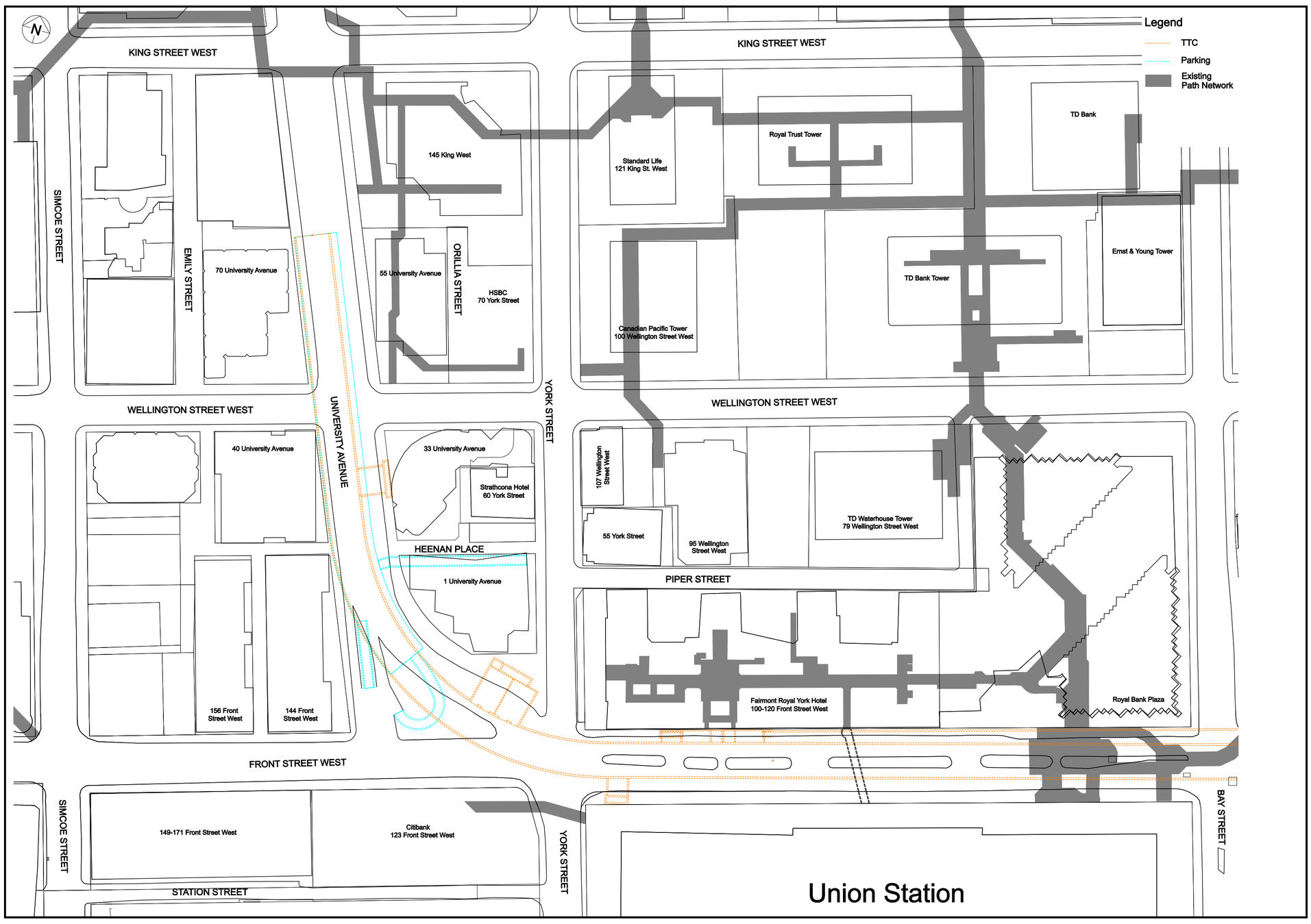


2021 Morning peak hour volumes by destination

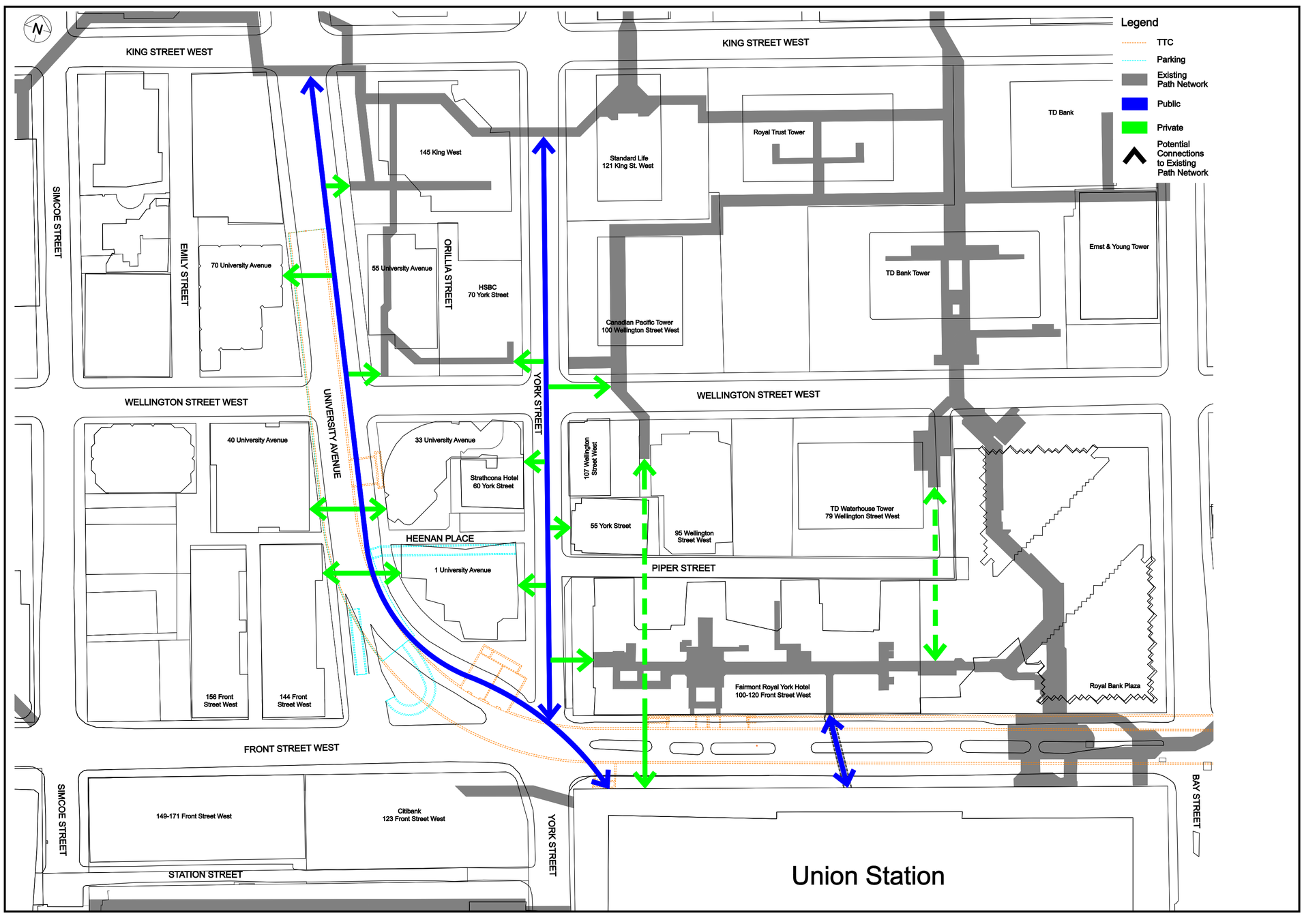


PATH System Connections

Current conditions



Potential route improvements/additions



TORONTO GO ARUP

Preliminary Evaluation of Alternatives

Evaluation Criteria	Do Nothing	Surface Improvements to Above-ground Pedestrian Facilities	Improvements to Existing Underground Routes	New Underground Routes	New Underground routes connecting to Surface Improvements	New Underground Routes in Parallel to Surface Improvements
Policy and Planning Environment						
Conformity with policies of City of Toronto Official Plan Assesses consistency with City of Toronto OP policies & schedules	🔴	🟢	🔴	🟢	🟢	🟢
Conformity with policies of Central Waterfront Secondary Plan Assesses consistency with Central Waterfront Secondary Plan policies & schedules	🔴	🟢	🟢	🟢	🟢	🟢
Agreement with the objectives of Union Station Master Plan Assesses consistency with Union Station Master Plan policies & schedules	🔴	🟡	🟠	🟢	🟢	🟢
Agreement with direction from Toronto City Council Assesses consistency with City Council's direction to staff to commence an Environmental Assessment (EA) for a new northwest PATH connection	🔴	🔴	🔴	🟢	🟢	🟢
Transportation Environment						
Pedestrian flow diverted from existing PATH network Assesses ability to divert users from existing PATH routes	🔴	🟠	🔴	🟢	🟢	🟢
Pedestrian flow capacity where required Assesses potential for fluid pedestrian movement in highly travelled corridors and to relieve congestion	🔴	🟢	🟠	🟢	🟢	🟢
Ease of use for pedestrians Assesses directness of pedestrian connections and degree of vertical circulation (i.e., stairs, elevators, etc.)	🔴	🟡	🟡	🟢	🟢	🟢
Protection of pedestrians against inclement weather Assesses the degree of enclosure or separation from the natural elements	🔴	🔴	🟡	🟢	🟢	🟢
Potential for Overcrowding Assesses the ability to provide a spacious pedestrian environment	🔴	🟢	🟡	🟢	🟢	🟢
Safety of Pedestrians Assesses the opportunities to provide public animation, public interaction and flexibility of pedestrian connections	🟡	🟢	🟡	🔴	🟢	🟡
Connectivity with the existing PATH network Assesses the ability of connecting to the current pedestrian network	🟡	🟡	🟡	🟢	🟢	🟢
Geotechnical / Engineering Environment						
Potential effect on existing structures and operation Assesses the potential impact to surrounding buildings	🟡	🟢	🟠	🟠	🟠	🟠
Ease of Construction Assesses the complexity of constructing new pedestrian connections	🟡	🟢	🔴	🟠	🟠	🟠
Limited staging costs and delays during construction Assesses the potential for impediments to the construction process	🟡	🟢	🟠	🔴	🔴	🔴
Potential effect on public transit during construction Assesses the potential for interruptions to operation of the subway system during construction	🟡	🟡	🔴	🟡	🟡	🟡
Potential effect on vehicular traffic flow during construction Assesses the potential for interruptions to traffic during construction including buses and streetcars	🟡	🟠	🟡	🔴	🔴	🔴
Potential effect on station pedestrian flow during construction Assesses the potential for interruptions to pedestrian movement at Union Station during construction	🟡	🟡	🔴	🟡	🟡	🟡
Frequency of maintenance Assesses how often pedestrian connections and their associated features (e.g., landscaping for surface improvements) would have to be maintained	🟡	🟠	🟡	🟠	🔴	🔴
Minimize cost of implementation Assesses relative cost of constructing pedestrian connection	🟢	🟢	🟡	🟠	🟠	🔴
Potential conflicts with existing utility services Assesses the potential for intersecting with a utility (hydro, phone lines, etc.)	🟡	🟢	🟠	🔴	🟠	🔴
Socio-Economic Environment						
Potential nuisance effects on adjacent uses during construction Assesses potential impacts of construction (Noise, dust, vibrations, etc.)	🟡	🟠	🔴	🔴	🔴	🔴
Potential effects on existing land uses and proposed developments Assesses the potential for businesses to benefit from their proximity to the pedestrian connection	🟡	🟡	🟡	🟢	🟢	🟢
Minimize acquisition of private property for public use Assesses the potential for acquiring private property to construct the pedestrian connection	🟢	🟢	🟡	🟠	🟠	🟠
Improvements to aesthetic experience of pedestrians Assesses the potential to make the pedestrian connection a pleasant pedestrian environment	🔴	🟢	🟡	🟢	🟢	🟢
Pedestrian draw/attraction Assesses the likelihood that pedestrians will use the new connection	🔴	🟢	🟡	🟢	🟢	🟢
Retail development opportunities Assesses the potential for providing new retail opportunities	🔴	🟡	🔴	🟢	🟢	🟢
Public amenity opportunities Assesses the potential to provide amenities such as washrooms, telephone booths, and drinking fountains	🔴	🟢	🟢	🟢	🟢	🟢
Cultural Environment						
Potential effects on designated heritage features Assesses the potential of new pedestrian connections intersecting with designated heritage properties	🟡	🟡	🟡	🟠	🟠	🟠
Legend and Total Score for Each Alternative						
Very Good	2	8	1	13	7	15
Good		6	1	2	9	1
Neutral	13	8	12	2	2	3
Poor		4	5	6	6	3
Very Poor	13	2	8	5	4	6

Preliminary recommended solution

Rationale for Preliminary Recommended Solution

The evaluation matrix suggests that a new underground connection combined with above-ground improvements is the potential solution with several advantages. In particular this solution will:

- Offers new underground route choice and ability to redirect and redistribute pedestrian flows within Union Station and from the existing PATH and above ground street networks

- Offer improved flexibility and route choice

- Provide the highest level of comfort and choice for pedestrians throughout the year

- Minimize the amount of vertical movement on the selected route

- Conform with existing City of Toronto policies

Next Steps...

- Comments received from this PIC will be considered along with those received from review agencies in order to confirm the selection of a preferred solution.

- The study team will identify alternative design concepts (i.e., routes or locations for improvements) associated with the preferred solution and evaluate those concepts

- Identify anticipated environmental effects and ways of minimizing negative effects and maximizing positive effects associated with the alternative design concepts

- Present the design concepts and the results of the evaluation to the public in June 2007

Thank you for your participation!

Please visit the project web site at:
http://www.toronto.ca/union_station

Appendix E – Public Information Centre #1 - Sign-in and comment sheet

REGISTRATION SHEET

Public Information Centre – New Northwest PATH Class Environmental Assessment
February 26th, 2007– Union Station

Please Print

Name	E-mail	Phone Number
1. Bryan Martin	bryan.martin@utoronto.ca	
2. DAN NEVITT	dnevitt@brookfieldproperties.com	416-864-9633 ex 27
3. REGAN NUQUI	Regan.nuqui@nbpcd.com	416-359-6123
4. Steve Chu	Steve.Chow@gmail.com	416-494-3325
5. Andrew Giraldi	agiraldi@gmail.com	905-277-2664
6. CHRISTOPHER PARKINSON	PARKINSON@TORONTOCLUB.CA	416-362-2751
7. Colin Rainsbury.	USPAC	
8. MAX STILES	MJTILES@YAHOO.CA	647 294 0149
9. Andy Lungenco	alungenco@lycos.com	416 733 2241
10. Anne Borrelly	anneborrelly@yahoo.fr	905-579-7444.

REGISTRATION SHEET

Please Print

ıation Centre – New Northwest PATH Class Environmental Assessment
February 26th, 2007– Union Station

Name	E-mail	Phone Number
11. S. Puth		416-594-7303
12. DAVID J. SCOTT		416-531-8284
13. JOE BOWDY	JOE.BOWDY@BELL.CA	
14. Chris Libaw		
15. Sidney		
16.		
17.		
18.		
19.		
20.		
21.		

FAX → Erin Morrow
→ S. Bateman
DATE: 03/29/07
Post-it

Your input into this study is important. Please pr
presented at the Public Information Centre.

In your view are all possible alternative solutions being considered?

Yes

Are the criteria used to evaluate the alternative solutions appropriate? Are there any additional criteria that we should consider?

Yes
No

Are the preliminary results of the evaluation reasonable?

Yes

Do you have any other comments about the study?

Seems Good -

Please forward your comments by March 15, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: mailto:tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
ARUP Canada Inc.
160 Bloor Street East, Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

Thank you for your participation.

The information presented at the Public Information Centre and additional information on this study is available at www.toronto.ca/ union_station

Appendix F - Notice of Public Information Centre #2

TORONTO Building a great city – *together*

The City of Toronto holds public consultations as one way to engage residents in the life of their city. Toronto thrives on your great ideas and actions. We invite you to get involved.

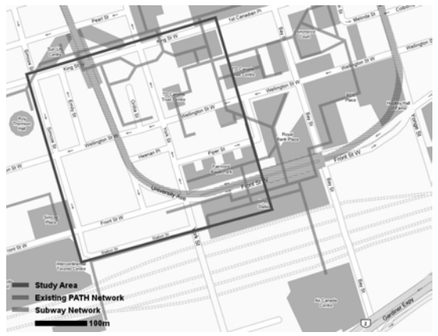
New Northwest PATH Connection (Union Station to Wellington St.)

SCHEDULE "C" MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

THE STUDY

The City of Toronto is currently undertaking a Municipal Class Environmental Assessment Study (Schedule "C) for a new northwest PATH pedestrian connection that will extend from Union Station to the existing PATH system in the vicinity of Wellington Street. The City of Toronto and GO Transit have retained the consulting firm Arup Canada Inc. to assist with the study.

The purpose of this new PATH connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new northwest PATH connection will also serve to more effectively disperse pedestrian activity in the PATH system which is currently oriented to the north east quadrant of Union Station. This redistribution will occur in conjunction with the development of a new GO west concourse that will mirror the existing GO east concourse.



THE PROCESS

The study is being undertaken in accordance with the *Municipal Class Environmental Assessment* (June 2000) process for a Schedule 'C' project.

At the first Public Information Centre, the study team presented its preliminary preferred solution of a new underground PATH connection in parallel with aboveground improvements. After confirming this solution based on public and agency input, the study team has considered specific routes for a new underground connection and locations for aboveground improvements. The upcoming second public meeting for this study will provide members of the public with an opportunity to review the alternative designs and provide comment on the preliminary recommended design option. The public meeting will take place:

Date: Tuesday July 10th, 2007
Time: 4:30 p.m. to 7:00 p.m.
Location: Great Hall - Union Station

COMMENTS

During the Class EA, the Study Team will be collecting comments and information regarding this project from the public in accordance with the requirements of the *Ontario Environmental Assessment Act.* If you wish to receive further information or to be added to the project mailing list, please contact one of the following:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto - City Planning
Metro Hall, 55 John Street, 22nd floor
Toronto, Ontario, M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
ARUP Canada Inc.
160 Bloor Street East, Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

For more information — www.toronto.ca/union_station

1/2 page
9 col. x 98 lines
Mirror-Guardian

Appendix G – Public Information Centre # 2 - Display Boards

New Northwest PATH Connection
Union Station to Wellington St.

Public Information Centre #2

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Welcome to the Public Information Centre #2 for the New Northwest PATH Connection Municipal Class EA

- Please sign in on the sheet provided. Then feel free to walk around and view the displays.

- If you have any questions, a member of the Project Team will be pleased to discuss the project with you.

- Comment sheets are provided for those who wish to provide comments in writing.

- Please place your completed sheets in the Comment Box or mail/fax them to one of the identified Project Team Members (see below) by July 27, 2007.

- Thank-you for your involvement in this project.

- For additional information, please contact one of the following Team Members:

Tim Laspa
Project Manager
Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
Arup Canada Inc.
160 Bloor Street East Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

Please visit the project web site at:

http://www.toronto.ca/union_station

Purpose of the Public Information Centre

The purpose of this PIC is to introduce you to the underground routes and above-ground improvements being considered, inform you of our progress to date in evaluating these alternatives, and to present a preliminary recommended design.

The major elements presented today are:

- Study, Overview & Background
- Overview of the Municipal Class Environmental Assessment Process
- Planning Framework - Policy Direction
- Problem Statement and Solution
- Alternative Designs Being Considered
- Evaluation of Alternative Designs
- Preliminary Recommended Design for an Underground Route and Above-Ground Improvements
- Next Step

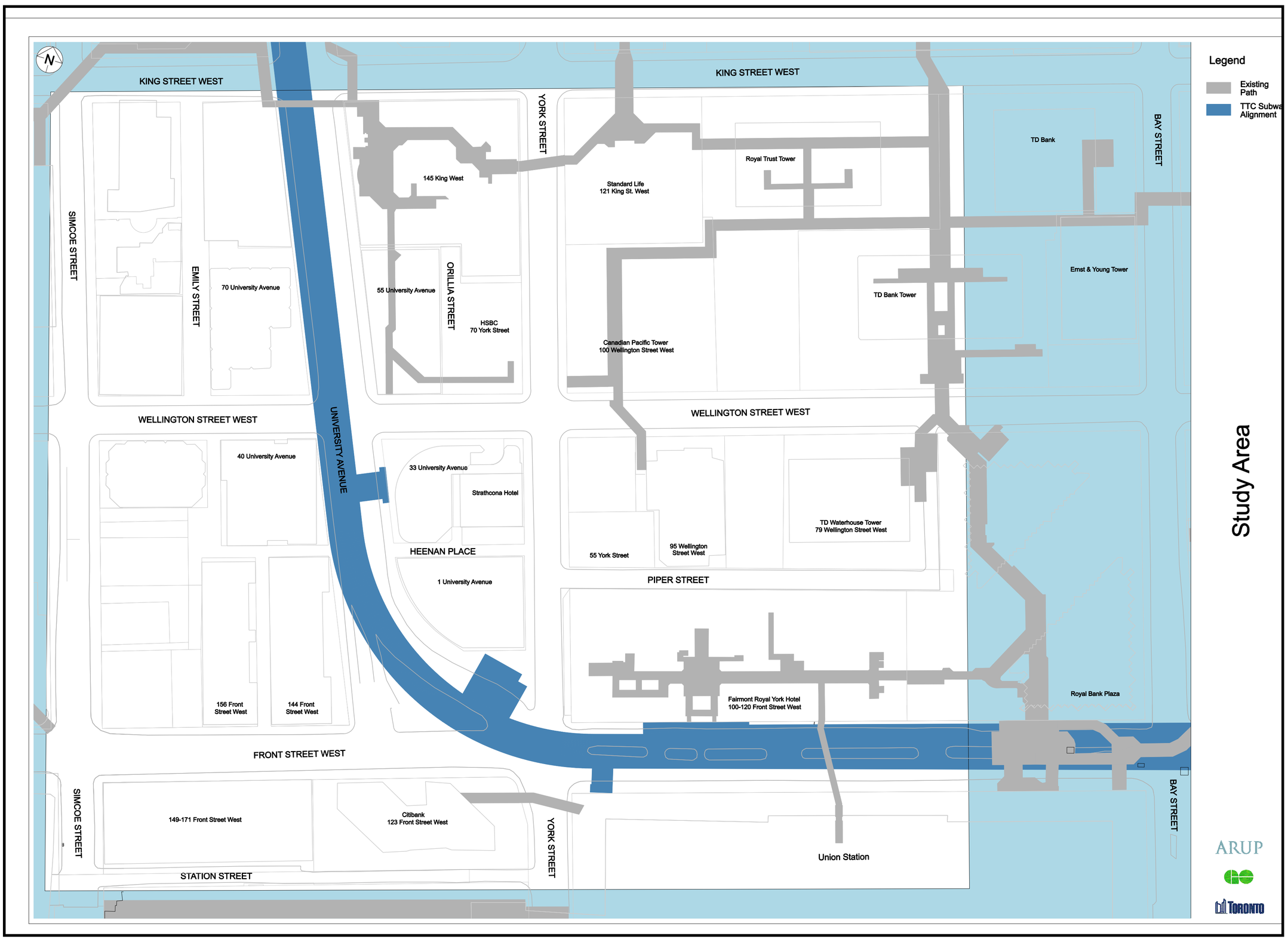
Study Overview

Introduction

- The City of Toronto is undertaking this study to examine potential routes for a pedestrian connection that will extend northwest from Union Station to the existing PATH system in the vicinity of Wellington Street.

- The study is following the Schedule ‘C’ requirements of the Municipal Class Environmental Assessment (2000) planning process.

Study Area



Background

- In August 2000 the City of Toronto purchased Union Station from the Toronto Terminals Railway Company (TTR).

- The City of Toronto purchased Union Station with three objectives:
  - promote Union Station as a multi-mode transportation hub
  - preserve Union Station's heritage
  - revitalize the existing station facility

- As part of the ongoing Union Station revitalization initiative, City Council has approved a Master Plan (2004) for the building, and a District Plan (2006) for the surrounding area.

- As part of the input to the aforementioned Plans, City Transportation Planning staff commissioned a series of pedestrian studies, one of which was to address the preliminary engineering feasibility of constructing a pedestrian tunnel under Front Street in the vicinity of University Avenue.

- The preliminary findings of the 2005 pedestrian study indicated that it is possible to construct a new underground pedestrian tunnel under Front Street which could be extended north under York or University Avenue and/or link to adjacent buildings and existing PATH connections in the vicinity of Wellington Street.

- Following that work in June 2006, City Council directed staff to take the necessary action on a priority basis, to commence an Environmental Assessment (EA) for the creation of a new northwest PATH connection in accordance with the design directions noted in the Union Station District Plan.

- Following Council's direction, the City of Toronto is undertaking a Municipal Class Environmental Assessment Study (Schedule 'C') for additional connections (Union Station to Wellington Street) and, with assistance from GO Transit, have retained a consulting engineering firm (Arup Canada Inc.) to assist with the study.

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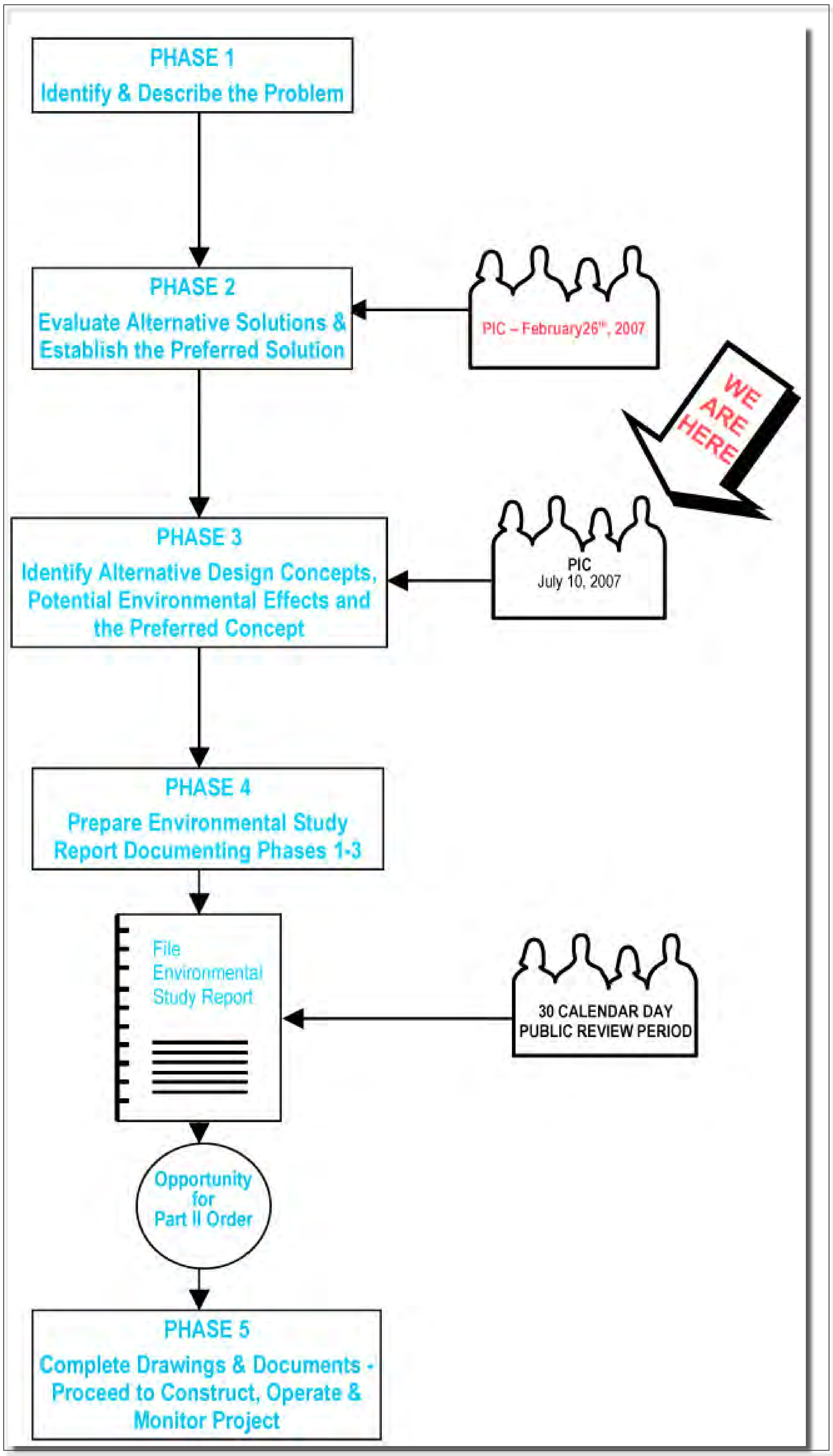
Overview of the Class Environmental Assessment Process

Alternative solutions are different ways or approaches of solving the problem identified in Phase 1. For this project, alternative solutions include all reasonable and feasible approaches for improving pedestrian connections from Union Station

Alternative design concepts describe ways of developing and designing the project to implement the preferred solution from Phase 2. For this project, alternative design concepts will describe the specific location of improvements to pedestrian connections and what such improvements would look like.

Prior to filing the Environmental Study Report, there will be a City of Toronto Staff Report presented to the Planning and Growth Management Committee (item for deputation) and City Council.



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Planning Framework - Policy Direction

The City of Toronto Official Plan

- Supports the need to improve downtown accessibility and mobility, including improving pedestrian circulation in the downtown core.

- An urban environment and infrastructure will be created that encourages and supports walking throughout The City through policies and practices that “ensure safe, direct, comfortable, attractive and convenient pedestrian conditions, including safe walking routes to schools, recreation areas and transit”. (Section 2.4(8)).

The Union Station Master Plan

- Supports additional connections between Union Station and the PATH network to address future pedestrian demand.

- Encourages a more porous Union Station that provides improved and efficient pedestrian movement that will enhance the commuting experience.

The Union Station District Plan

- Develop a new Northwest PATH connection as a priority

Problem Statement and Solution

Problem

- Approximately 14,000 pedestrians currently exit Union Station northbound to Front Street. At the same time, approximately 19,000 pedestrians use the existing PATH system.

- Exits to Front Street are projected to increase to approximately 24,000 movements. Approximately 13,000 of these pedestrians will continue to travel north, of which an estimated 4,700 to 6,100 will be oriented to the north and west. During the same time, pedestrian flow in the existing PATH will increase to approximately 36,000 movements. Significant volumes will occur at other peak times, and will also experience increases.

- The Front Street / York Street/University Avenue intersection will, at a maximum, accommodate an estimated 3,900 northbound pedestrians per hour.

- The current facilities and operations will not meet projected pedestrian demands nor provide any opportunity for redistribution of other existing PATH users who may be oriented north and west of The Station.

Solution

- After analysis of the evaluation matrix and with input from public, private and government stakeholders, a new underground connection combined with above-ground improvements is the preliminary preferred design solution. In particular this solution offers :

  - new underground route choice and ability to redirect and redistribute pedestrian flows within Union Station, from the existing PATH, and above-ground street networks.
  - improved flexibility and route choice.
  - provide the highest level of comfort and choice for pedestrians throughout the year.
  - confomity with existing City of Toronto policies.

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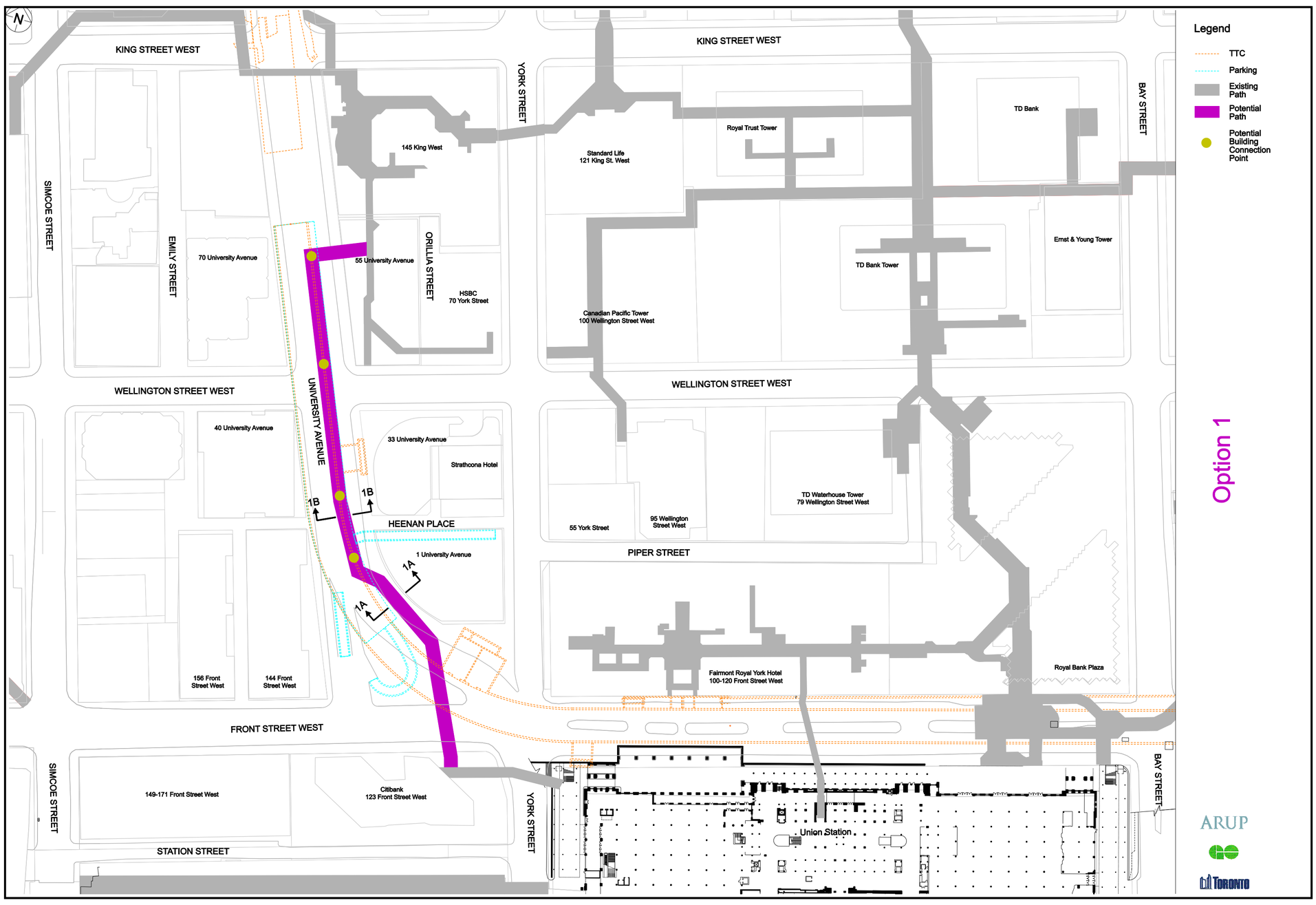
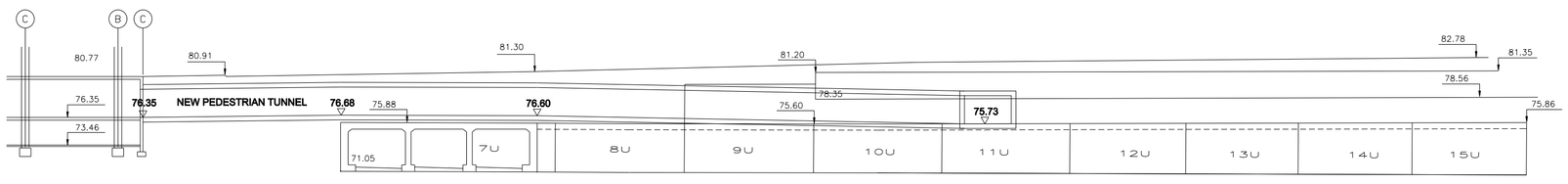
PATH System - Option 1

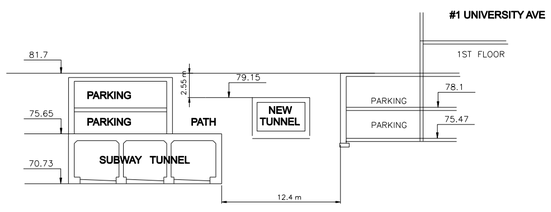
Plan



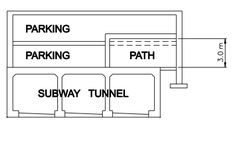
Cross-Sections



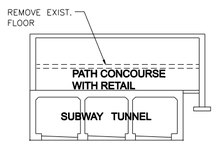
LONGITUDINAL SECTION - OPTION 1A



SECTION 1A



SECTION 1Bx (EXISTING PARKING GARAGE)



SECTION 1By (OPTIONAL)

Option 1

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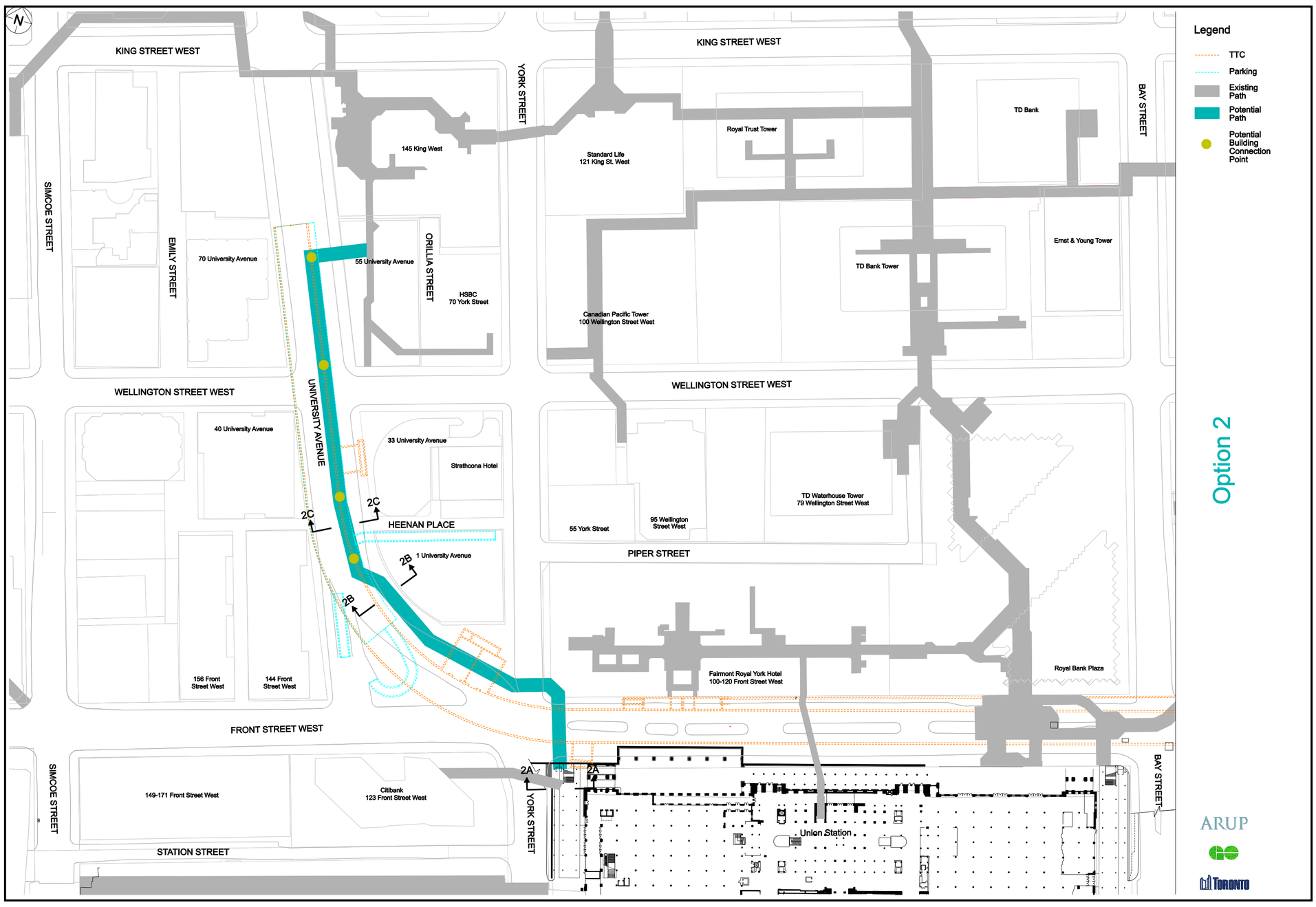
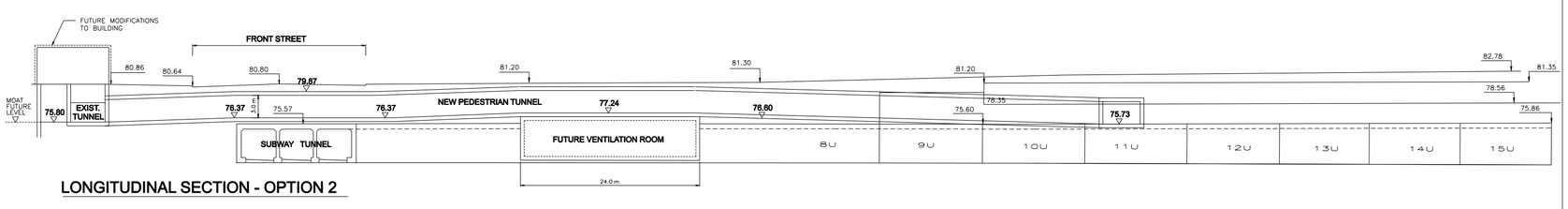
PATH System - Option 2

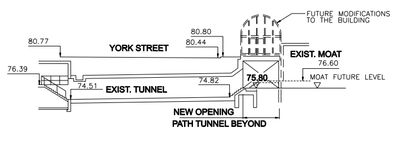
Plan



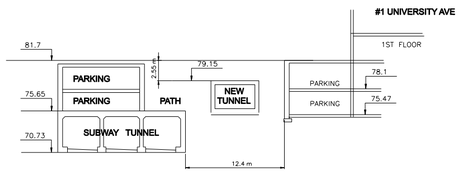
Cross-Sections



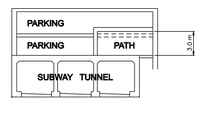
LONGITUDINAL SECTION - OPTION 2



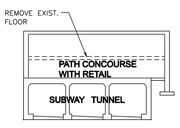
SECTION 2A (AT EXISTING TUNNEL)



SECTION 2B



SECTION 2Cx (EXISTING PARKING GARAGE)



SECTION 2Cy (OPTIONAL)

Option 2

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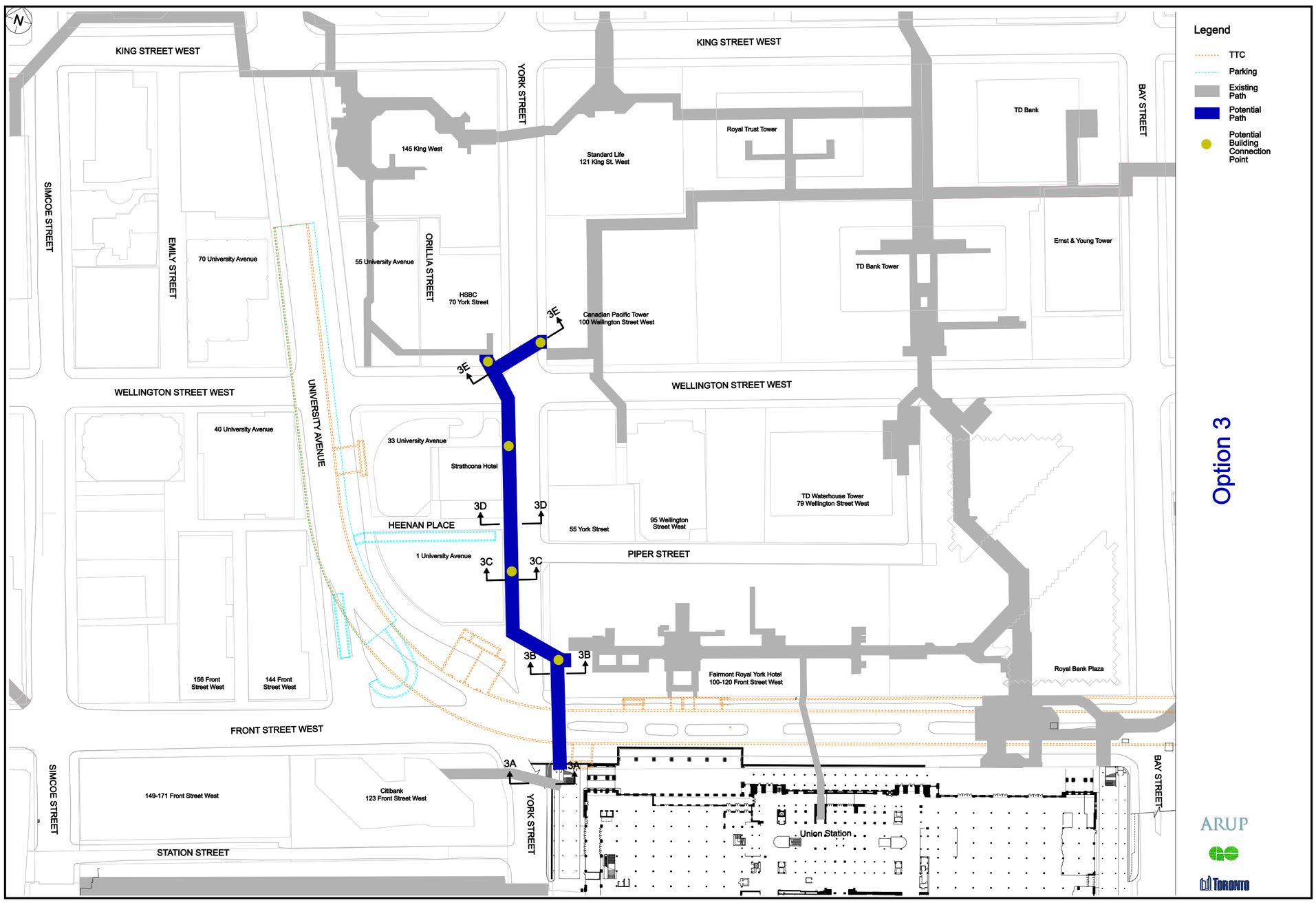
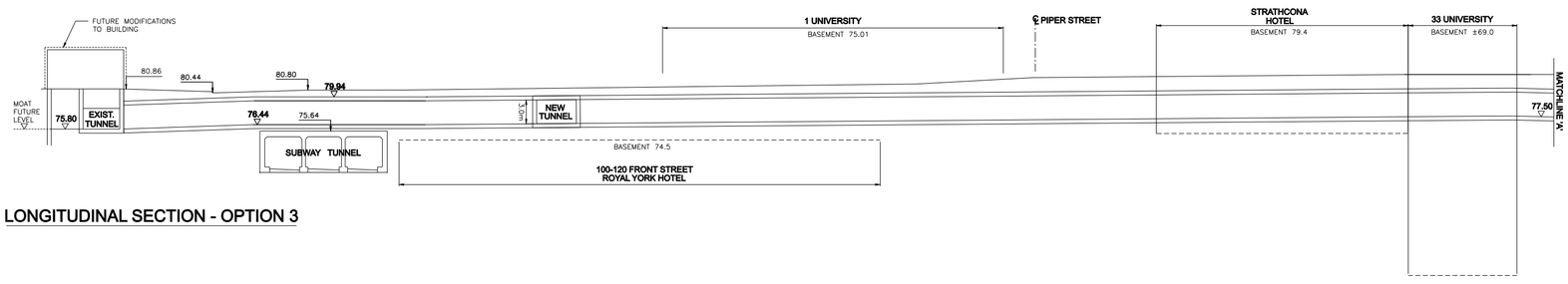
TORONTO

PATH System - Option 3

Plan



Cross-Sections



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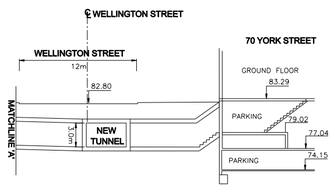
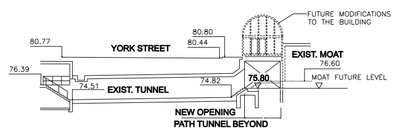
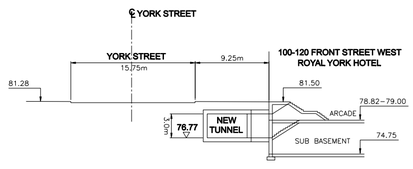


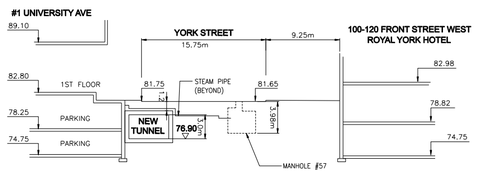
LONGITUDINAL SECTION (CONT'D) - OPTION 3



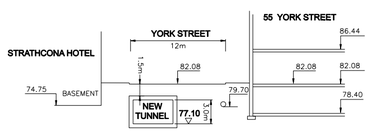
SECTION 3A (AT EXISTING TUNNEL)



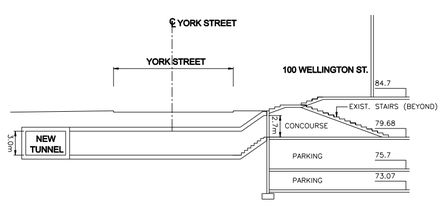
SECTION 3B



SECTION 3C



SECTION 3D



SECTION 3E - N/E ARM

Option 3

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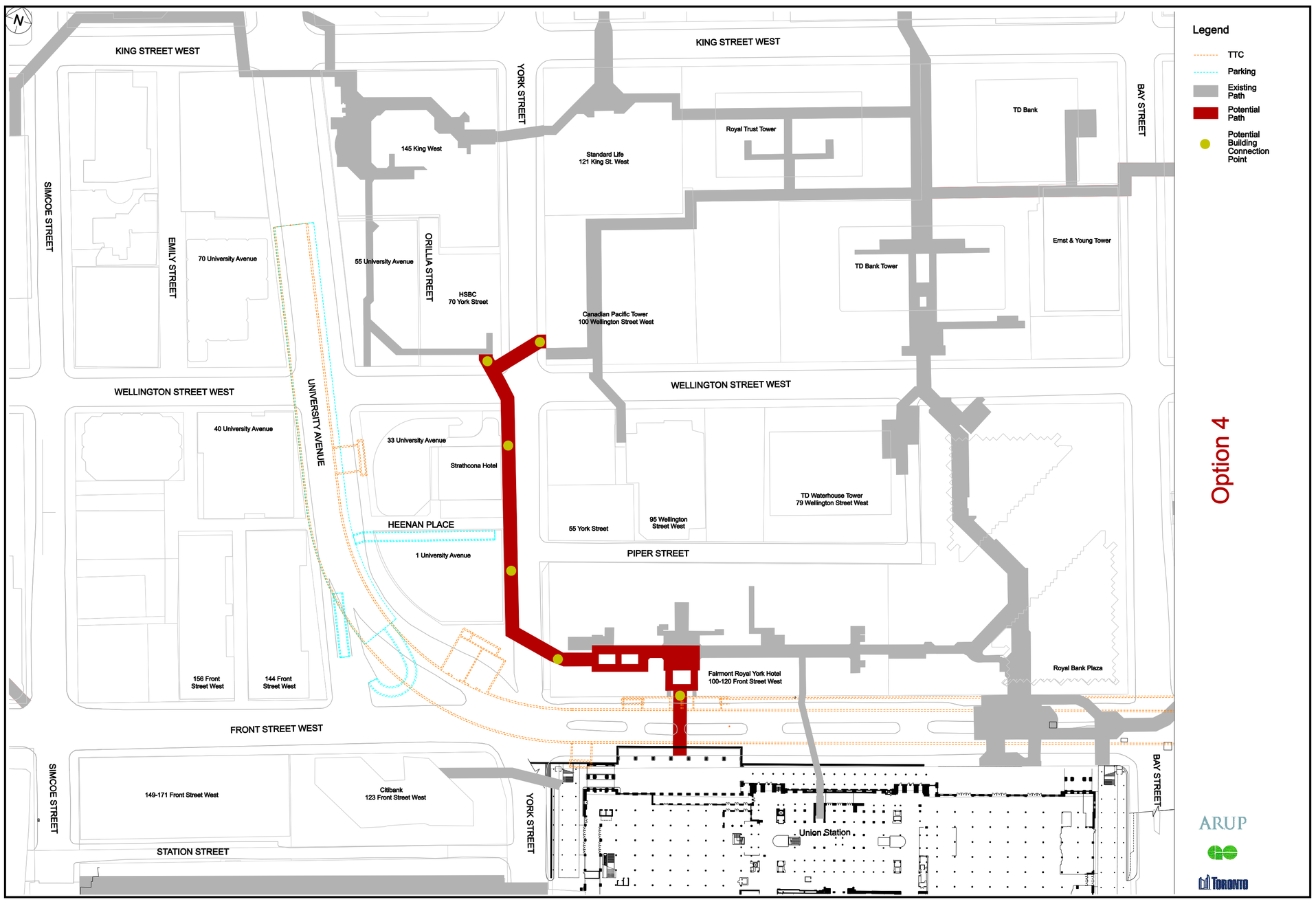
TORONTO

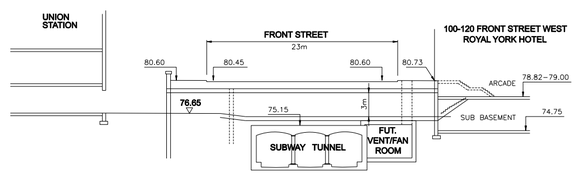
Appendix H – Public Information Centre # 2 - Sign-in and comment sheet

PATH System - Option 4

Plan



Cross-Sections



LONGITUDINAL SECTION - OPTION 4

Option 4
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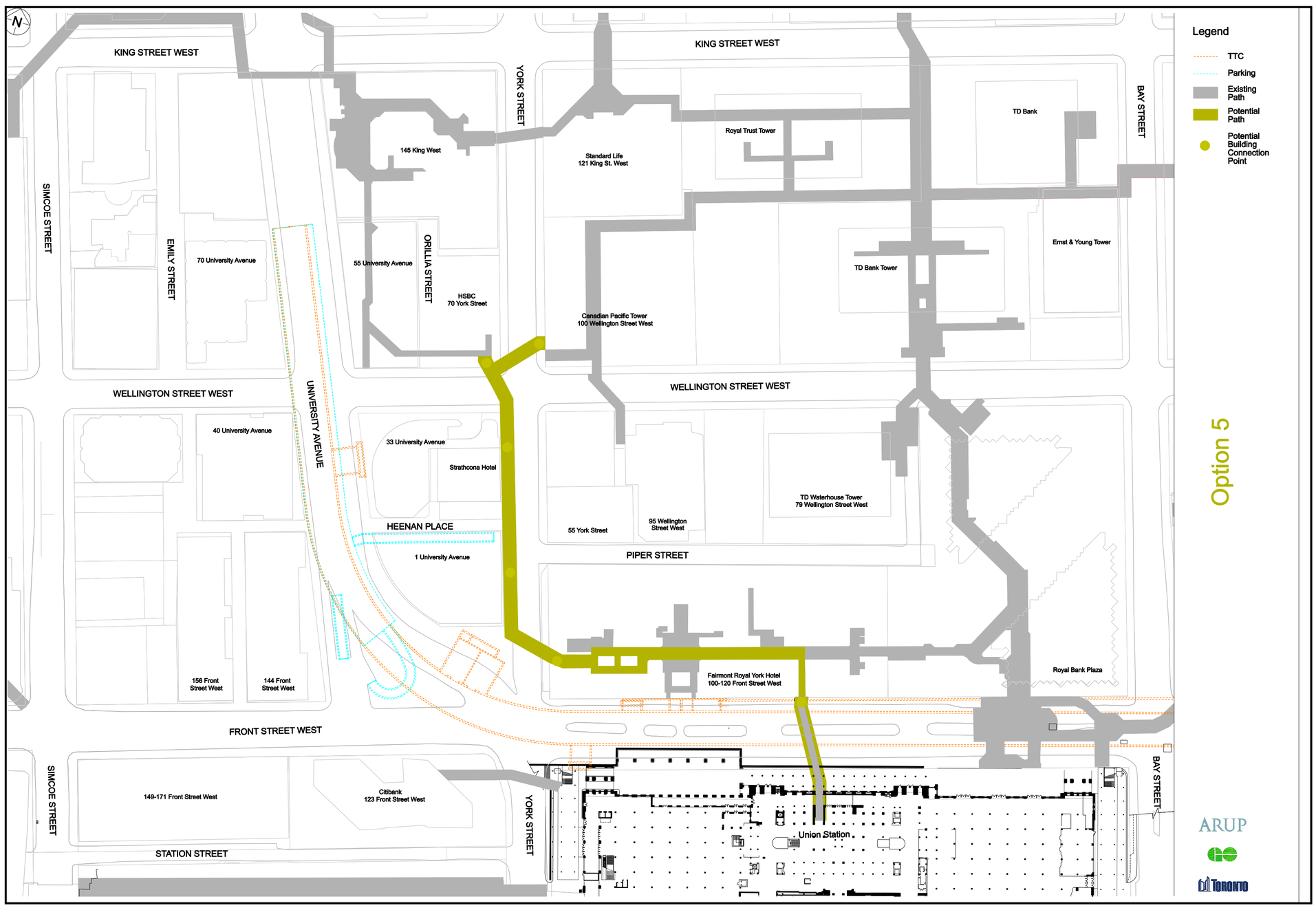
TORONTO

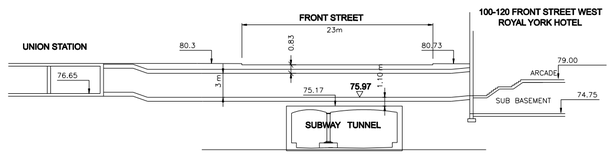
TORONTO
ARUP

PATH System - Option 5

Plan



Cross-Sections



LONGITUDINAL SECTION - OPTION 5

Option 5

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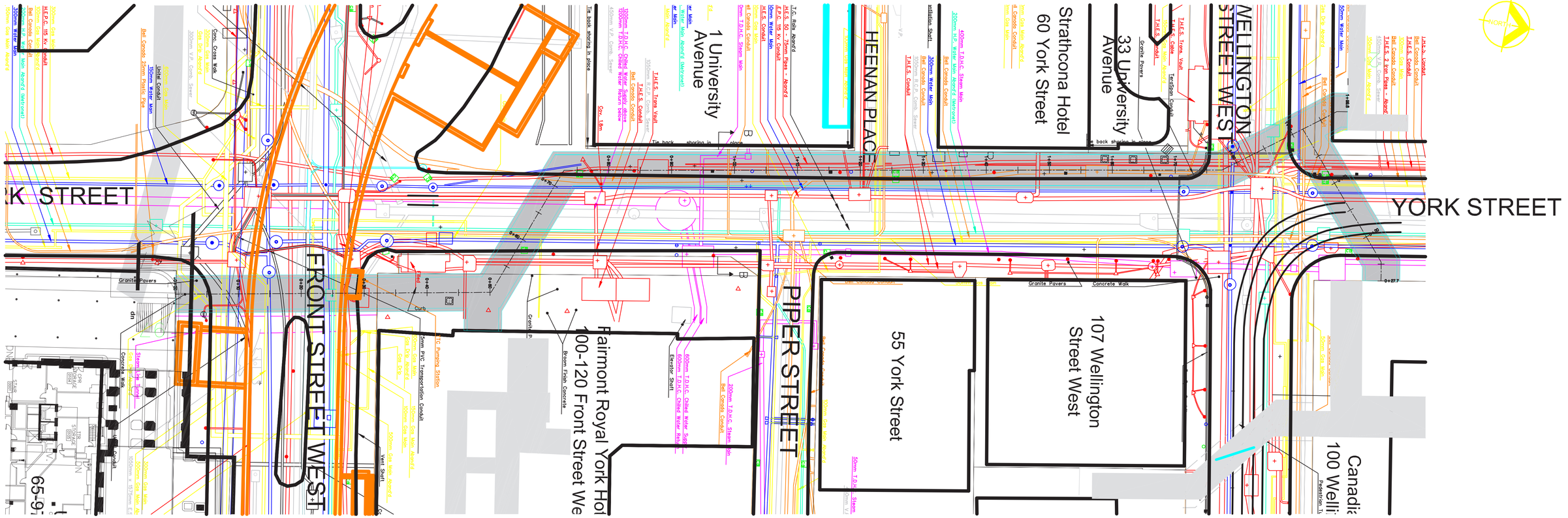
Evaluation Matrix - Underground Routes

Evaluation Criteria	Do Nothing	Option 1 (University)	Option 2 (University)	Option 3 (York)	Option 4 (Royal York to York)	Option 5 (Royal York to York)
Policy and Planning Environment						
Conformity with policies of City of Toronto Official Plan	🔴	🟢	🟢	🟢	🟢	🟢
Conformity with policies of Central Waterfront Secondary Plan	🔴	🟢	🟢	🟢	🟢	🟢
Agreement with the objectives of Union Station Master Plan	🔴	🟢	🟢	🟢	🟢	🟢
Agreement with the objectives of Union Station District Plan	🔴	🟢	🟢	🟢	🟢	🟢
Consistency with applicable provincial legislation and guidelines	🟢	🟢	🟢	🟢	🟢	🟢
Transportation Environment						
Potential to accomodate demand and attract new users	🔴	🟢	🟢	🟢	🟢	🟠
Accessibility to disabled	🟢	🟢	🟢	🟢	🟢	🟠
Connectivity to existing PATH network	🔴	🟢	🟢	🟢	🟢	🟢
Potential to provide connectivity with buildings currently lacking a PATH connection	🔴	🟡	🟢	🟢	🟢	🟢
Potential effects on Traffic / Intersection Operations (existing and future demands)	🟠	🟢	🟢	🟢	🟢	🟢
Urban Design / Public Realm Environment						
Potential to provide Public animation and interaction	🟡	🟢	🟢	🟢	🟢	🟢
Potential to provide high level of finish and detail	🟡	🟢	🟢	🟢	🟢	🟢
Ease of use for pedestrians	🟡	🟢	🟢	🟢	🟡	🟡
Geotechnical / Engineering Environment						
Potential effect on existing buildings	🟢	🔴	🔴	🟢	🔴	🟠
Potential effect on construction feasibility	🟢	🔴	🔴	🟡	🟡	🟡
Potential effect on the TTC	🟢	🔴	🔴	🟢	🟢	🟢
Potential effect on vehicular traffic flow during construction	🟢	🟢	🟢	🟡	🟡	🟡
Socio-Economic Environment						
Potential Effects on property and business access	🟡	🟠	🟠	🟢	🟢	🟢
Potential effects on Parking availability in commercial retail areas	🟢	🔴	🔴	🟢	🟢	🟢
Potential economic effects on adjacent businesses	🟡	🟢	🟢	🟢	🟢	🟢
Potential economic effects on residential property	🟡	🟢	🟢	🟢	🟢	🟢
Potential effects during construction	🟢	🟡	🟡	🟠	🟠	🟠
Cultural Environment						
Potential effects on built heritage, cultural and archaeological features	🟡	🟡	🟢	🟢	🟢	🟢
Natural Environment						
Potential effects on Air quality	🟡	🟡	🟡	🟡	🟡	🟡
Potential effects on Stormwater Management	🟡	🟡	🟡	🟠	🟠	🟠
Potential effects on groundwater	🟡	🟡	🟡	🟡	🟡	🟡
Potential effects on contaminated soils	🟡	🟡	🟡	🟠	🟠	🟠
Cost						
Potential effects on City / GO Transit Budget	🟡	🔴	🔴	🟢	🟢	🟢
Potential for cost sharing	🔴	🟡	🟡	🟢	🟢	🟢
Potential for revenue generation for the city	🔴	🟢	🟢	🟢	🟢	🟢
Legend and Total Score for Each Alternative						
Very Good	6	4	6	13	10	10
Good	2	12	12	10	11	9
Neutral	12	8	6	4	5	5
Poor	1	1	1	3	3	6
Very Poor	9	5	5	0	1	0

TORONTO GO ARUP

Preliminary Recommended Design



Option 3 Advantages

- highest potential to accomodate existing and future pedestrian demand and new users
- minimizes long term effects on businesses in the area
- maximizes connectivity with multiple potential connections to existing buildings and existing PATH
- most cost-effective option to construct
- least impact to the TTC subway tunnel and underground parking facilities
- minimizes accessibility issues (no ramps or elevators required)

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York Street Traffic Options

Option 1

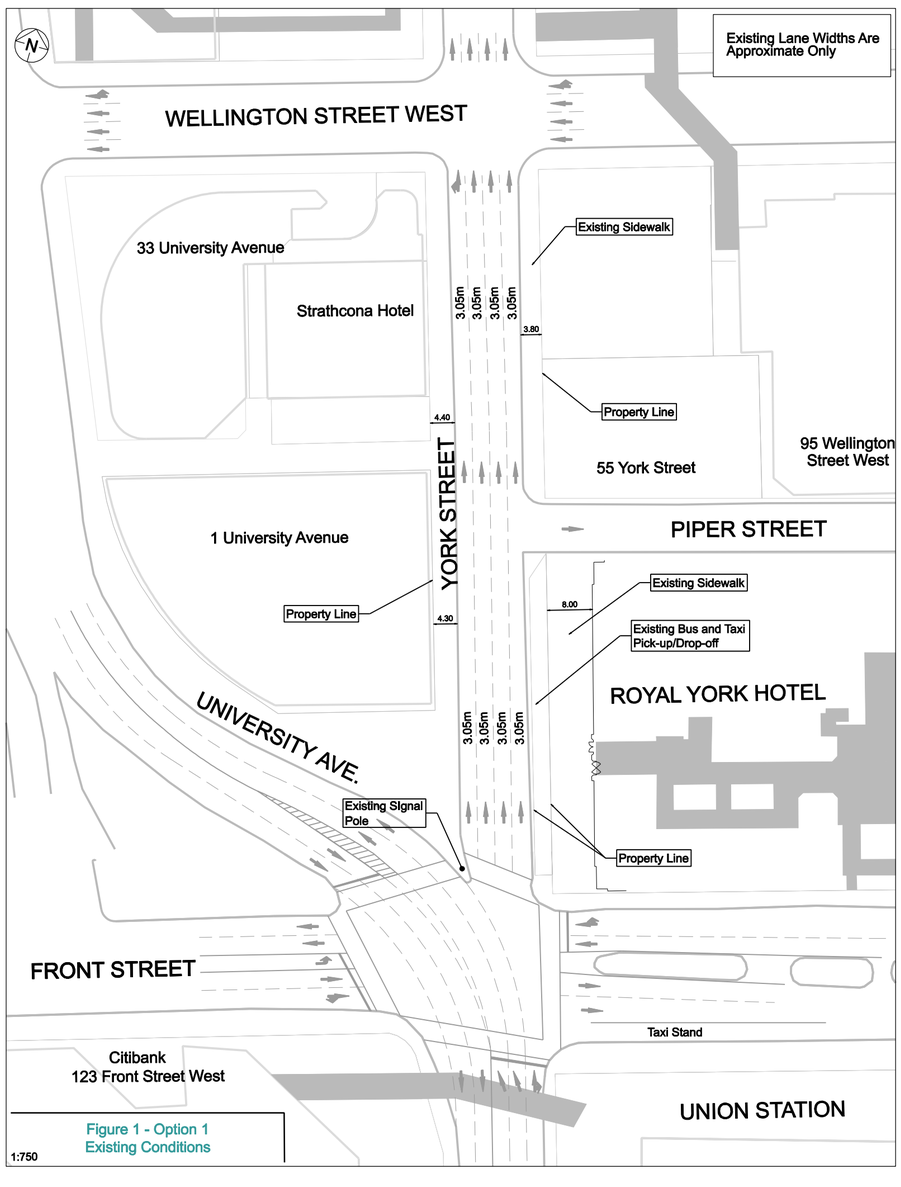


Figure 1 - Option 1
Existing Conditions

Option 2

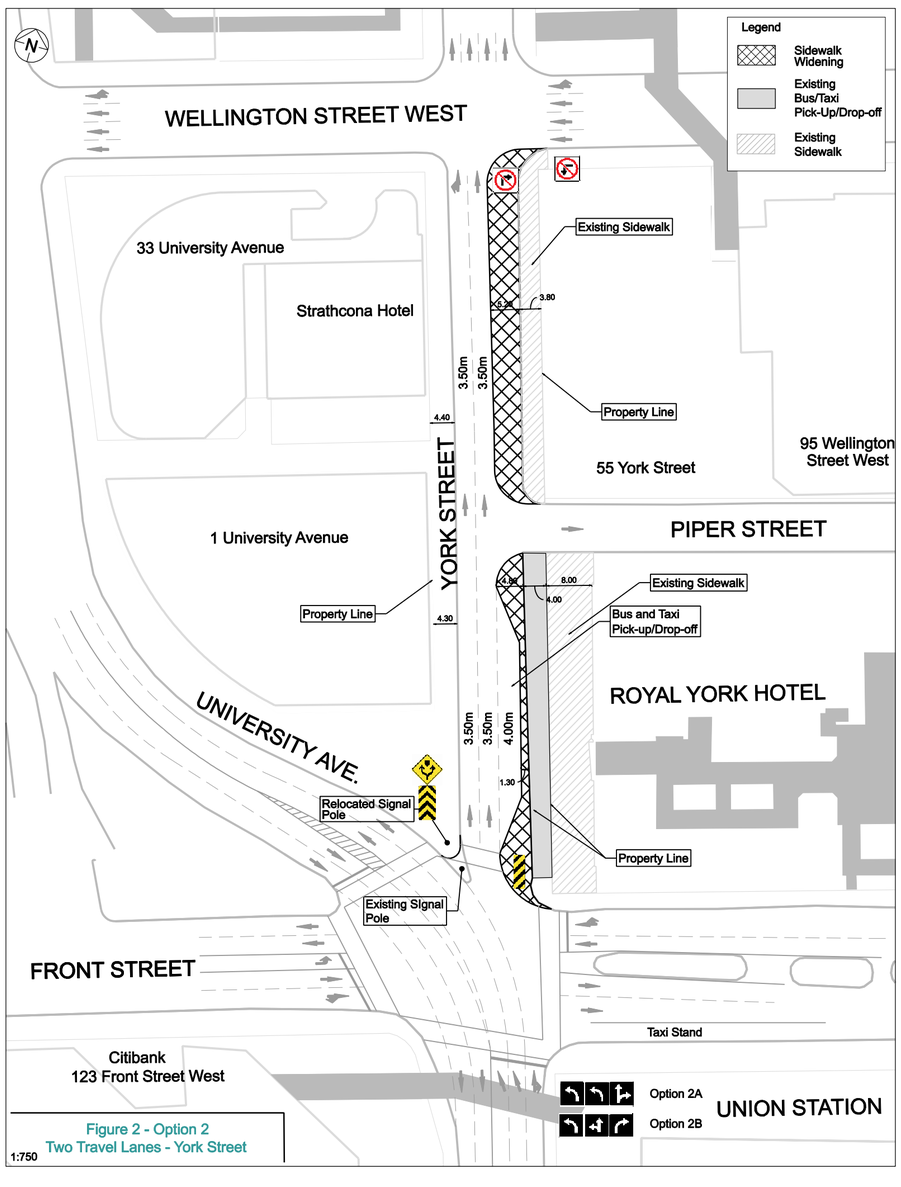


Figure 2 - Option 2
Two Travel Lanes - York Street

Option 3

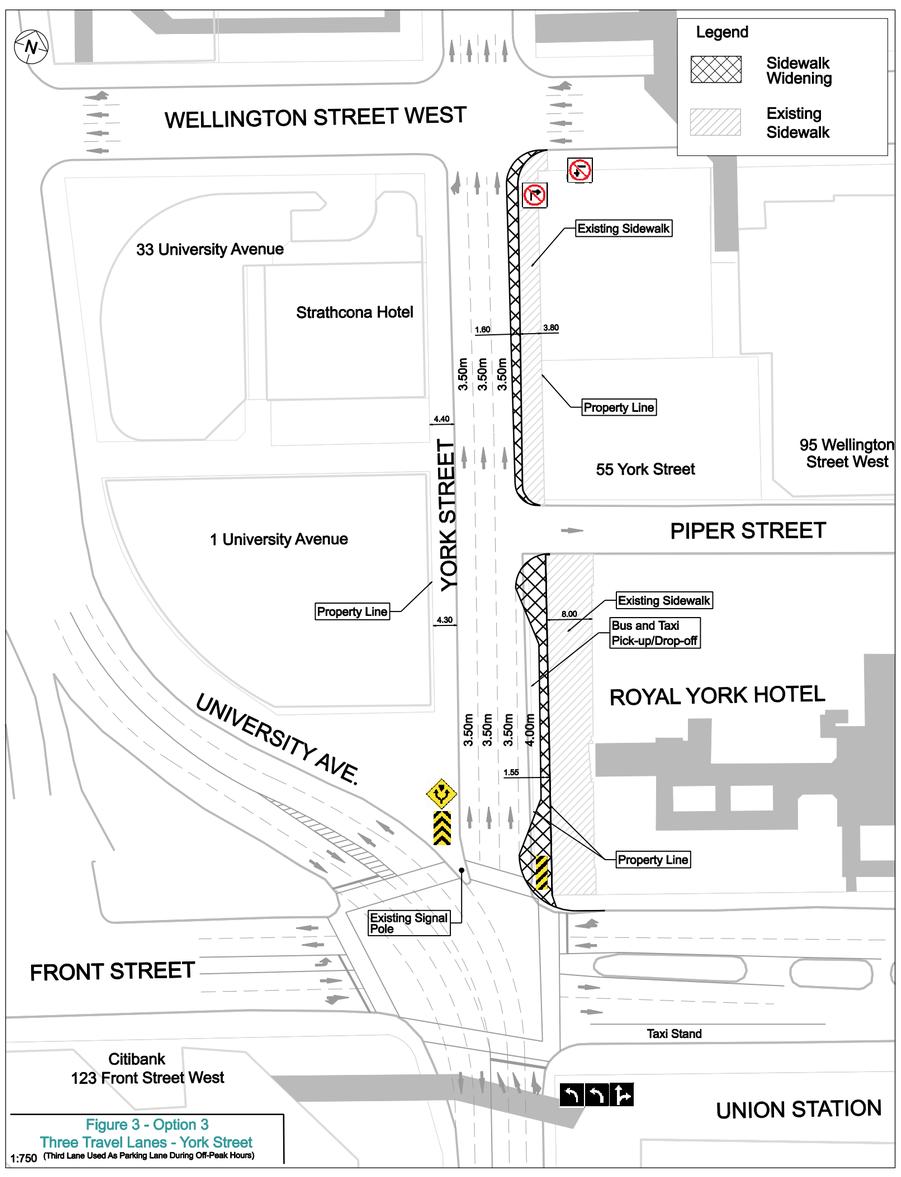


Figure 3 - Option 3
Three Travel Lanes - York Street
(Third Lane Used As Parking Lane During Off-Peak Hours)

Option 4

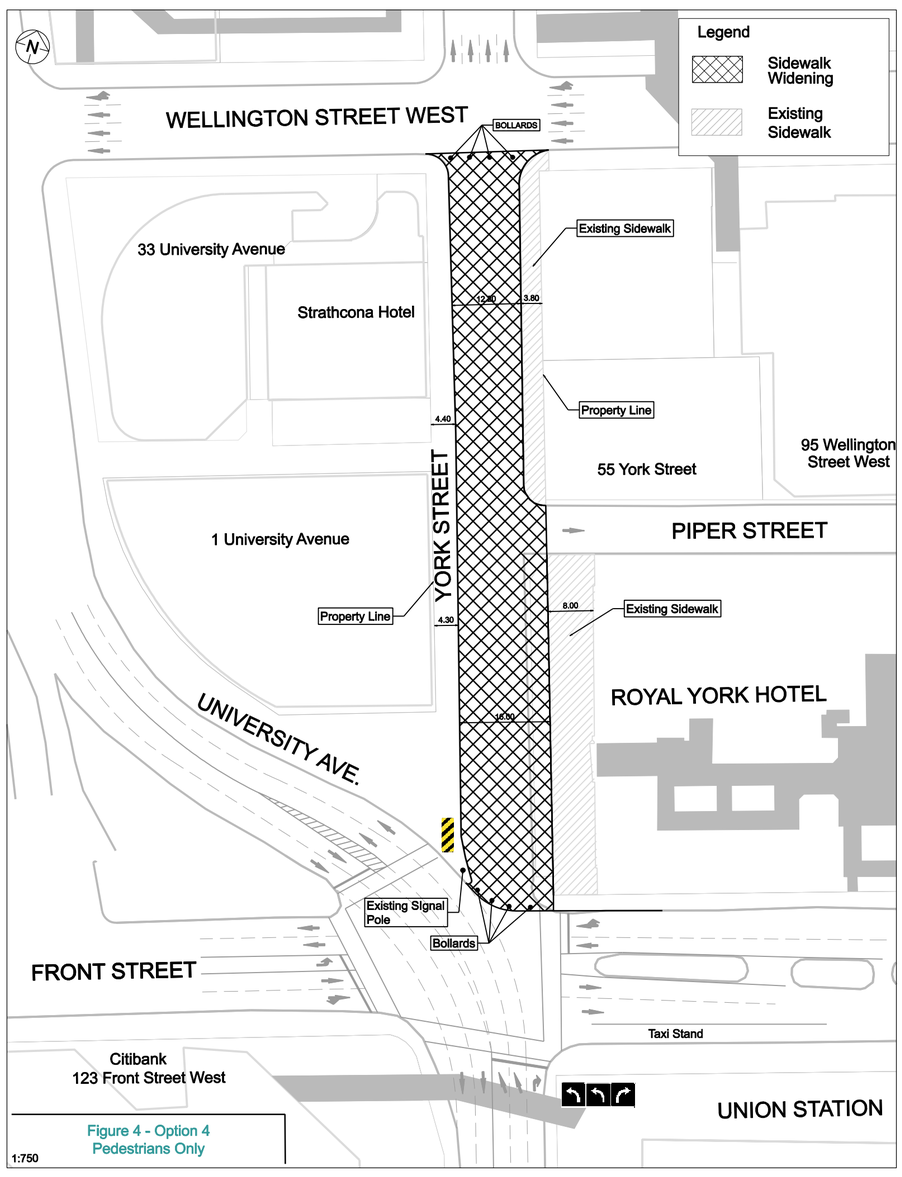
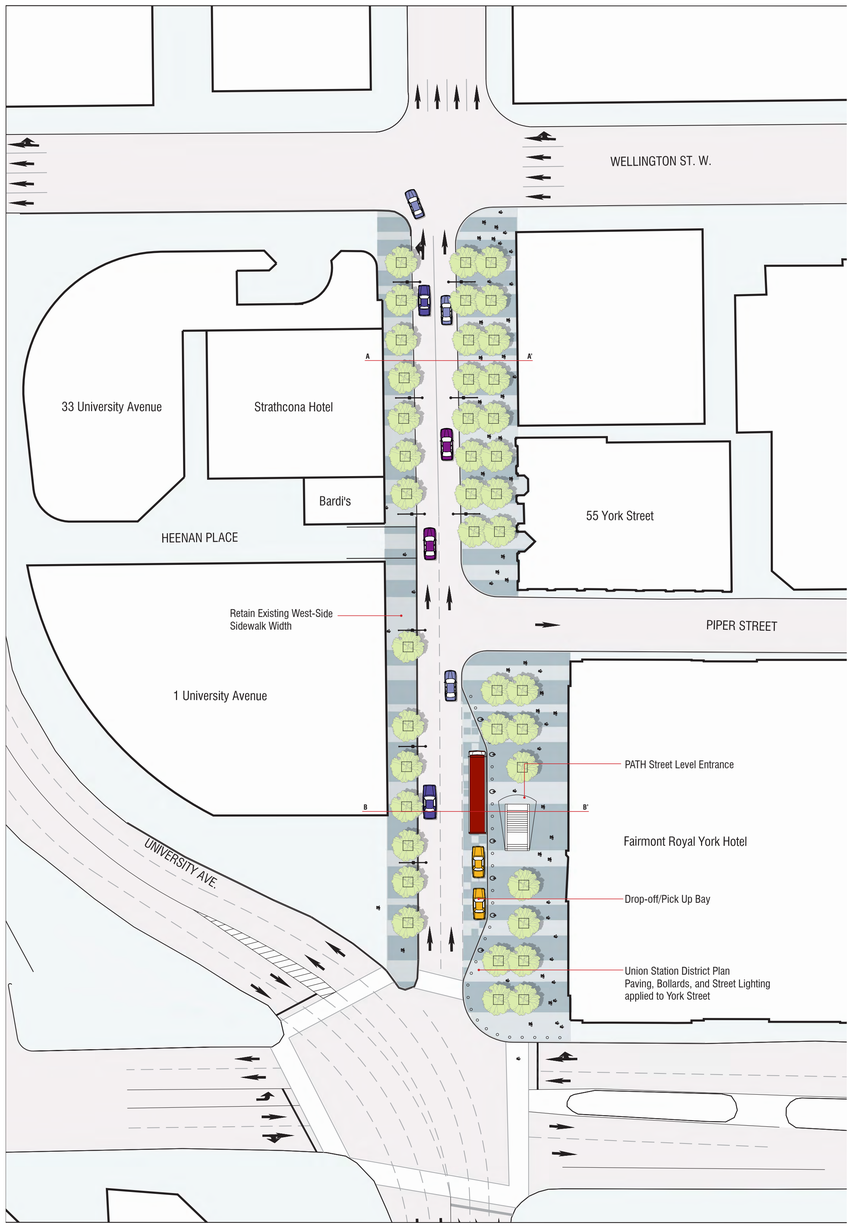


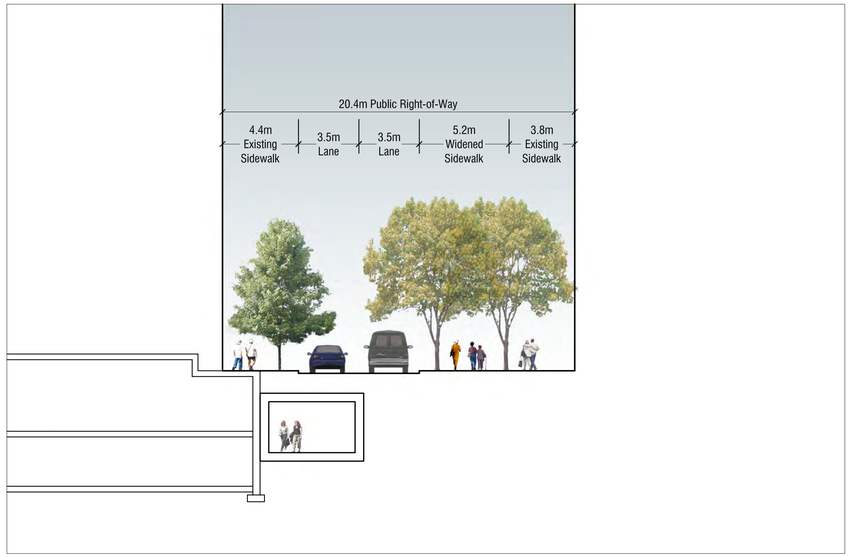
Figure 4 - Option 4
Pedestrians Only

Evaluation Matrix - Surface Improvements

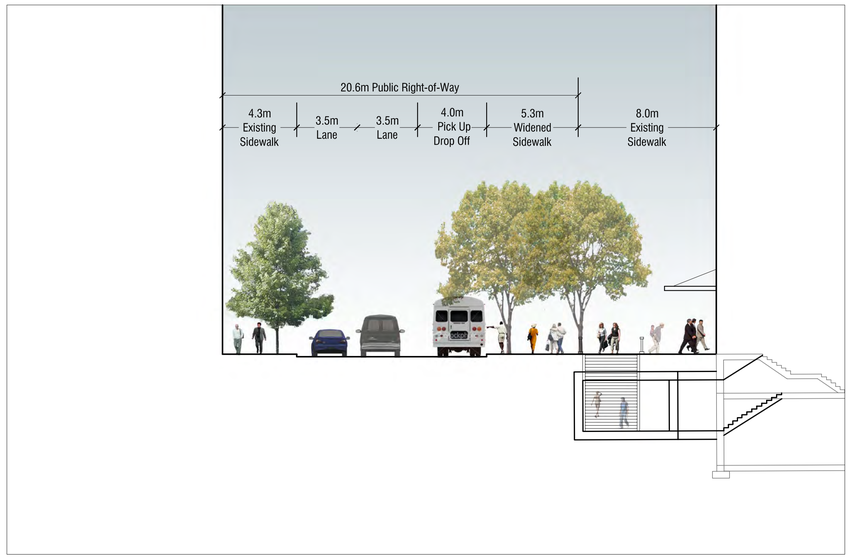
Evaluation Criteria	Option 1 (Do Nothing)	Option 2 (2 Lanes)	Option 3 (3 lanes)	Option 4 (Pedestrians Only)
Policy and Planning Environment				
Conformity with policies of City of Toronto Official Plan	🟡	🟢	🟢	🟢
Conformity with policies of Central Waterfront Secondary Plan	🟡	🟢	🟢	🟢
Agreement with the objectives of Union Station Master Plan	🔴	🟢	🟢	🟢
Agreement with the objectives of Union Station District Plan	🔴	🟢	🟢	🟢
Consistency with applicable provincial legislation and guidelines	🟡	🟢	🟢	🟢
Transportation Environment				
Potential to accomodate demand and attract new users	🔴	🟢	🟢	🟢
Accessibility to disabled	🟡	🟢	🟢	🟢
Potential effects on traffic/intersection operations	🟡	🟢	🟢	🔴
Potential effects on Corridor Traffic Operations	🟡	🟢	🟢	🔴
Potential effects on Municipal Operations	🟡	🟢	🟢	🟡
Potential effects on Emergency Vehicle Opertations	🟡	🟢	🟢	🔴
Potential effects on Pedestrians and Cyclists	🟡	🟢	🟡	🟢
Urban Design / Public Realm Environment				
Potential to provide public animation and interaction	🟡	🟢	🟢	🟡
Potential to provide high level of finish and detail	🟡	🟢	🟢	🟢
Ease of use for pedestrians	🟢	🟢	🟢	🟢
Geotechnical / Engineering Environment				
Potential effects on Constructions Feasibility	🟡	🟢	🟢	🟢
Potential effects on Traffic Flow	🟡	🟢	🟢	🔴
Potential effect on TTC	🟡	🟢	🟢	🟢
Socio-Economic Environment				
Potential effects on property and business access	🟢	🟢	🟡	🔴
Potential effects on parking availability in commercial retail areas	🟢	🟢	🟢	🟢
Potential economic effects on adjacent businesses	🔴	🟢	🟡	🟡
Potential economic effects on residential property	🟡	🟡	🟡	🟢
Potential effects during construction	🟢	🟠	🟠	🟠
Cultural Environment				
Potential effects on built heritage, cultural and archaeological features	🟡	🟢	🟢	🟢
Natural Environment				
Potential effects on Air Quality	🟠	🟢	🟡	🟡
Potential effects on Stormwater Management	🟡	🟡	🟡	🟡
Potential effects on Groundwater	🟡	🟡	🟡	🟡
Potential effects on Contaminated Soils	🟢	🟢	🟢	🟢
Cost				
Minimizes construction costs and additional utility cost	🟢	🟢	🟢	🟠
Legend and Total Score for Each Alternative				
Very Good	5	14	10	10
Good	1	11	11	6
Neutral	13	3	7	5
Poor	6	1	1	3
Very Poor	4	0	0	5

Preliminary Recommended Design





Section A-A': North of Royal York



Section B-B': PATH Entrance at Royal York

Option 2 Advantages

- highest potential to provide additional room for pedestrians at street level and maintain traffic flow for cars, trucks, and cyclists

- provides generous space for streetscape enhancements, design and landscaping

- good potential to maximize business attractiveness

UNION STATION PATH NORTHWEST | CONCEPT DEVELOPMENT

YORK STREET IMPROVEMENTS

ARUP
du Toit Allsopp Hillier
Totten Sims Hubicki

2007-07-09

Next Steps...

- Comments received from this PIC will be considered along with those received from review agencies in order to confirm the selection of the preferred design.

- The study team will select the preferred designs for the underground route and above-ground improvements to be carried forward.

- Finalize preliminary design of the recommended designs.

- Prepare Environmental Study Report (ESR) for public review and approvals.

- Report to Planning and Growth Management Committee and City Council.

- File the ESR in the public record in accordance with the requirements of the Municipal Class Environmental Assessment Process.

Thank you for your participation!

Please visit the project web site at:

http://www.toronto.ca/union_station

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Comment Sheet for PIC #2

July 10, 2007

Municipal Class Environmental Assessment Study (Schedule 'C') for a New Northwest PATH Connection (Union Station to Wellington Street)

Introduction

The City of Toronto and GO Transit are currently undertaking a Municipal Class Environmental Assessment Study (Schedule 'C') for a new northwest pedestrian connection that will extend from Union Station to Wellington Street. The purpose of this new connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new connection will also serve to more effectively disperse underground pedestrian activity in the PATH system, which is currently oriented to the northeast quadrant of Union Station.

Alternative Underground Routes

The study team is considering six alternative routes to address the need for additional underground pedestrian connections:

1. Do Nothing - No changes or improvements would be undertaken to the existing PATH system. This alternative acts as a comparative benchmark.
2. Option 1: University – Underground connection along University Avenue
3. Option 2: University – Variation of an Underground connection along University Avenue
4. Option 3: York – Underground connection along York Street
5. Option 4: Royal York to York – Underground connection through the Royal York and along York Street
6. Option 5: Royal York to York – Variation of an underground connection through the Royal York and along York Street

Above-Ground Improvements

The study team is also considering four above-ground improvements to address the need for additional above-ground pedestrian capacity:

1. Option 1: Do Nothing – No improvements would be undertaken
2. Option 2: 2 lanes – Widen Sidewalks and reduce York Street to 2 lanes
3. Option 3: 3 lanes – Widen Sidewalks and reduce York Street to 3 lanes
4. Option 4: Pedestrian Only – Make York Street pedestrian only from Front St. to Wellington St.

Next Steps

Comments received from this Public Information Centre will be considered along with those received from review agencies in order to confirm a preferred route and locations for improvements. Over the next months, the study team will prepare detailed concept designs and complete the Environmental Study Report for submission to the Ministry of the Environment.

TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

Option No 3 for York ST. PATH
Option No 3 for Traffic Options
minimal alteration of trees – people do prefer to use the street level over tunnel!
make the sidewalk concrete only, with decorative designs painted or embedded with colour.

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
ARUP Canada Inc.
160 Bloor Street East, Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

Thank you for your participation.

The information presented at the Public Information Centre and additional information on this study is available at www.toronto.ca/ union_station

TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

I THINK OPTION 3 OR 2 MAKE MOST SENSE WITH MORE NORTH-SOUTH ROUTING THAN OTHER OPTIONS

FOR YORK STREET, I LIKE OPTION 2 (RECOMMENDED). WOULD PREFER OPTION 2A FOR TURN LANES.

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
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TORONTO

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Do you have any comments about the study?

- I also like option 3 for under ground
- Would like to see bike lanes on the narrowed Yorkville St.
- Build it soon, it is too hot out side today -

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
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Toronto, Ontario M5H 2N2
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TORONTO

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Do you have any comments about the study?

#3 does seem fairly reasonable.
I do have a reservation about how we might be missing a complication, a transit opportunity on Front St. as we've not been able to think of restoring transit to Front St. yet, and the EA. for the Front St. Extension, which might lead us to explore a set of transit options for Front St., is still under appeal to the Minister, and referred back to the City over four years later.
So it would be nice if we could design Phase 1 streetcar/LRT on Front St. as inside street level at most level, some year/decade.
At least what's proposed, at right angles could become a stop/barricaded point somehow, so it may be complementary.
Enclosed is a rough design for a Front St. transitway

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
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TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

Option three sounds like it would be the easiest option for accessibility. I take the path a lot and I find it difficult to use the lifts because my wheelchair is fairly large. Sometimes, in order to do a more accessible route I have to go 2 miles where someone who walks could go one mile. For instance, to get from BCE place to Scotia Plaza, I'd have to go through the Royal Bank Plaza, TD Centre and First Canadian Place, whereas a normal wheelchair would be able to get up the ~~the~~ lift to Commerce Court. I realize that this doesn't address the specific options laid out, but the situation remains similar no matter what routes.

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
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TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

It would be great to see all options on the project -- to close up [illegible] Street to all traffic IS NOT a good idea.

(1) Keep [illegible] Street's transit option open (es drop-off for Greyhound, Airport Coach etc - and - TAXIS - is there enough space - [illegible]? ([illegible])

(2) PATH through [illegible] garage - it has been a hazard [illegible] City Hall (fines, vehicles etc), but could [illegible] PATH still go through the [illegible] lot?

(3) Is there an option if existing buildings to [illegible] PATH connection?

(4) With present TTC [illegible] at Union will this affect any results??

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
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TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

The recommended Option 3 looks very good provided it serves the largest number of pedestrians. * Emailed Aug change

We are now waiting to connect Union Station's south exit by a PATH to Queens Quay. A portion will be included in the new Maple Leaf Square.

Another important PATH should serve the Sony Centre (formerly the Hummingbird) as well as St. Lawrence Centre for the Arts.

Ulla Callgress
Chair
York Quay Neighbourhood Assoc
YQNA

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
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Thank you for your participation.

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TORONTO

160 Bloor Street East Suite 205
Toronto, ON M4W 1B9
Tel +1 416 515 0915
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The City of Toronto

Union Station NW Path

Report
Subsurface Utility Engineering Services

Project # 7200850187

October 2007

Subsurface Utility Engineers

TSH TBE Joint Venture

Table of Contents:

Appendix

1.0 Executive Summary

TSH/TBE Subsurface Utility Engineers (TSH/TBE) completed a Subsurface Utility Engineering (SUE) investigation for the City of Toronto (the City) on York Street from Front Street to Wellington Street. The investigation was completed in accordance with ASCE 38-02 – Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data. The field investigation was completed over the summer of 2007. The purpose of the investigation was to clearly identify the location of the existing underground utilities in order to facilitate the selection of the route for the new PATH tunnel.

TSH/TBE collected existing utility records information from the various Utilities and from the City's DMOG mapping. The records research covered the entire area under consideration along Front Street, University Avenue and York Street. When the proposed route was narrowed down to York Street, TSH/TBE made recommendations for a three stage approach to the collection of the field data:

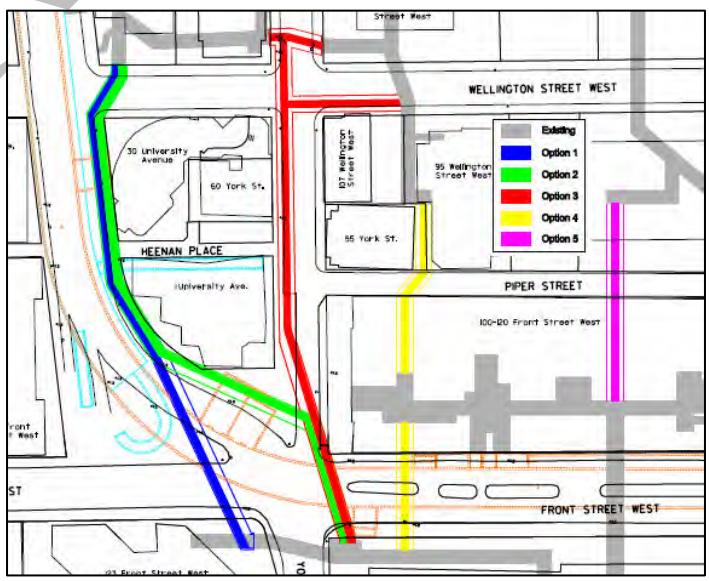
- Phase I - Manhole / Catchbasin Investigation
- Phase II - Utility Designating
- Phase III -Vacuum Excavation

Approval was provided to proceed with Phase I and II. It was determined that Phase III would be completed at a later stage of the design.

The investigation was successful in gathering the utility information for the project in order to evaluate the proposed route for the tunnel. TSH/TBE anticipates that as the design progresses and key conflict areas are identified additional information will be gathered.

2.0 Project Background

The City of Toronto plans to install a new PATH network connection from Union station to the existing PATH tunnel on Wellington Street. The project will involve the construction of an underground tunnel approximately 3m x 5m in size. The tunnel construction will have a major impact on the existing utilities in the area which made it important to create an accurate depiction of the existing conditions.



The limits of the records investigation encompassed the wide area of all 6 original proposed routes. The field investigation was limited to the area of the preferred route along York Street.

3.0 Investigation Methodology

The following methodology provides a step by step summary of the procedures used by TSH/TBE to complete the utility investigation.

Step #1: The first step in the investigation, as with any other SUE investigation, was to collect all available utility records. TSH/TBE used both the DMOG drawings from the City as well as information collected from the individual utilities. The investigation area covered the entire area encompassed by all the options being assessed.

Step #2: The second step was to gather invert elevations for manholes within the area of the proposed route along York Street. Invert measurements were not possible at all locations due to the geometry of the chambers or the depths of the structures. All manholes were surveyed and tied into the coordinates for the drawing.

Step #3: The third stage was to collect quality level B information in the area of the proposed route along York Street. Designating was completed using single and multi-frequency electromagnetic cable locate equipment. Where possible direct connect designating was used; however where access was not possible, inductive designating was also utilized. The designating efforts focused on telecommunications, electrical, gas, and water.

Step #4: The utility information was imported into a composite utility drawing using the City's DMOG drawings as a base. The final drawing has the utility information shown at the appropriate quality level, ranging from D to B, as defined in the ASCE Standard. The use of quality levels will provide the designer/engineer with confidence in the information and provide the bidders with confidence in the location of the utilities so that they can provide competitive bids.

4.0 Conclusions / Recommendations

The SUE investigation for this project provided key information to be used during the design of the new PATH tunnel. The investigation area is very congested with utilities which made mapping a challenge. Some utilities could not be field verified and are therefore left on the drawing at QL-D. In addition to verifying the location of the existing utilities and adding an increased level of accuracy to the existing records, the investigation identified a few discrepancies in the initial information provided on the DMOG mapping.

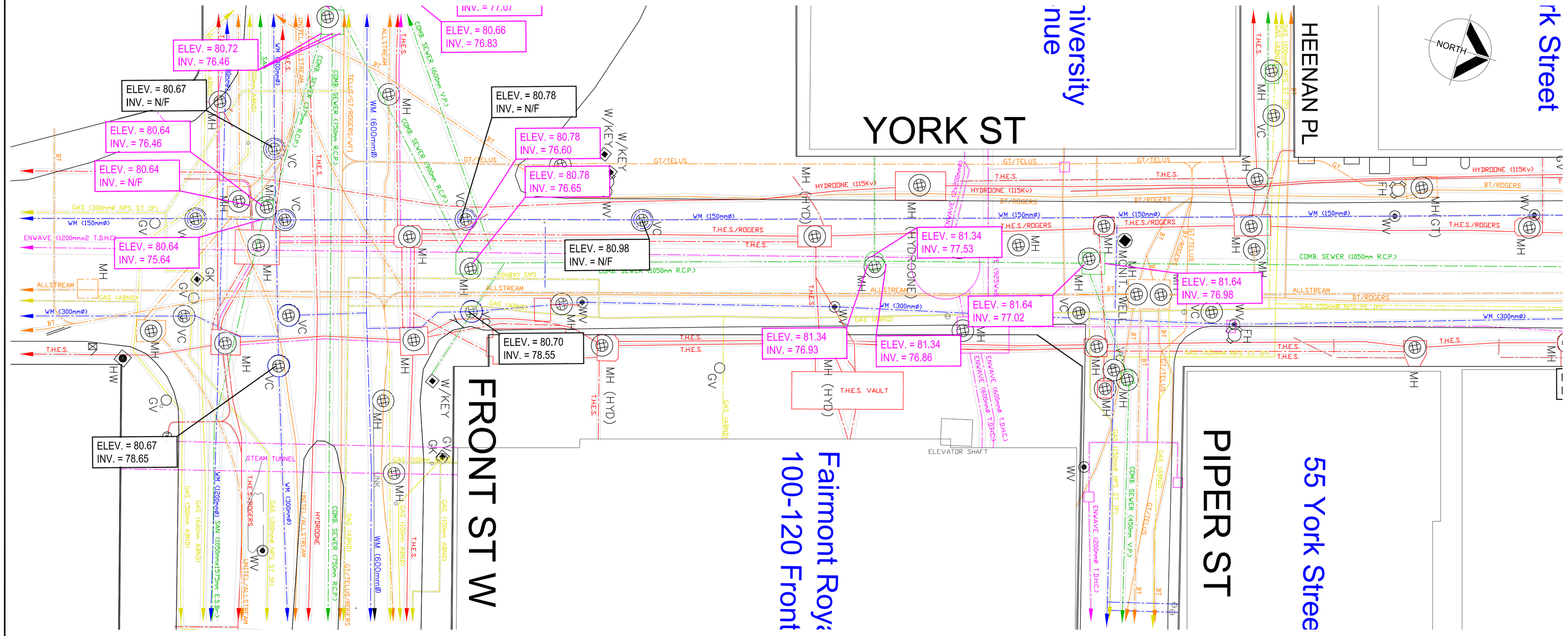
One major discrepancy was the existence of a large Toronto Hydro structure and chambers along Wellington Road which did not show up on the DMOG map. This structure will have a definite impact on the proposed tunnel alignment.

The data currently shown on the drawing should provide the designers adequate information to move forward with the project design. TSH/TBE recommends that following additional steps be completed during the next stage of the design:

- Test holes should be completed to determine the exact horizontal and vertical location and the nature/material type of the key utilities that will be crossed or approached by the new tunnel;
- Dimensions of the vaults in the critical project areas should be verified;
- The alignment of the steam tunnel across Front Street should be verified with survey data; and
- The location of the TTC vent shafts should be verified.

The utility drawing in Appendix A should be maintained and updated as new utilities are added in order to provide the City with a complete up to date inventory of what is present within the roadway. The information should be relayed to the DMOG mapping group in order to compare to and update their existing drawing.

APPENDIX A
SUE UTILITY DRAWING



PRELIMINARY

LEGEND

GAS	GAS
FOC	FIBRE OPTIC CABLE
BT	BELL
TV	CABLE TV
BE	BURIED ELECTRIC
WM	WATER
SAN	SANITARY SEWER
STM	STORM SEWER
UNK	UNKNOWN
———	QUALITY LEVEL "B"
- - - -	QUALITY LEVEL "C"
—·—·—	QUALITY LEVEL "D"
⌖	TEST HOLE (QL-A)
( )	BRACKETS INDICATE INFORMATION OBTAINED FROM RECORDS

NOTES

THE UTILITY INFORMATION SHOWN ON THIS DRAWING WAS COLLECTED IN ACCORDANCE TO ASCE STANDARD 38-02. THE INFORMATION IS SHOWN BY QUALITY LEVEL WHICH INDICATES THE LEVEL OF EFFORT USED TO DETERMINE THE LOCATION OF THE DATA

INCREASED QUALITY

QUALITY LEVEL "D" – INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

QUALITY LEVEL "C" – INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY LEVEL "D" INFORMATION.

QUALITY LEVEL "B" – INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE UTILITIES.

QUALITY LEVEL "A" – PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASURMENT OF SUBSURFACE UTILITIES.

No.	DATE	BY	ISSUES / REVISIONS
1			

GENERAL NOTES

1. TSH/TBE'S SUE FIELD INVESTIGATION WAS PERFORMED SEPTEMBER 2007. CHANGES TO UTILITIES THAT OCCURRED FOLLOWING OUR INVESTIGATION MAY NOT BE SHOWN. CONSIDERATION SHOULD BE GIVEN TO UPDATING THIS PLAN PRIOR TO FINAL DESIGN AND CONSTRUCTION.

2. LIMIT OF INVESTIGATION: INTERSECTION OF FRONT STREET AND YORK STREET. YORK STREET FROM FRONT STREET TO WELLINGTON STREET. WELLINGTON STREET FROM YORK STREET TO 60m± EAST ON WELLINGTON.

3. FIELD VERIFICATION OF UTILITIES WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE AND CABLE LOCATE EQUIPMENT.

4. EMPTY CONDUITS, SERVICES TO BUILDINGS, ABANDONED FACILITIES SUCH AS STREET LIGHT CABLES, WITHIN THE INVESTIGATION AREA MAY NOT BE SHOWN ON THE DRAWING.

5. TSH/TBE WILL USE ALL AVAILABLE MEANS IN AN ATTEMPT TO DETERMINE THE LOCATION OF UNKNOWN UTILITIES HOWEVER CANNOT BE RESPONSIBLE FOR FINDING ALL UNKNOWN UTILITIES.

6. SURVEY OF UNDERGROUND UTILITIES WAS COMPLETED BY SHAEFFER & DZALDOV LIMITED. TSH/TBE IS NOT RESPONSIBLE FOR THE ACCURACY OF SURFACE FEATURES.

7. INFORMATION SHOWN IN BRACKETS ON DRAWING ARE BASED SOLELY ON RECORDS INFORMATION.

8. SEE PROJECT REPORT FOR ADDITIONAL INFORMATION.

THE ENGINEER'S SEAL HEREON IS TO CERTIFY THAT THE UTILITIES SHOWN HAVE BEEN INVESTIGATED IN ACCORDANCE WITH STANDARD SUE INDUSTRY PRACTICES. ALL OTHER INFORMATION HEREON HAS BEEN PROVIDED BY OTHERS AND IS NOT A PART OF THIS CERTIFICATION.

Subsurface Utility Engineers
TSH/TBE Joint Venture
300 WATER STREET
WHITBY, ONTARIO
L1N 9J2
TEL: 905-668-8822
FAX: 905-668-0221
WWW.TSHTBE.CA

CLIENT:

CITY OF TORONTO

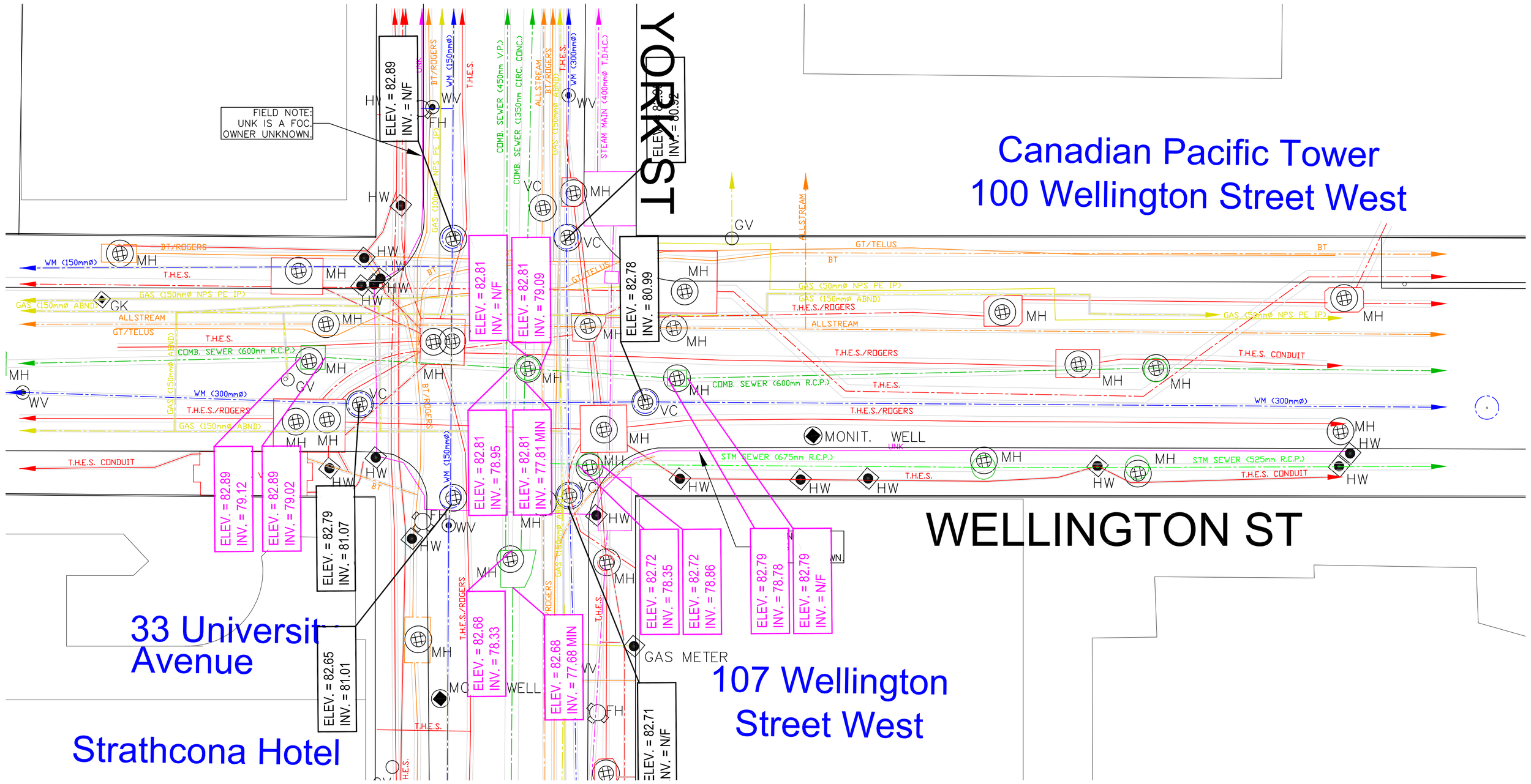
PROJECT:

NEW NW PATH CONNECTION
UNION STATION TO WELLINGTON STREET

DRAWING:

SUBSURFACE UTILITY INVESTIGATION

DRAWN BY:	CHECKED BY:	PROJECT No. :
M. CAVANAUGH	J. BRADBURN	7200850187
DESIGNED BY:	APPROVED BY:	DRAWING No.
	L. ARCAND	P1
SCALE: 1:200	DATE: OCTOBER, 2007	



PRELIMINARY

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CLIENT:

CITY OF TORONTO

PROJECT:

NEW NW PATH CONNECTION
UNION STATION TO WELLINGTON STREET

DRAWING:

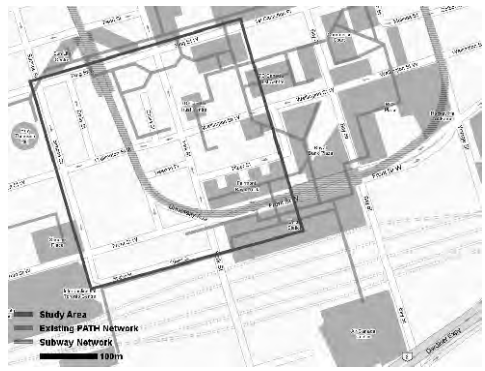
SUBSURFACE UTILITY INVESTIGATION

DRAWN BY:	CHECKED BY:	PROJECT No. :
M. CAVANAUGH	J. BRADBURN	7200850187
DESIGNED BY:	APPROVED BY:	DRAWING No.
	L. ARCAND	P2
SCALE:	DATE:	
1:200	OCTOBER, 2007	

Notice of Study Commencement and Public Meeting
Northwest PATH Connection
(Union Station to Wellington Street)
Class Environmental Assessment

The Study

The City of Toronto and GO Transit are currently undertaking a Municipal Class Environmental Assessment Study (Schedule "C) for a new underground northwest PATH pedestrian connection that will extend from Union Station to the existing PATH system in the vicinity of Wellington Street. The City of Toronto and GO Transit have retained the consulting firm Arup Canada Inc. to assist with the study.



The purpose of this new PATH connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new northwest PATH connection will also serve to more effectively disperse underground pedestrian activity in the PATH system which is currently oriented to the north east quadrant of Union Station. This redistribution will occur in conjunction with the development of a new GO Transit west concourse at Union Station that will mirror the existing east concourse.

The Process

The study is being undertaken in accordance with the *Municipal Class Environmental Assessment* (June 2000) process for a **Schedule 'C'** project. Consultation will be an integral component of this study and your ideas and input will be invited as the Environmental Assessment process takes place. An upcoming public meeting will provide members of the public with an opportunity to meet the study team and learn about the issues to be addressed by the study, and potential alternative solutions. The public meeting will take place:

Date: Monday, February 26, 2007
Time: 4:30 p.m. to 7:00 p.m.
Location: Union Station (GO Transit East Concourse)

Comments

During the Class EA, the *s*tudy *t*eam will be collecting comments and information regarding this project from the public in accordance with the requirements of the *Ontario Environmental Assessment Act.* If you wish to receive further information or to be added to the project mailing list, please contact one of the following:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax:: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt
Project Manager
ARUP Canada Inc.
180 Bloor Street East Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@aurp.com

For more information, click on www.toronto.ca/union_station.

TORONTO

Job title	New Northwest PATH Connection	Job number	96126-00
Meeting name & number	Alternatives Workshop 1/07	File reference	9-04
Location	Union Station Room No. 228A/B/C	Time & date	13:30 January 30, 2007
Purpose of meeting	Stakeholder Workshop - Alternative Solutions and Routes		

Present

Project Team:

Tim Laspa (City of Toronto)
Andrew McAlpine (ARUP)
David Pratt (ARUP)
Marc Rose (Gartner Lee Limited)
Scott Mitchell (City of Toronto)
Jeff Batemen (City of Toronto)
John Bryson (City of Toronto)
Erin Morrow (ARUP)
Edward Terry (Gartner Lee Limited)
David Hopper (GO Transit/HDI)

Stakeholders:

John Spano (Oxford Properties)
Susan Dutton (Avison Young)
Sandra Tofani (Bell Canada)
Richard Avery (IBI Group/Royal York)
David Chalmers (40 University)
Christopher Parkinson (Toronto Club)
Brendan Cullin (Strathcona Hotel)
Catya Covassin (TD Centre)
Tannea Helmta (City of Toronto)
Graham Flude (Royal York Hotel)
Michael Saunders (City of Toronto)
Adam Snow (GO Transit)
James Parach (City of Toronto)
Pie Mammone (TTR)
Jodie Parmer (City of Toronto)
Janice Etter (USRPAG)
Jim Davidson (TD Centre)
Dan Francey (GO Transit)

Apologies

Circulation: Those present

Prepared by: Edward Terry

Date of circulation: February 7, 2007

Date of next meeting

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

1. Introduction

1.1 D. Pratt (ARUP) & M. Rose (GLL) made introductory remarks and introduced the project team.

2. Project overview

2.1 T. Laspa (City of Toronto) presented an overview of the purpose of the project / and policy context and Council's direction to proceed with the initiative

2.2 M. Rose provided an overview of the Schedule "C" Class EA process and outlined the study area

3. Possible solutions and initial routes

3.1 A. McAlpine (ARUP) presented the possible solutions for a new PATH connection and identified initial routes outlining various opportunities and constraints

3.2 Q & A's

Q: Is York Street option complicated because of the Enwave deep water-cooling system?

A: The Enwave pipe is 14m deep. The issue would be examined in further detail as the study progresses.

Q: What is the eastern boundary of the study area?

A: Mid-block between York St. & Bay St.

Q: What is the width of the public Right-of-Way on York Street?

A: Approximately 20m

Q: Suggestion to expand study area further west to provide route for new RBC building?

A: The City is taking planning steps to deal with new PATH connections outside of the study area through the development review process.

4. Evaluation Framework

4.1 M. Rose presented the proposed evaluation framework criteria

4.2 Additional criteria to include:

- Above-Grade pedestrian routes/surface conditions
- Under the category of Cultural Environment include – Quality of pedestrian environment
- # of buildings connected to new route(s)
- Vehicular and Pedestrian capacity
- Length, distance and directness of route

Quality of Environment & way finding

4.3 Should weightings be placed on evaluation framework criteria?

- Higher weightings to pedestrian realm issues
- Long term overall benefit more important than shorter-term disruptions anticipated through Construction process
- Does solution solve the problem - should be the important question

4.3 Stakeholders agreed that it is difficult to weight criteria at this point of the study

5. New solutions and routes

5.1 Attendees split up into break out groups to identify new solutions and routes

5.2 Reconvened to present ideas to the entire group:

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

Group A (See Figure 1)

- Discussed the benefits of a York Street route (provides great opportunities for connectivity to the existing system)
- Pedestrian route(s) should connect to as many buildings as possible along York Street
- Potential for route(s) to pass through the north west portion of Royal York Hotel Potential for Strathcona Hotel connections
- Toronto Club is a heritage designated property

Figure 1

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

Group B (See Figure 2)

- Red route (York Street) would need to be animated

- A new route through Royal York may be problematic when trying to connect to 95 Wellington just north of it
- Hybrid solution – come through Royal York and then to York St - Royal York will help animate part of the route

Figure 2

Job title	Job number	Date of Meeting	Action	Action Date
New Northwest PATH Connection	96126-00	January 30, 2007		

Group C (See Figure 3)

- Need to include retail component
- Need some surface route improvements
- Enhance retail opportunities in Royal York Hotel
- Suggestion: full concourse under Front with a variety of smaller routes heading north
- More buildings need to be connected for project buy-in
- Back-of-house activities at Royal York poses a challenge as you move further east

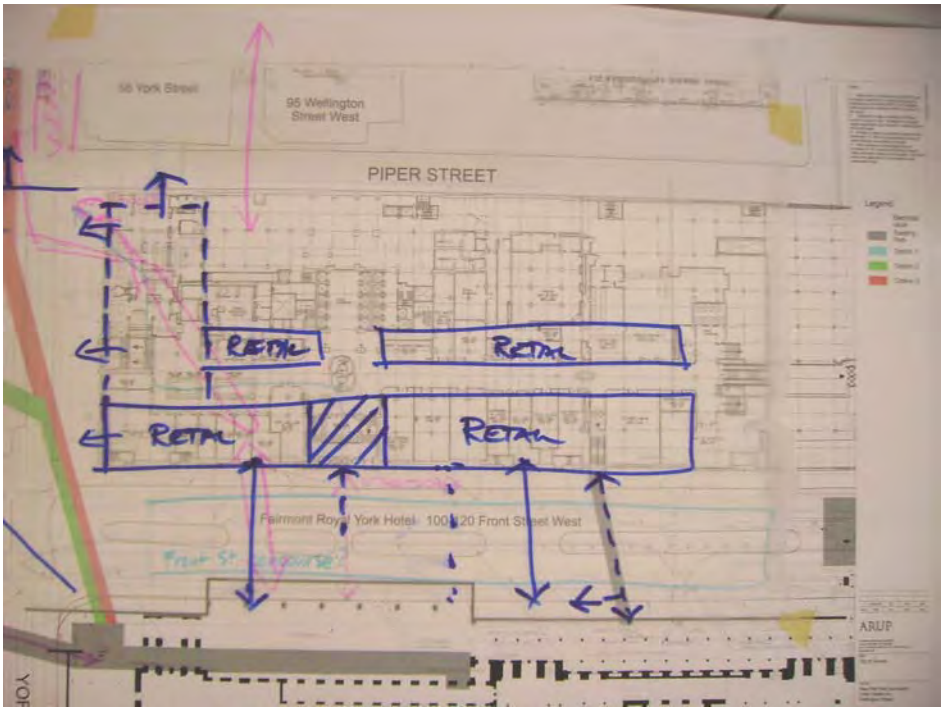


Figure 3

5.3 Post Discussion:

- **Front Street -** is a major challenge with utility locations
- **Deal breaker -** not being connected to buildings
- **Safety, Security and maintenance** - are a concern for sections of a PATH extension within the public right-of-way
- **Cost sharing** – would property owners be willing to share cost
- Just being connected is a big advantage, retail is secondary

6. Next Steps

6.1 M. Rose described the next steps in the process and explained how stakeholders could stay involved wit the Project including the City's website

6.2 T. Laspa thanked attendees for their participation

New Northwest PATH Connection
Union Station to Wellington St.

Public Information Centre

TORONTO

ARUP

Welcome to the Public Information Centre for the New Northwest PATH Connection Municipal Class EA

- Please sign in on the sheet provided. Then feel free to walk around and view the displays.

- If you have any questions, our representatives will be pleased to discuss the project with you.

- Comment sheets are provided for those who wish to provide comments in writing.

- Please either place your completed sheets in the Comment Box or mail/fax them to one of the identified Project Team Members (see below) by March 16th, 2007.

- Thank-you for your involvement in this project.

- For additional information, please contact one of the following Team Members:

Tim Laspa
Project Manager
Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
Arup Canada Inc.
160 Bloor Street East Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

TORONTO

ARUP

Purpose of the Public Information Centre

The purpose of this PIC is to introduce you to this project, inform you of our progress to date, and obtain your comments.

The major elements presented today are:

- Study Overview & Background
- Overview of the Municipal Class Environmental Assessment Process
- Problem/Opportunity Statement
- Alternative Solutions Being Considered
- Existing Study Conditions
- Initial Evaluation of Alternative Solutions
- Preliminary Recommended Solution
- Next Steps

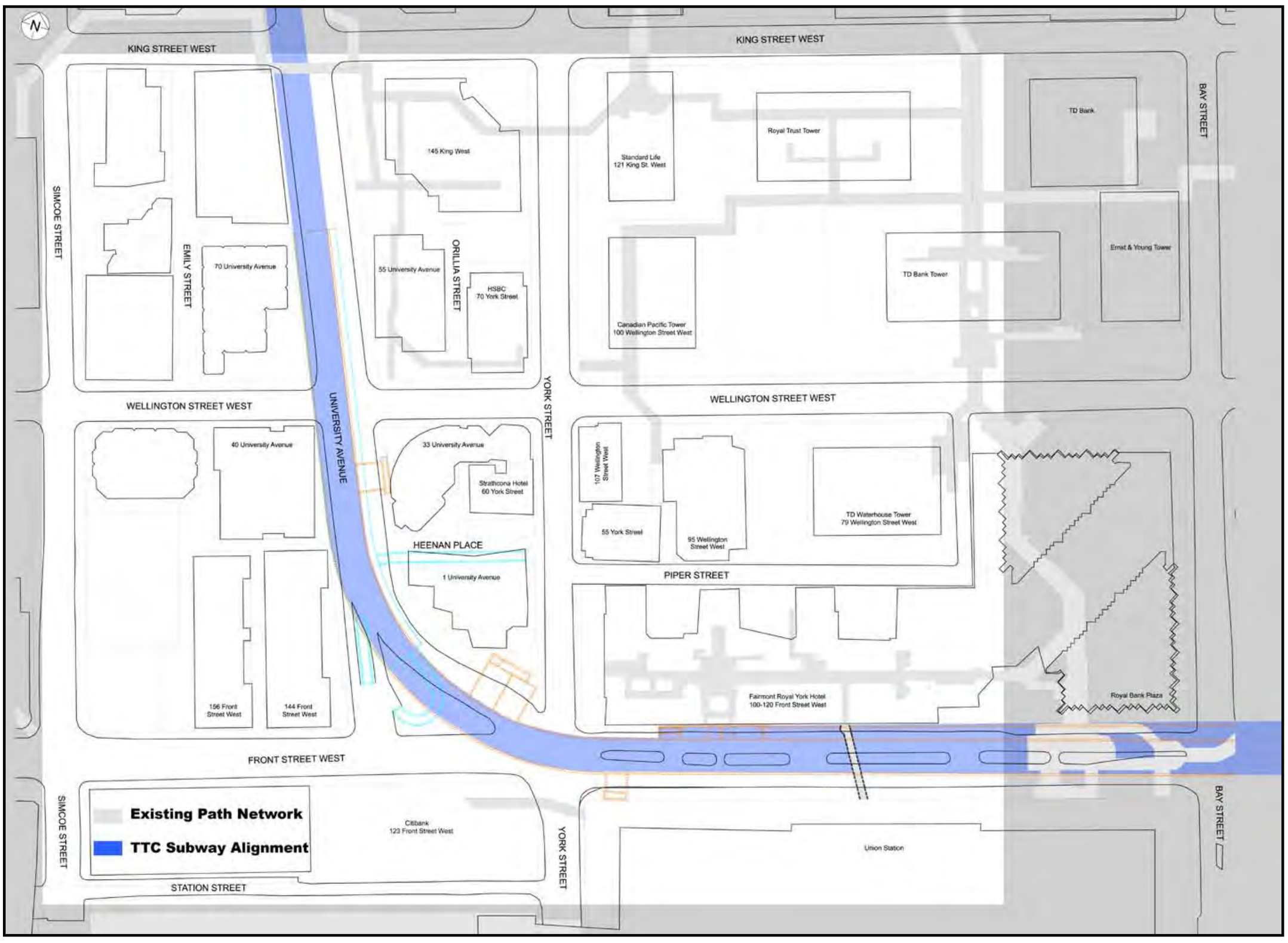
Study Overview

Introduction

- The City of Toronto is undertaking this study to provide additional pedestrian connections from Union Station to the surrounding area.

- The study is following the Schedule ‘C’ requirements of the Municipal Class Environmental Assessment (2000) planning process.

Study Area



Background

- In August 2000 the City of Toronto purchased Union Station from the Toronto Terminals Railway Company (TTR)

- The City of Toronto purchased Union Station in August 2000 with three objectives:
  - Promote Union Station as a multi-model transportation hub
  - Preserve Union Station's heritage
  - Revitalize the existing station facility

- As part of the ongoing Union Station revitalization initiative, City Council has approved a Master Plan (2004) for the building, and a District Plan (2006) for the surrounding area.

- As part of the input to the aforementioned Plans, City Transportation Planning staff commissioned a series of pedestrian studies, one of which was to address the preliminary engineering feasibility of constructing a pedestrian tunnel under Front Street in the vicinity of University Avenue. The preliminary findings of the 2005 pedestrian study indicated that it is possible to construct a new underground pedestrian tunnel under Front Street which could be extended north under York or University Avenue and/or link to adjacent buildings and existing PATH connections in the vicinity of Wellington Street.

- Following from that work in June 2006, City Council directed staff take the necessary action on a priority basis, to commence an Environmental Assessment (EA) for the creation of a new northwest PATH connection in accordance with the design directions noted in the Union Station District Plan.

- Following Council's direction, the City of Toronto is undertaking a Municipal Class Environmental Assessment Study (Schedule 'C') for additional connections (Union Station to Wellington Street) and, with assistance form GO Transit, have retained the consulting firm Arup Canada to assist with the study.

Overview of the Class Environmental Assessment Process

- The Municipal Class Environmental Assessment (2000) (Class EA) process, which is approved under the Environmental Assessment Act, enables the planning of municipal infrastructure projects in accordance with a proven procedure for protecting the environment.

- The study is being undertaken in accordance with the first three Phases of the Class EA process for a Schedule ‘C’ project.

- The Schedule ‘C’ Class EA process includes public and review agency consultation, an evaluation of alternative solutions, an evaluation of alternative design concepts, an assessment of the effects on the environment, and identification of reasonable measures to mitigate any adverse effects.

- There is an opportunity at any time during the Class EA process for public input, including this Public Information Centre (PIC).

- Upon Completion of the Class EA, an Environmental Study Report (ESR) will be available for public review.

Overview of the Class Environmental Assessment Process

PHASE 1

Identify & Describe the Problem/ Opportunity

WE ARE HERE

Alternative solutions are different ways or approaches of solving the problem identified in Phase 1. For this project, alternative solutions include all reasonable and feasible approaches for improving pedestrian connections from Union Station

PHASE 2

Evaluate Alternative Solutions & Establish the Preferred Solution

PIC – February26th, 2007

Alternative design concepts describe ways of developing and designing the project to implement the preferred solution from Phase 2. For this project, alternative design concepts will describe the specific location of improvements to pedestrian connections and what such improvements would look like.

PHASE 3

Identify Alternative Design Concepts, Potential Environmental Effects and the Preferred Concept

PIC
June

Prior to filing the Environmental Study Report, there will be a City of Toronto Staff Report presented to the Planning and Growth Management Committe (item for deputation) and City Council.

PHASE 4

Prepare Environmental Study Report Documenting Phases 1-3

File Environmental Study Report

30 CALENDAR DAY
PUBLIC REVIEW PERIOD

Opportunity for Part II Order

PHASE 5

Complete Drawings & Documents - Proceed to Construct, Operate & Monitor Project

TORONTO

GO

ARUP

Planning Framework - Policy Direction

- The City of Toronto's Official Plan
  -Supports the need to improve downtown accessibility and mobility, including improving pedestrian circulation in the downtown core.
  -An urban environment and infrastructure will be created that encourages and supports walking throughout the City through policies and practices that ensure safe, direct, comfortable, attractive and convenient pedestrian conditions, including safe walking routes to schools, recreation areas and transit." (Section 2.4(8)).

- The Union Station Master Plan
  -Supports additional connections between Union Station and the PATH network to address future pedestrian demand.
  -Encourages a more porous Union Station that provides improved and efficient pedestrian movement that will enhance the commuting experience.

The Problem - Pedestrian Demand

- Existing morning peak commuter period (1 hour):
  -Approximately 14,000 pedestrians currently exit northbound to Front Street
  -At the same time, approximately 19,000 pedestrians use the existing PATH system.

- Future conditions:
  -exits to Front Street are projected to increase to approximately 24,000 movements. Approximately 13,000 of these pedestrians will continue to travel north, of which an estimated 4,700 to 6,100 will be oriented to the north and west.
  -During the same time, pedestrian flow in the existing PATH will increase to approximately 36,000 movements

- Significant volumes will occur at other peak times, and will also experience increases.

- The Front Street / York Street/University Avenue intersection will, at a maximum, accommodate an estimated 3,900 northbound pedestrians per hour.

- The current facilities and operations will not meet projected pedestrian demands nor provide any opportunity for redistribution of other existing PATH users who may be oriented north and west of the Station.

The Opportunity

- Additional pedestrian facilities, either above ground or subsurface or a combination thereof, are opportunities that will be examined.
- The objective is to provide additional capacity, amenity and routing options to accommodate station related pedestrian activity.

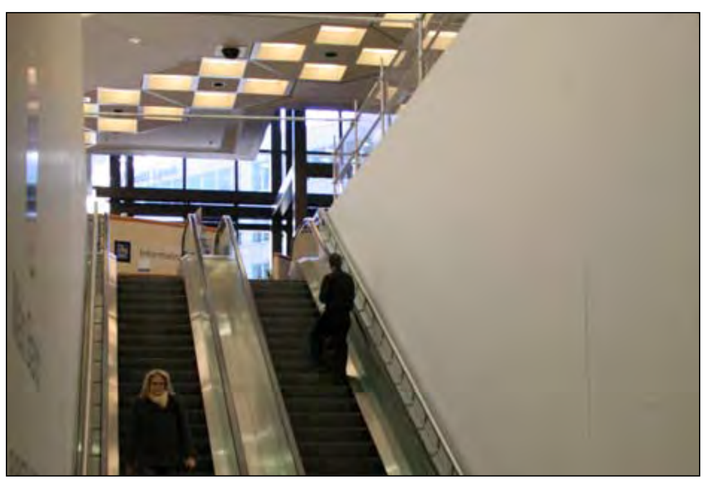
Alternative Solutions Being Considered

1. Do Nothing
No Changes or improvements would be made to the existing PATH system. Acts as a comparitive benchmark.

2. Above ground routes with streetscape improvements
Improvements would be made to the public realm at street level. Such improvements could include widening sidewalks and providing other pedestrian amenities.

3. Improvements to existing underground routes
Sections of the existing PATH system would be widened to accommodate more people.

4. New underground routes
New underground routes would be created by travelling under public rights-of-way and/or through private property. Depending on the location, there would be opportunities to incorporate retail space and public amenities into the routes.

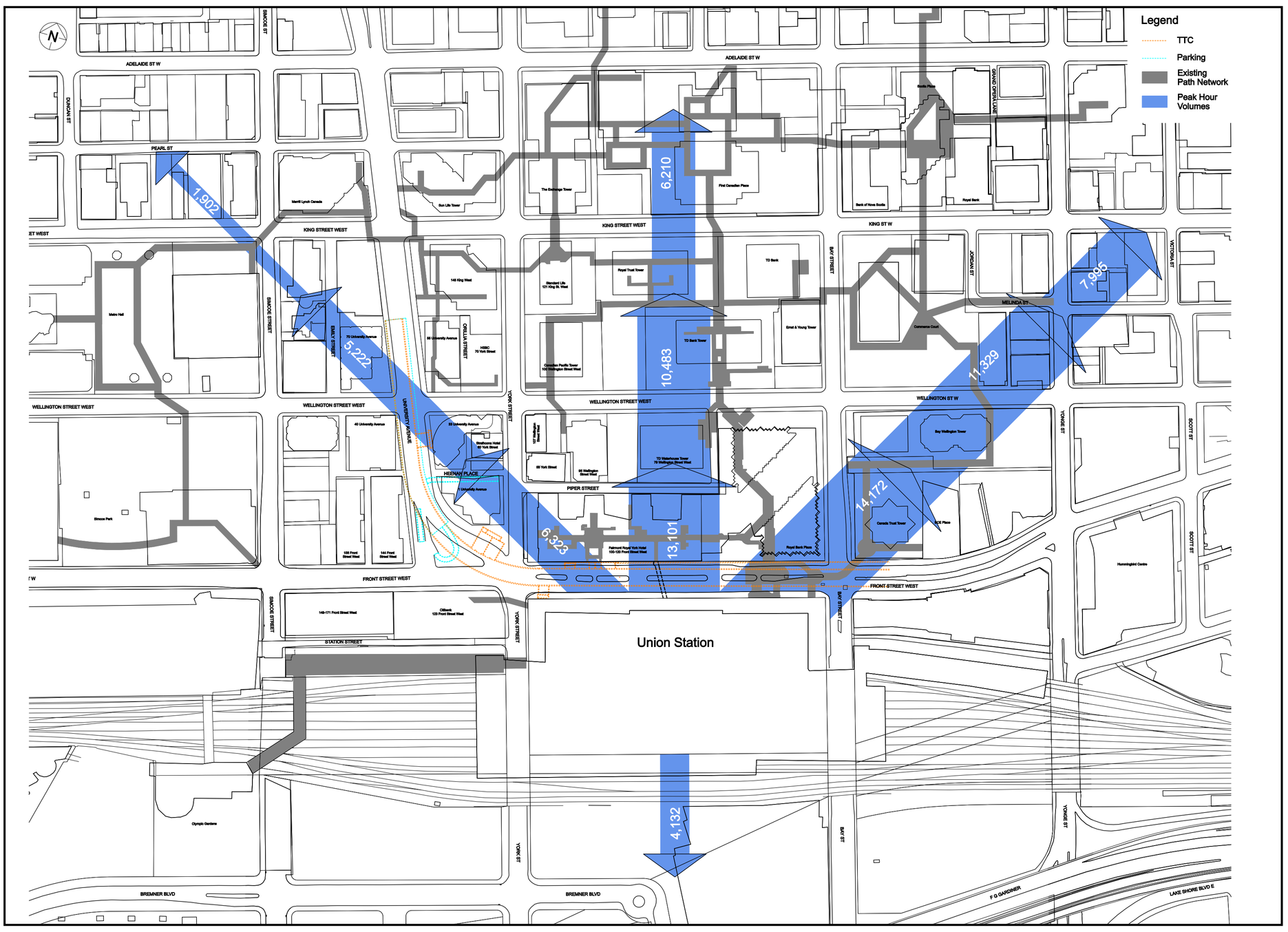


5. New underground routes connecting to above ground routes
New routes would be created by connecting underground and above-ground routes. Pedestrians travelling these routes would be routed through both underground and above ground sections.

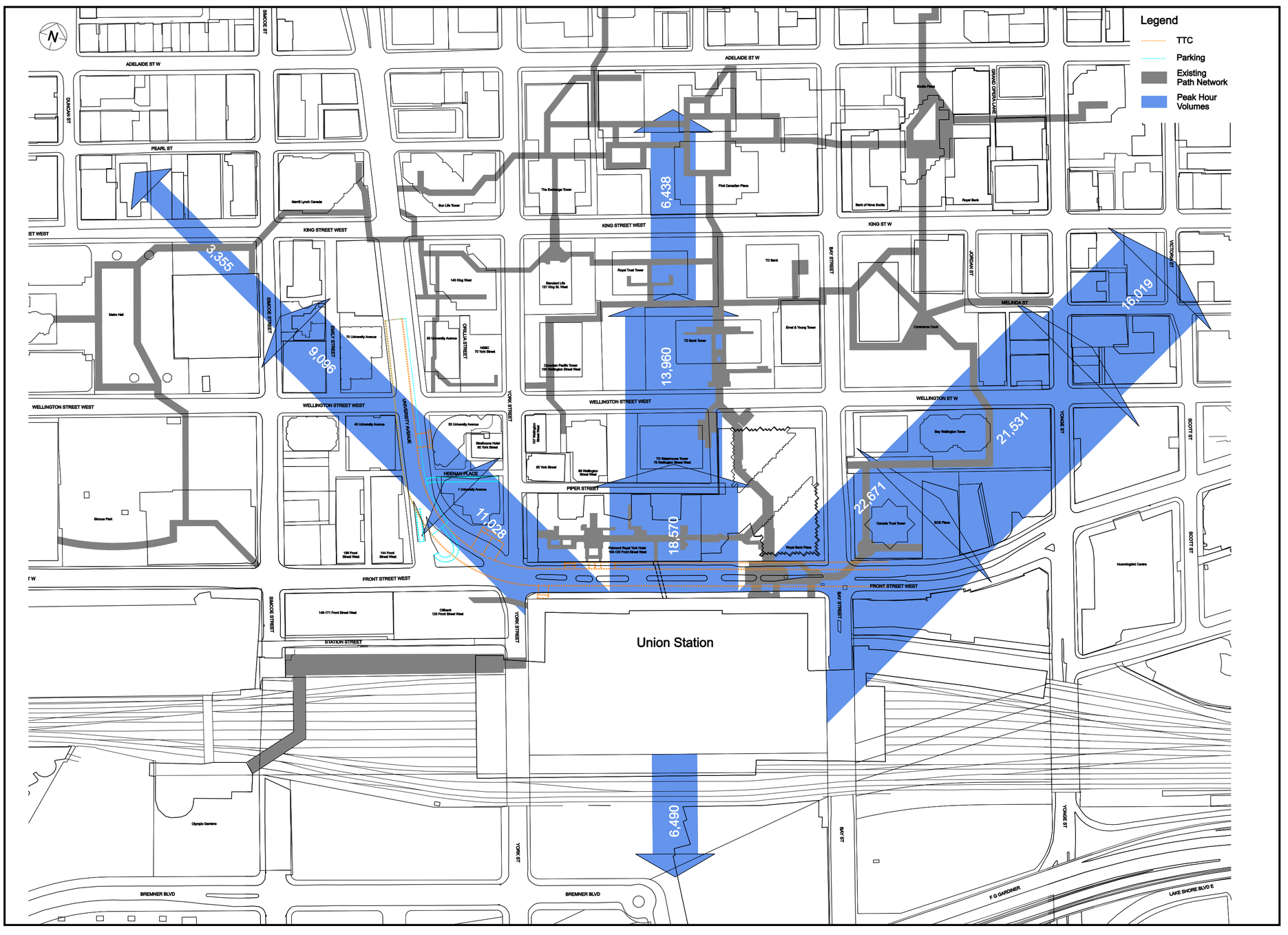
6. New underground routes in parallel to above ground routes
New underground routes would be created along with above-ground routes. Pedestrians would have an opportunity to walk at street level or underground.

Base Conditions

2003 Morning peak hour volumes by destination

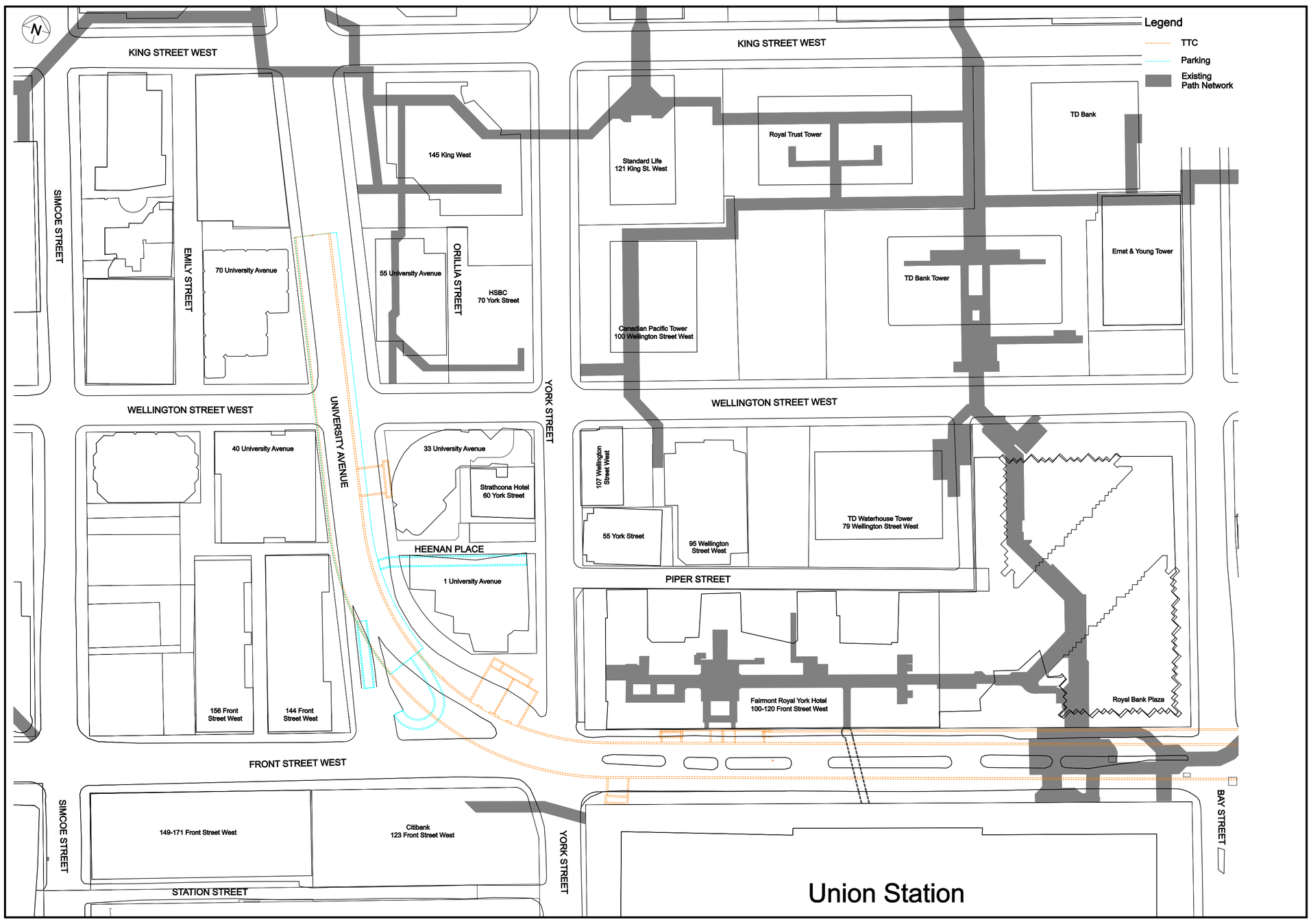


2021 Morning peak hour volumes by destination

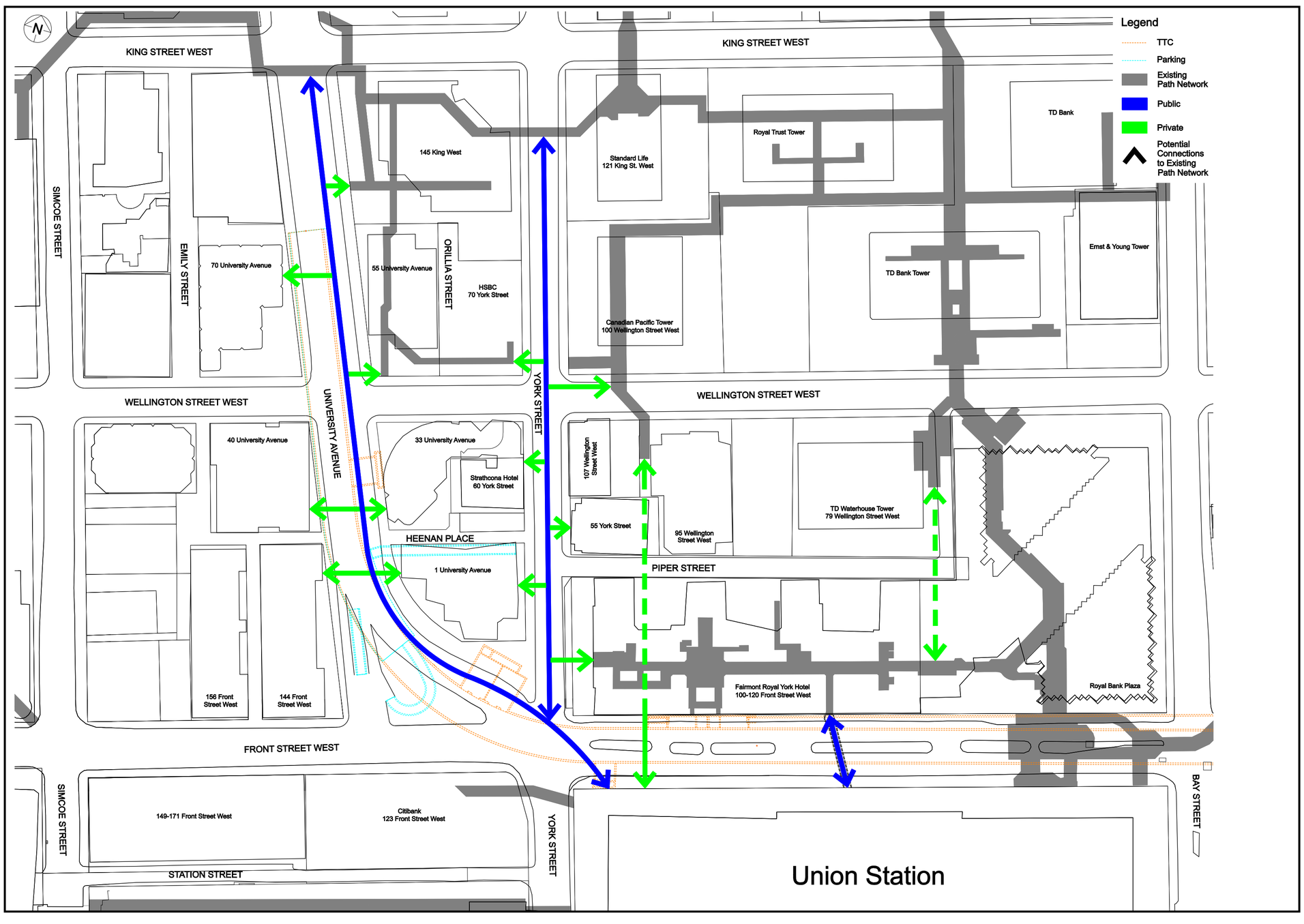


PATH System Connections

Current conditions



Potential route improvements/additions



TORONTO GO ARUP

Preliminary Evaluation of Alternatives

Evaluation Criteria	Do Nothing	Surface Improvements to Above-ground Pedestrian Facilities	Improvements to Existing Underground Routes	New Underground Routes	New Underground routes connecting to Surface Improvements	New Underground Routes in Parallel to Surface Improvements
Policy and Planning Environment						
Conformity with policies of City of Toronto Official Plan Assesses consistency with City of Toronto OP policies & schedules	🔴	🟢	🔴	🟢	🟢	🟢
Conformity with policies of Central Waterfront Secondary Plan Assesses consistency with Central Waterfront Secondary Plan policies & schedules	🔴	🟢	🟢	🟢	🟢	🟢
Agreement with the objectives of Union Station Master Plan Assesses consistency with Union Station Master Plan policies & schedules	🔴	🟡	🟠	🟢	🟢	🟢
Agreement with direction from Toronto City Council Assesses consistency with City Council's direction to staff to commence an Environmental Assessment (EA) for a new northwest PATH connection	🔴	🔴	🔴	🟢	🟢	🟢
Transportation Environment						
Pedestrian flow diverted from existing PATH network Assesses ability to divert users from existing PATH routes	🔴	🟠	🔴	🟢	🟢	🟢
Pedestrian flow capacity where required Assesses potential for fluid pedestrian movement in highly travelled corridors and to relieve congestion	🔴	🟢	🟠	🟢	🟢	🟢
Ease of use for pedestrians Assesses directness of pedestrian connections and degree of vertical circulation (i.e., stairs, elevators, etc.)	🔴	🟡	🟡	🟢	🟢	🟢
Protection of pedestrians against inclement weather Assesses the degree of enclosure or separation from the natural elements	🔴	🔴	🟡	🟢	🟢	🟢
Potential for Overcrowding Assesses the ability to provide a spacious pedestrian environment	🔴	🟢	🟡	🟢	🟢	🟢
Safety of Pedestrians Assesses the opportunities to provide public animation, public interaction and flexibility of pedestrian connections	🟡	🟢	🟡	🔴	🟢	🟡
Connectivity with the existing PATH network Assesses the ability of connecting to the current pedestrian network	🟡	🟡	🟡	🟢	🟢	🟢
Geotechnical / Engineering Environment						
Potential effect on existing structures and operation Assesses the potential impact to surrounding buildings	🟡	🟢	🟠	🟠	🟠	🟠
Ease of Construction Assesses the complexity of constructing new pedestrian connections	🟡	🟢	🔴	🟠	🟠	🟠
Limited staging costs and delays during construction Assesses the potential for impediments to the construction process	🟡	🟢	🟠	🔴	🔴	🔴
Potential effect on public transit during construction Assesses the potential for interruptions to operation of the subway system during construction	🟡	🟡	🔴	🟡	🟡	🟡
Potential effect on vehicular traffic flow during construction Assesses the potential for interruptions to traffic during construction including buses and streetcars	🟡	🟠	🟡	🔴	🔴	🔴
Potential effect on station pedestrian flow during construction Assesses the potential for interruptions to pedestrian movement at Union Station during construction	🟡	🟡	🔴	🟡	🟡	🟡
Frequency of maintenance Assesses how often pedestrian connections and their associated features (e.g., landscaping for surface improvements) would have to be maintained	🟡	🟠	🟡	🟠	🔴	🔴
Minimize cost of implementation Assesses relative cost of constructing pedestrian connection	🟢	🟢	🟡	🟠	🟠	🔴
Potential conflicts with existing utility services Assesses the potential for intersecting with a utility (hydro, phone lines, etc.)	🟡	🟢	🟠	🔴	🟠	🔴
Socio-Economic Environment						
Potential nuisance effects on adjacent uses during construction Assesses potential impacts of construction (Noise, dust, vibrations, etc.)	🟡	🟠	🔴	🔴	🔴	🔴
Potential effects on existing land uses and proposed developments Assesses the potential for businesses to benefit from their proximity to the pedestrian connection	🟡	🟡	🟡	🟢	🟢	🟢
Minimize acquisition of private property for public use Assesses the potential for acquiring private property to construct the pedestrian connection	🟢	🟢	🟡	🟠	🟠	🟠
Improvements to aesthetic experience of pedestrians Assesses the potential to make the pedestrian connection a pleasant pedestrian environment	🔴	🟢	🟡	🟢	🟢	🟢
Pedestrian draw/attraction Assesses the likelihood that pedestrians will use the new connection	🔴	🟢	🟡	🟢	🟢	🟢
Retail development opportunities Assesses the potential for providing new retail opportunities	🔴	🟡	🔴	🟢	🟢	🟢
Public amenity opportunities Assesses the potential to provide amenities such as washrooms, telephone booths, and drinking fountains	🔴	🟢	🟢	🟢	🟢	🟢
Cultural Environment						
Potential effects on designated heritage features Assesses the potential of new pedestrian connections intersecting with designated heritage properties	🟡	🟡	🟡	🟠	🟠	🟠
Legend and Total Score for Each Alternative						
Very Good	2	8	1	13	7	15
Good		6	1	2	9	1
Neutral	13	8	12	2	2	3
Poor		4	5	6	6	3
Very Poor	13	2	8	5	4	6

Preliminary recommended solution

Rationale for Preliminary Recommended Solution

The evaluation matrix suggests that a new underground connection combined with above-ground improvements is the potential solution with several advantages. In particular this solution will:

- Offers new underground route choice and ability to redirect and redistribute pedestrian flows within Union Station and from the existing PATH and above ground street networks

- Offer improved flexibility and route choice

- Provide the highest level of comfort and choice for pedestrians throughout the year

- Minimize the amount of vertical movement on the selected route

- Conform with existing City of Toronto policies

Next Steps...

- Comments received from this PIC will be considered along with those received from review agencies in order to confirm the selection of a preferred solution.

- The study team will identify alternative design concepts (i.e., routes or locations for improvements) associated with the preferred solution and evaluate those concepts

- Identify anticipated environmental effects and ways of minimizing negative effects and maximizing positive effects associated with the alternative design concepts

- Present the design concepts and the results of the evaluation to the public in June 2007

Thank you for your participation!

Please visit the project web site at:
http://www.toronto.ca/union_station

REGISTRATION SHEET

Public Information Centre – New Northwest PATH Class Environmental Assessment
February 26th, 2007– Union Station

Please Print

Name	E-mail	Phone Number
1. Bryan Martin	bryan.martin@utoronto.ca	
2. DAN NEVITT	dnevitt@brookfieldproperties.com	416-864-9633 ex 27
3. REGAN NUQUI	Regan.nuqui@nbpcd.com	416-359-6123
4. Steve Chu	Steve.Chow@gmail.com	416-494-3325
5. Andrew Giraldi	agiraldi@gmail.com	905-277-2664
6. CHRISTOPHER PARKINSON	PARKINSON@TORONTOCLUB.CA	416-362-2751
7. Colin Rainsbury.	USPAC	
8. MAX STILES	MJTILES@YAHOO.CA	647 294 0149
9. Andy Lungenco	alungenco@lycos.com	416 733 2241
10. Anne Borrelly	anneborrelly@yahoo.fr	905-579-7444.

REGISTRATION SHEET

Please Print

ıation Centre – New Northwest PATH Class Environmental Assessment
February 26th, 2007– Union Station

Name	E-mail	Phone Number
11. S. Puth		416-594-7303
12. DAVID J. SCOTT		416-531-8284
13. JOE BOWDY	JOE.BOWDY@BELL.CA	
14. Chris Libaw		
15. Sidney		
16.		
17.		
18.		
19.		
20.		
21.		

FAX → Erin Morrow
→ S. Bateman
DATE: 03/29/07
Post-it

Your input into this study is important. Please pr
presented at the Public Information Centre.

In your view are all possible alternative solutions being considered?

Yes

Are the criteria used to evaluate the alternative solutions appropriate? Are there any additional criteria that we should consider?

Yes
No

Are the preliminary results of the evaluation reasonable?

Yes

Do you have any other comments about the study?

Seems Good -

Please forward your comments by March 15, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: mailto:tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
ARUP Canada Inc.
160 Bloor Street East, Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

Thank you for your participation.

The information presented at the Public Information Centre and additional information on this study is available at www.toronto.ca/ union_station

TORONTO Building a great city – *together*

The City of Toronto holds public consultations as one way to engage residents in the life of their city. Toronto thrives on your great ideas and actions. We invite you to get involved.

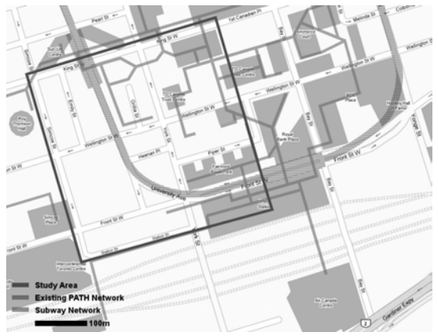
New Northwest PATH Connection (Union Station to Wellington St.)

SCHEDULE "C" MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

THE STUDY

The City of Toronto is currently undertaking a Municipal Class Environmental Assessment Study (Schedule "C) for a new northwest PATH pedestrian connection that will extend from Union Station to the existing PATH system in the vicinity of Wellington Street. The City of Toronto and GO Transit have retained the consulting firm Arup Canada Inc. to assist with the study.

The purpose of this new PATH connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new northwest PATH connection will also serve to more effectively disperse pedestrian activity in the PATH system which is currently oriented to the north east quadrant of Union Station. This redistribution will occur in conjunction with the development of a new GO west concourse that will mirror the existing GO east concourse.



THE PROCESS

The study is being undertaken in accordance with the *Municipal Class Environmental Assessment* (June 2000) process for a Schedule 'C' project.

At the first Public Information Centre, the study team presented its preliminary preferred solution of a new underground PATH connection in parallel with aboveground improvements. After confirming this solution based on public and agency input, the study team has considered specific routes for a new underground connection and locations for aboveground improvements. The upcoming second public meeting for this study will provide members of the public with an opportunity to review the alternative designs and provide comment on the preliminary recommended design option. The public meeting will take place:

Date: Tuesday July 10th, 2007
Time: 4:30 p.m. to 7:00 p.m.
Location: Great Hall - Union Station

COMMENTS

During the Class EA, the Study Team will be collecting comments and information regarding this project from the public in accordance with the requirements of the *Ontario Environmental Assessment Act.* If you wish to receive further information or to be added to the project mailing list, please contact one of the following:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto - City Planning
Metro Hall, 55 John Street, 22nd floor
Toronto, Ontario, M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
ARUP Canada Inc.
160 Bloor Street East, Suite 205
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Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

For more information — www.toronto.ca/union_station

1/2 page
9 col. x 98 lines
Mirror-Guardian

New Northwest PATH Connection
Union Station to Wellington St.

Public Information Centre #2

TORONTO

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Welcome to the Public Information Centre #2 for the New Northwest PATH Connection Municipal Class EA

- Please sign in on the sheet provided. Then feel free to walk around and view the displays.

- If you have any questions, a member of the Project Team will be pleased to discuss the project with you.

- Comment sheets are provided for those who wish to provide comments in writing.

- Please place your completed sheets in the Comment Box or mail/fax them to one of the identified Project Team Members (see below) by July 27, 2007.

- Thank-you for your involvement in this project.

- For additional information, please contact one of the following Team Members:

Tim Laspa
Project Manager
Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
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160 Bloor Street East Suite 205
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Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

Please visit the project web site at:

http://www.toronto.ca/union_station

Purpose of the Public Information Centre

The purpose of this PIC is to introduce you to the underground routes and above-ground improvements being considered, inform you of our progress to date in evaluating these alternatives, and to present a preliminary recommended design.

The major elements presented today are:

- Study, Overview & Background
- Overview of the Municipal Class Environmental Assessment Process
- Planning Framework - Policy Direction
- Problem Statement and Solution
- Alternative Designs Being Considered
- Evaluation of Alternative Designs
- Preliminary Recommended Design for an Underground Route and Above-Ground Improvements
- Next Step

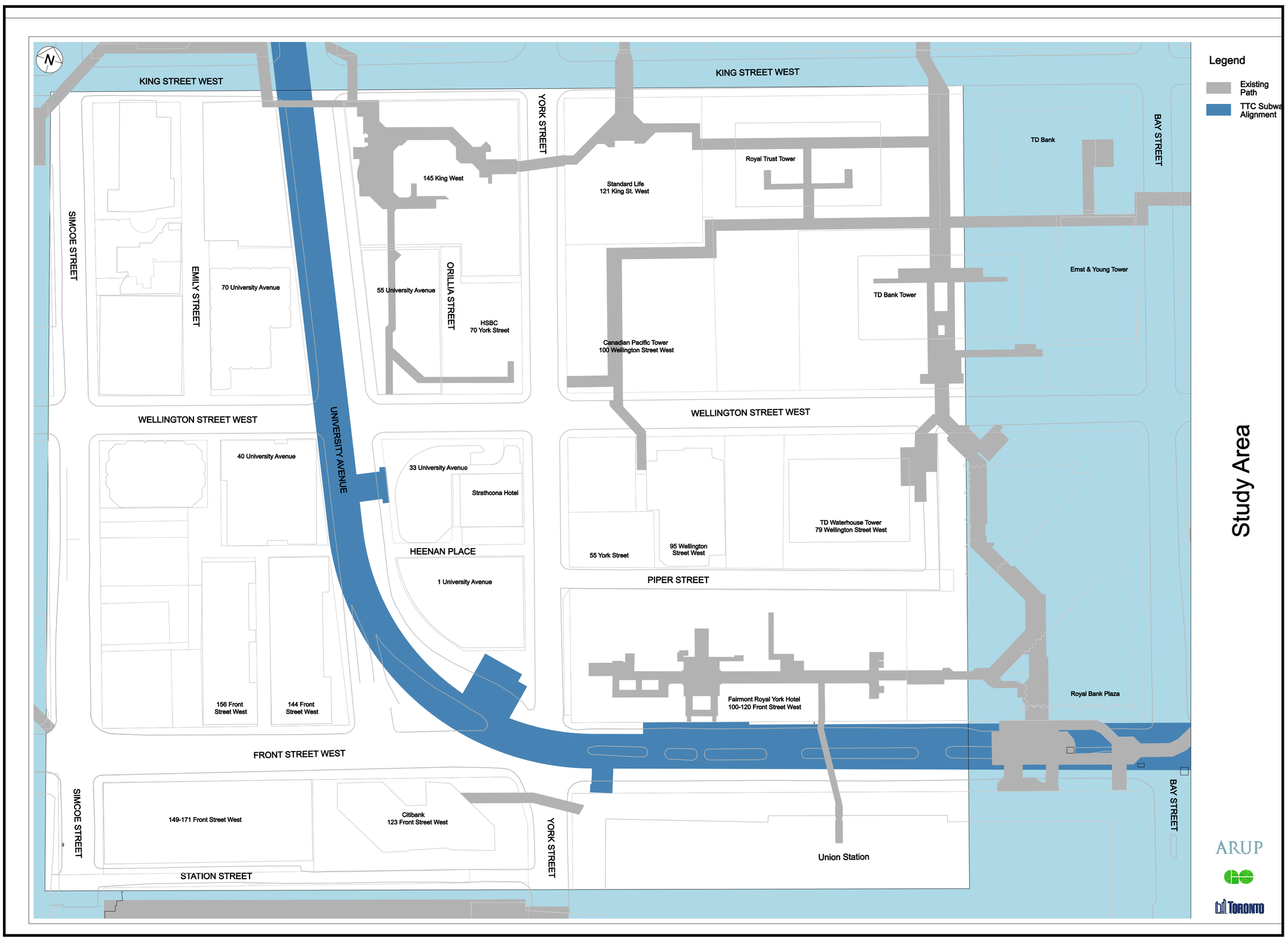
Study Overview

Introduction

- The City of Toronto is undertaking this study to examine potential routes for a pedestrian connection that will extend northwest from Union Station to the existing PATH system in the vicinity of Wellington Street.

- The study is following the Schedule ‘C’ requirements of the Municipal Class Environmental Assessment (2000) planning process.

Study Area



Background

- In August 2000 the City of Toronto purchased Union Station from the Toronto Terminals Railway Company (TTR).

- The City of Toronto purchased Union Station with three objectives:
  - promote Union Station as a multi-mode transportation hub
  - preserve Union Station's heritage
  - revitalize the existing station facility

- As part of the ongoing Union Station revitalization initiative, City Council has approved a Master Plan (2004) for the building, and a District Plan (2006) for the surrounding area.

- As part of the input to the aforementioned Plans, City Transportation Planning staff commissioned a series of pedestrian studies, one of which was to address the preliminary engineering feasibility of constructing a pedestrian tunnel under Front Street in the vicinity of University Avenue.

- The preliminary findings of the 2005 pedestrian study indicated that it is possible to construct a new underground pedestrian tunnel under Front Street which could be extended north under York or University Avenue and/or link to adjacent buildings and existing PATH connections in the vicinity of Wellington Street.

- Following that work in June 2006, City Council directed staff to take the necessary action on a priority basis, to commence an Environmental Assessment (EA) for the creation of a new northwest PATH connection in accordance with the design directions noted in the Union Station District Plan.

- Following Council's direction, the City of Toronto is undertaking a Municipal Class Environmental Assessment Study (Schedule 'C') for additional connections (Union Station to Wellington Street) and, with assistance from GO Transit, have retained a consulting engineering firm (Arup Canada Inc.) to assist with the study.

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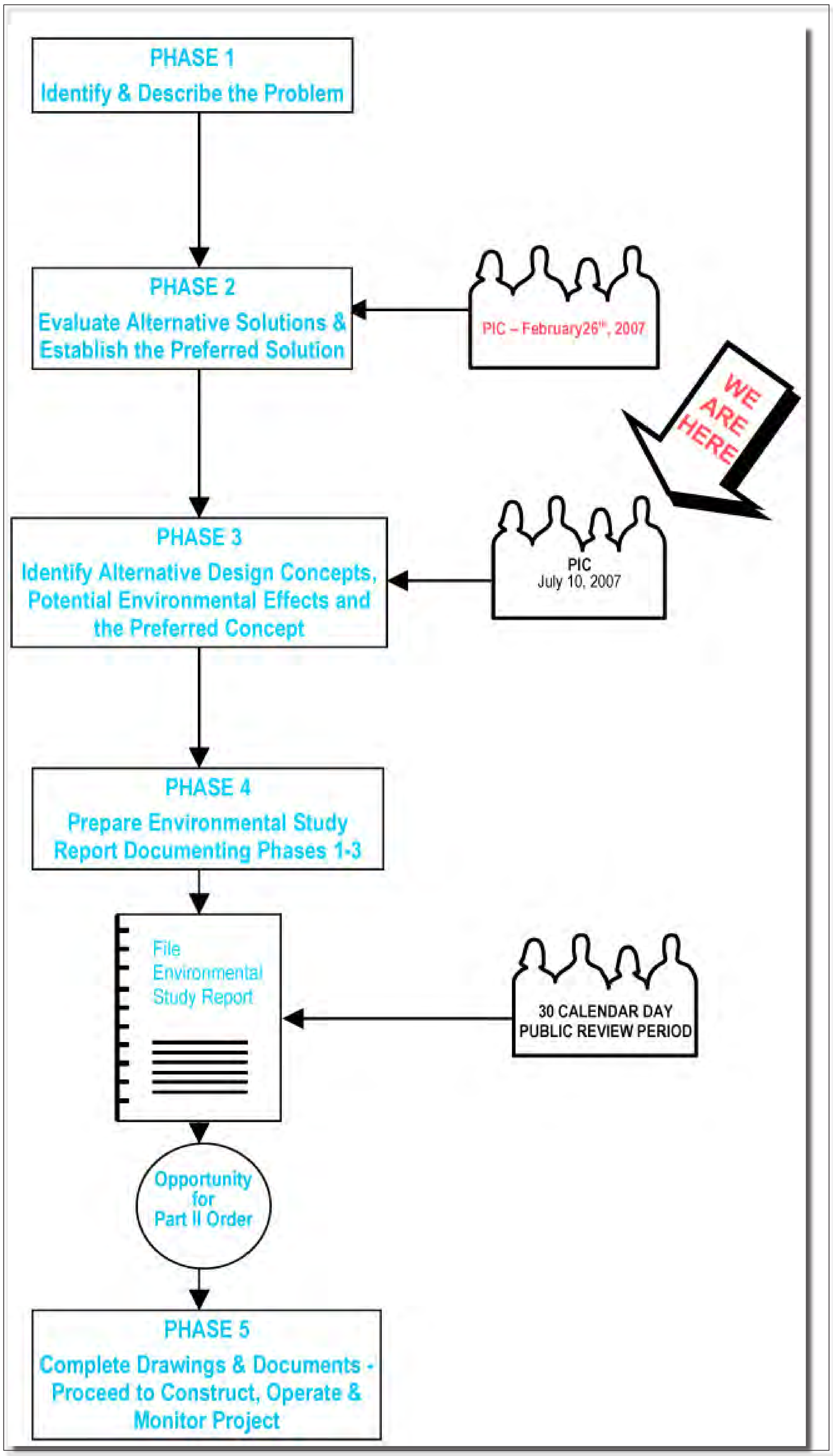
Overview of the Class Environmental Assessment Process

Alternative solutions are different ways or approaches of solving the problem identified in Phase 1. For this project, alternative solutions include all reasonable and feasible approaches for improving pedestrian connections from Union Station

Alternative design concepts describe ways of developing and designing the project to implement the preferred solution from Phase 2. For this project, alternative design concepts will describe the specific location of improvements to pedestrian connections and what such improvements would look like.

Prior to filing the Environmental Study Report, there will be a City of Toronto Staff Report presented to the Planning and Growth Management Committee (item for deputation) and City Council.



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Planning Framework - Policy Direction

The City of Toronto Official Plan

- Supports the need to improve downtown accessibility and mobility, including improving pedestrian circulation in the downtown core.

- An urban environment and infrastructure will be created that encourages and supports walking throughout The City through policies and practices that “ensure safe, direct, comfortable, attractive and convenient pedestrian conditions, including safe walking routes to schools, recreation areas and transit”. (Section 2.4(8)).

The Union Station Master Plan

- Supports additional connections between Union Station and the PATH network to address future pedestrian demand.

- Encourages a more porous Union Station that provides improved and efficient pedestrian movement that will enhance the commuting experience.

The Union Station District Plan

- Develop a new Northwest PATH connection as a priority

Problem Statement and Solution

Problem

- Approximately 14,000 pedestrians currently exit Union Station northbound to Front Street. At the same time, approximately 19,000 pedestrians use the existing PATH system.

- Exits to Front Street are projected to increase to approximately 24,000 movements. Approximately 13,000 of these pedestrians will continue to travel north, of which an estimated 4,700 to 6,100 will be oriented to the north and west. During the same time, pedestrian flow in the existing PATH will increase to approximately 36,000 movements. Significant volumes will occur at other peak times, and will also experience increases.

- The Front Street / York Street/University Avenue intersection will, at a maximum, accommodate an estimated 3,900 northbound pedestrians per hour.

- The current facilities and operations will not meet projected pedestrian demands nor provide any opportunity for redistribution of other existing PATH users who may be oriented north and west of The Station.

Solution

- After analysis of the evaluation matrix and with input from public, private and government stakeholders, a new underground connection combined with above-ground improvements is the preliminary preferred design solution. In particular this solution offers :

  - new underground route choice and ability to redirect and redistribute pedestrian flows within Union Station, from the existing PATH, and above-ground street networks.
  - improved flexibility and route choice.
  - provide the highest level of comfort and choice for pedestrians throughout the year.
  - confomity with existing City of Toronto policies.

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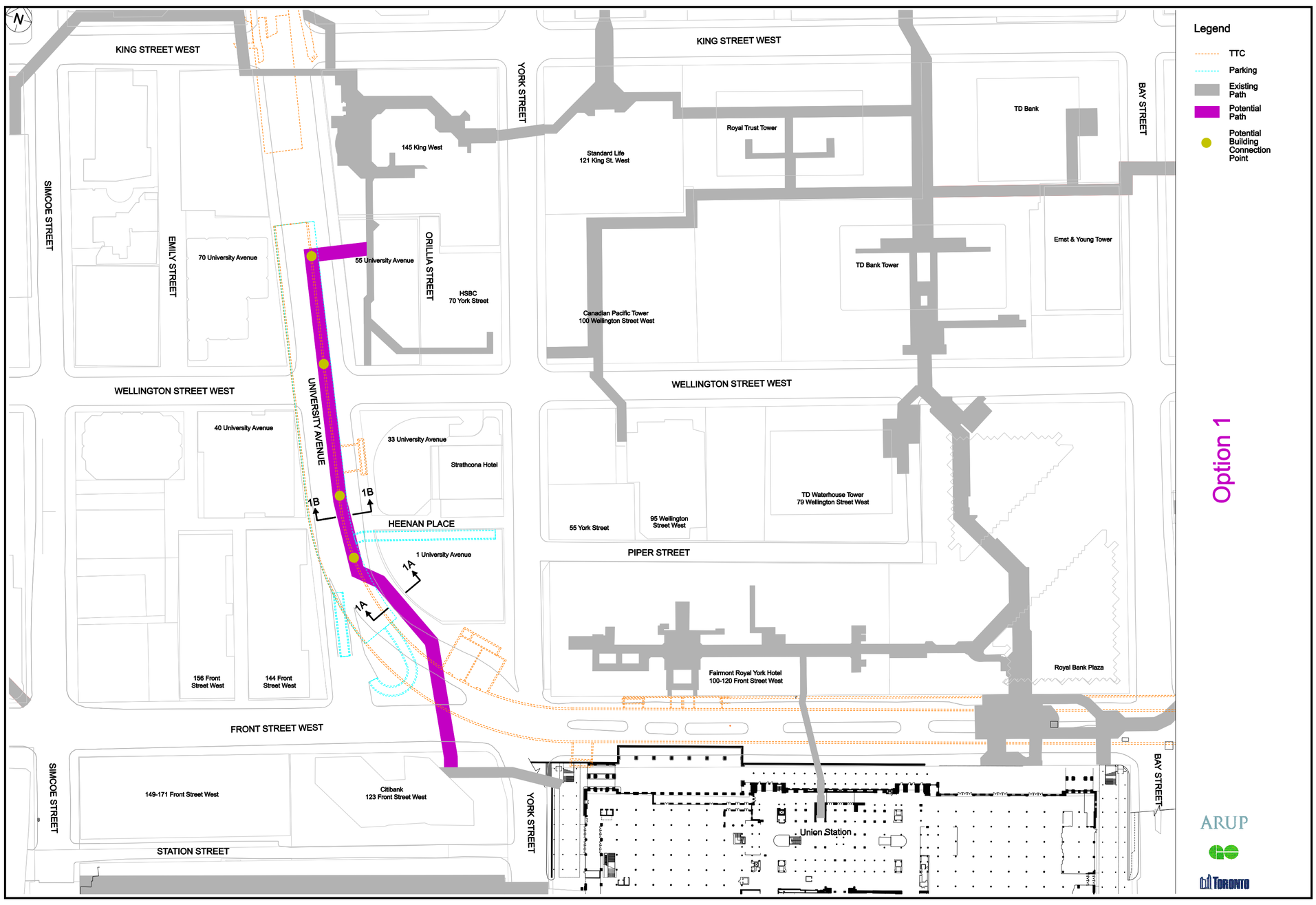
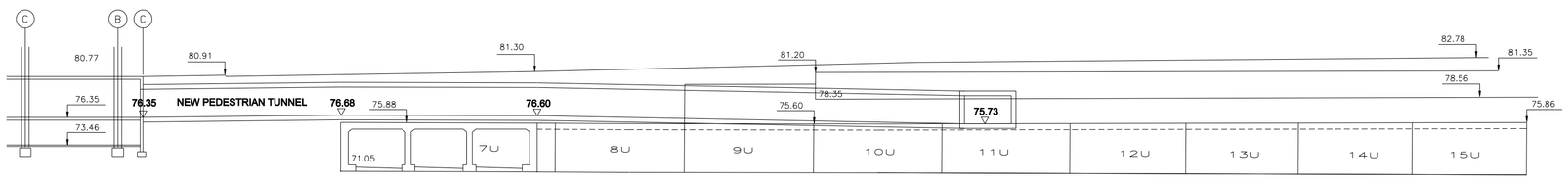
PATH System - Option 1

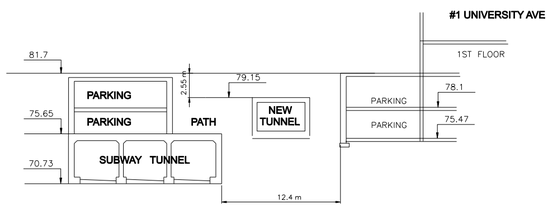
Plan



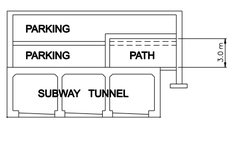
Cross-Sections



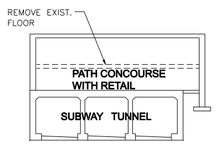
LONGITUDINAL SECTION - OPTION 1A



SECTION 1A



SECTION 1Bx (EXISTING PARKING GARAGE)



SECTION 1By (OPTIONAL)

Option 1

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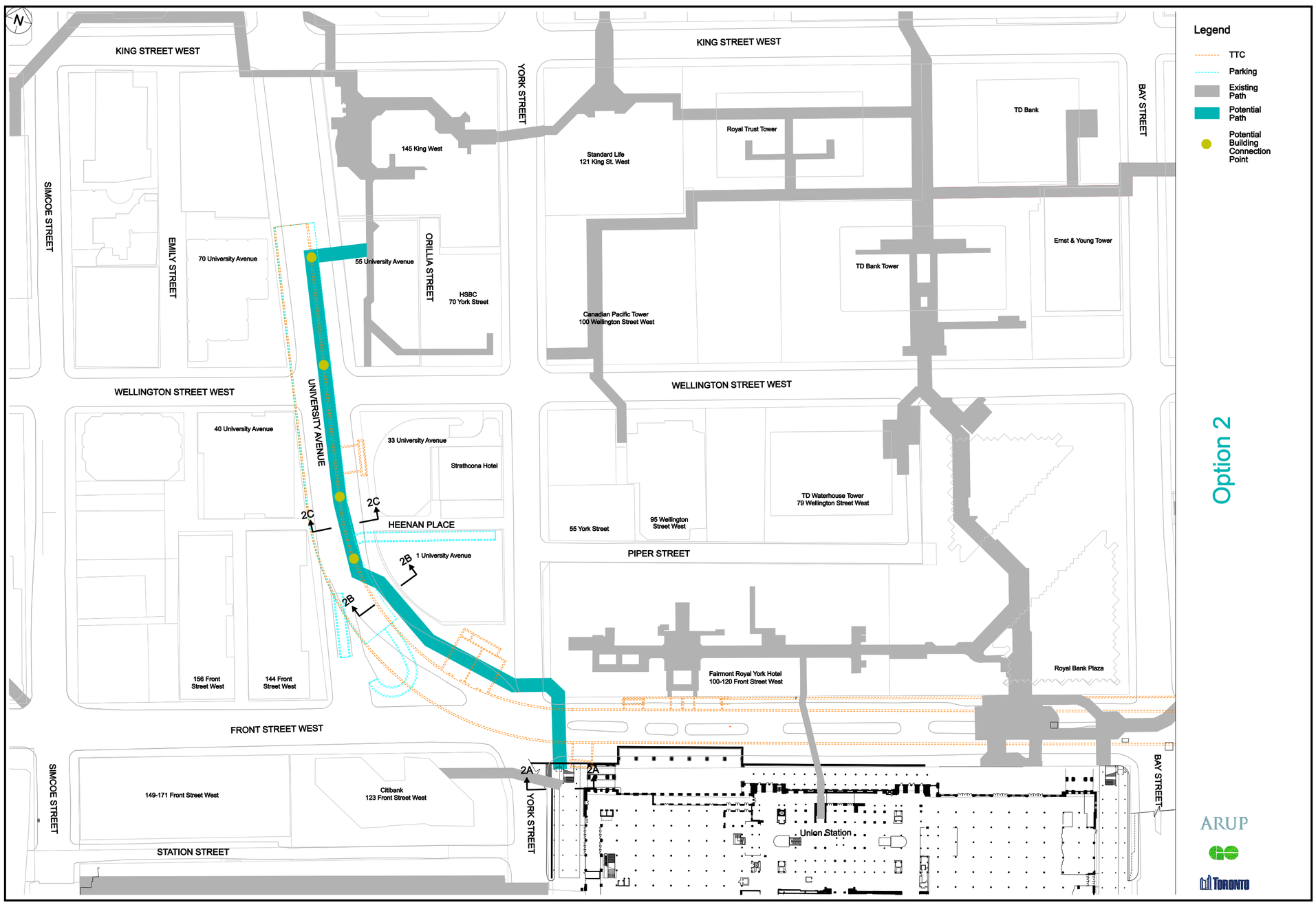
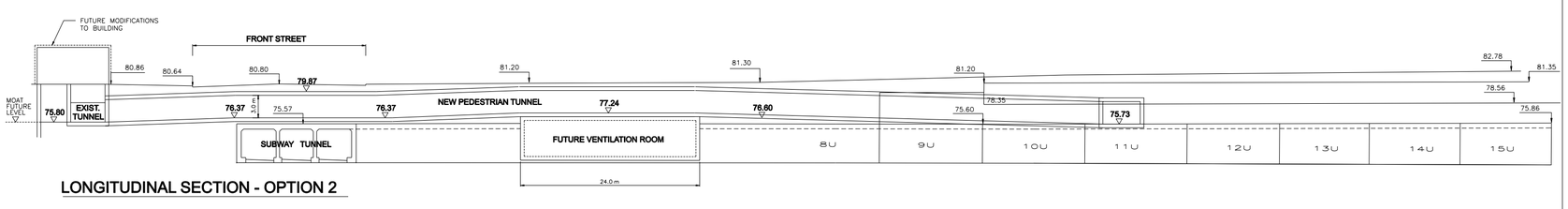
PATH System - Option 2

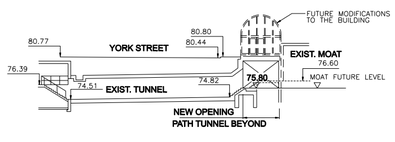
Plan



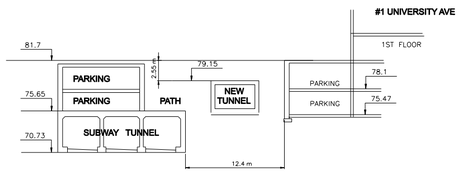
Cross-Sections



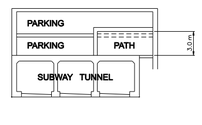
LONGITUDINAL SECTION - OPTION 2



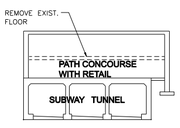
SECTION 2A (AT EXISTING TUNNEL)



SECTION 2B



SECTION 2Cx (EXISTING PARKING GARAGE)



SECTION 2Cy (OPTIONAL)

Option 2

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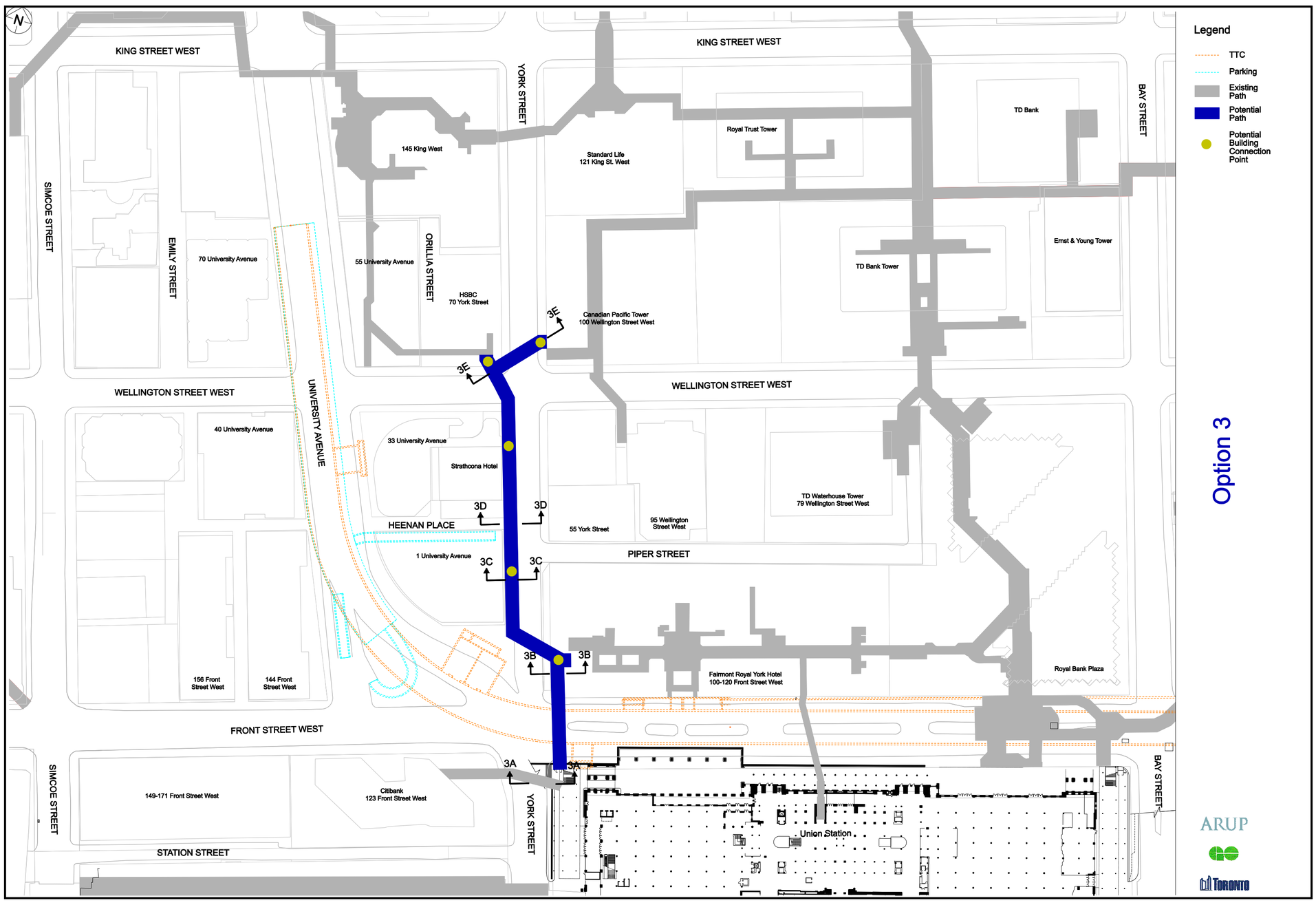
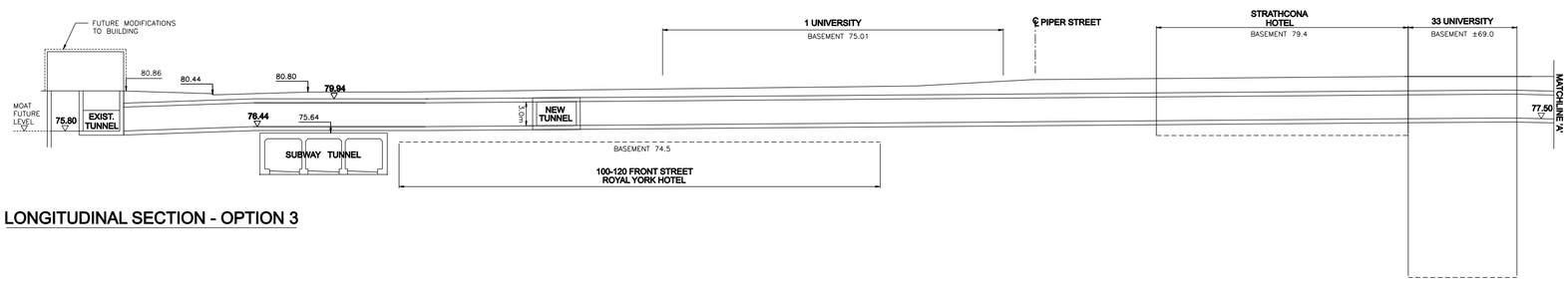
PATH System - Option 3

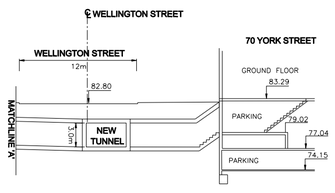
Plan



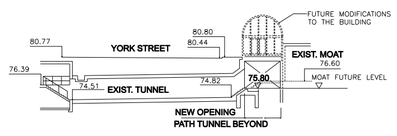
Cross-Sections



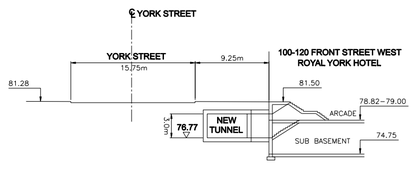
LONGITUDINAL SECTION - OPTION 3



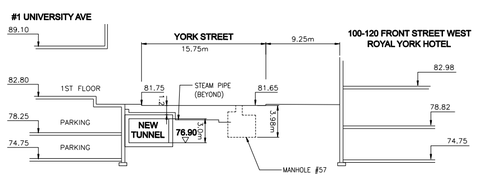
LONGITUDINAL SECTION (CONT'D) - OPTION 3



SECTION 3A (AT EXISTING TUNNEL)



SECTION 3B



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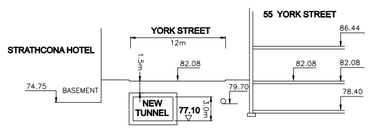

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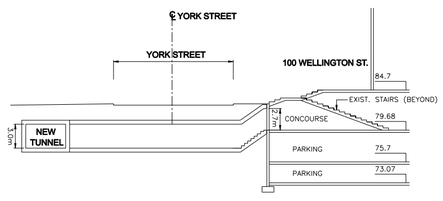


SECTION 3E - N/E ARM

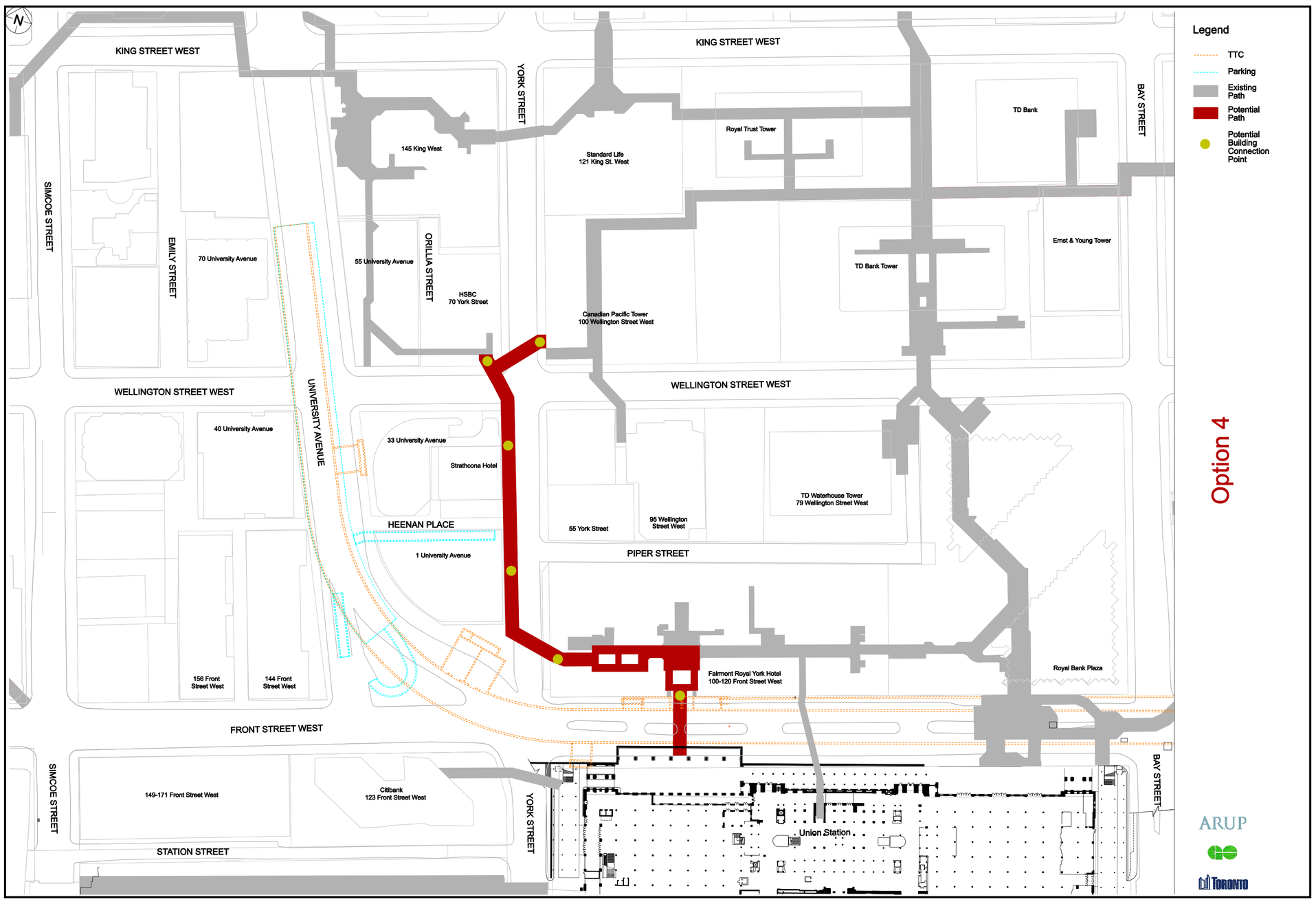
Option 3

ARUP

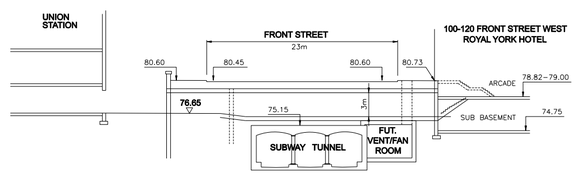
TORONTO

PATH System - Option 4

Plan



Cross-Sections



LONGITUDINAL SECTION - OPTION 4

Option 4

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TORONTO

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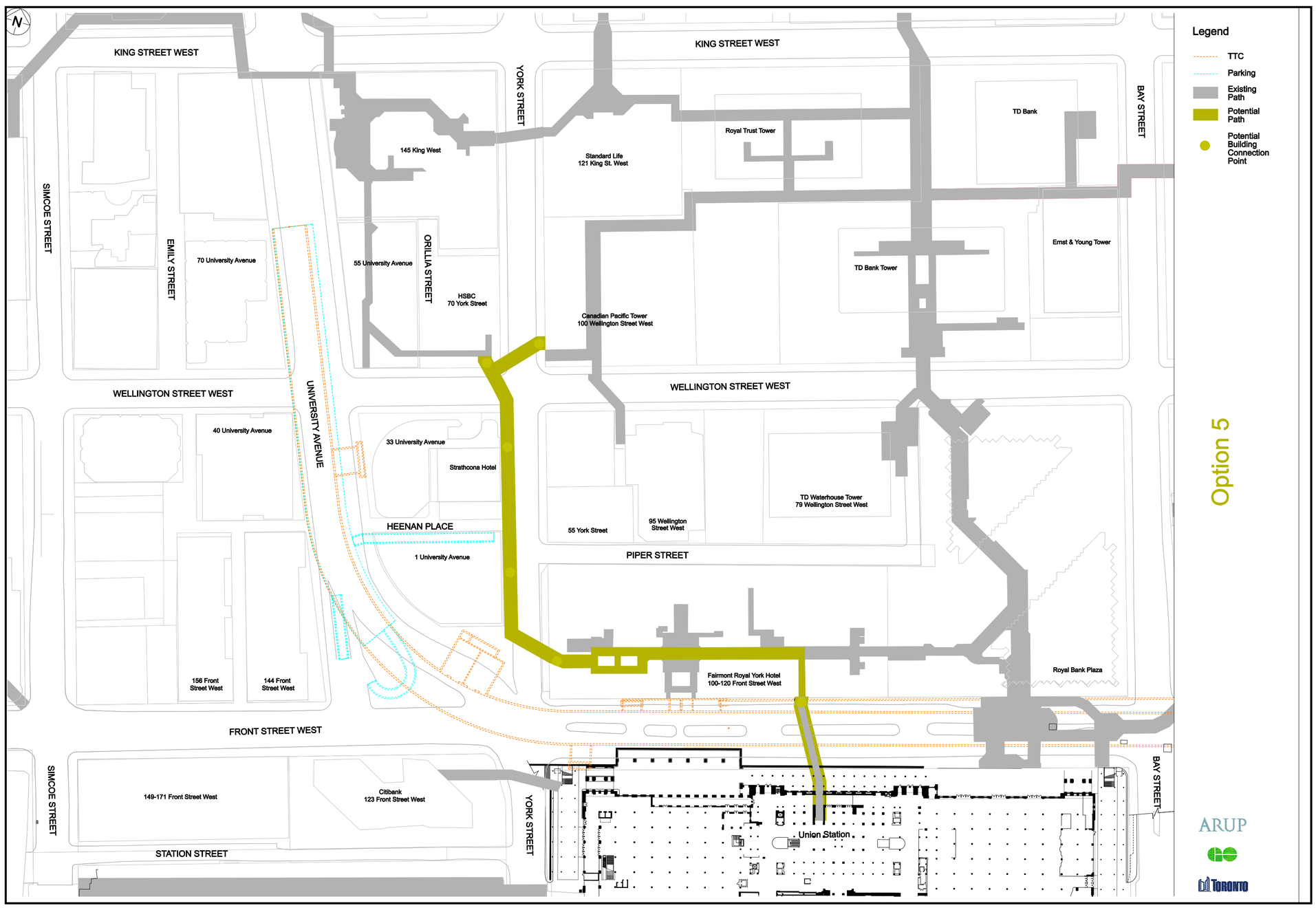
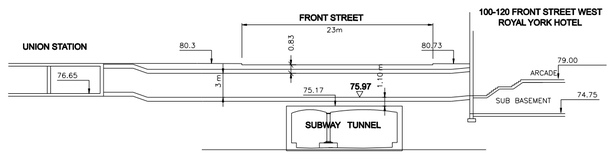
PATH System - Option 5

Plan



Cross-Sections



LONGITUDINAL SECTION - OPTION 5

Option 5

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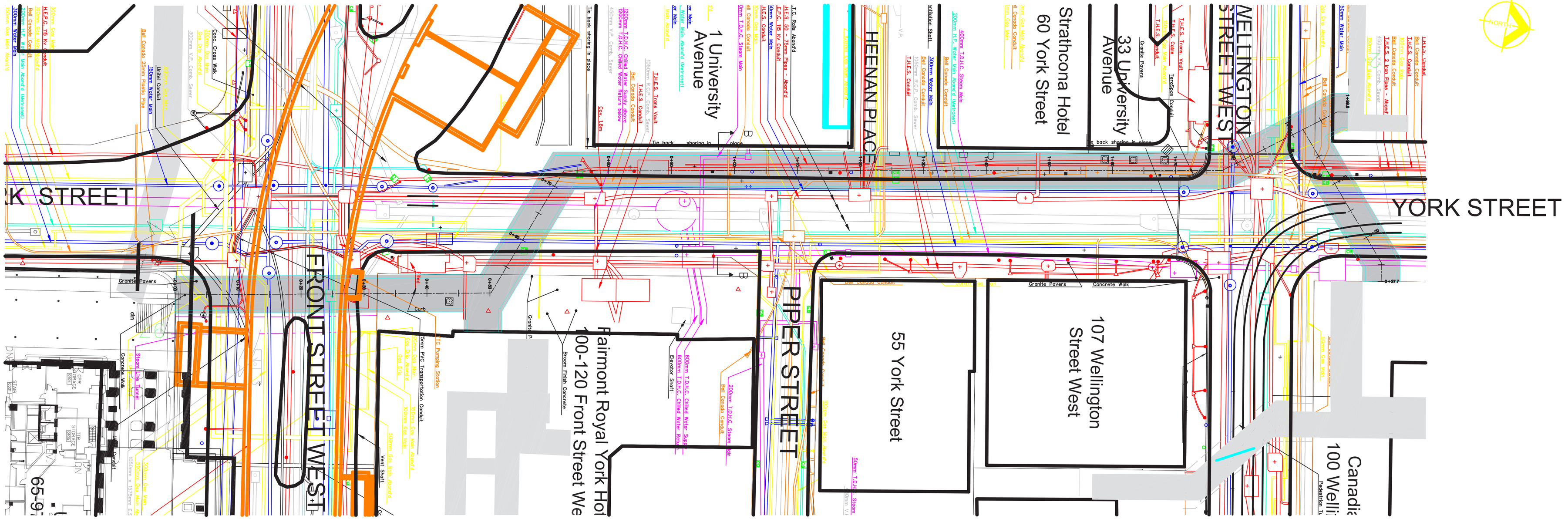
Evaluation Matrix - Underground Routes

Evaluation Criteria	Do Nothing	Option 1 (University)	Option 2 (University)	Option 3 (York)	Option 4 (Royal York to York)	Option 5 (Royal York to York)
Policy and Planning Environment						
Conformity with policies of City of Toronto Official Plan	🔴	🟢	🟢	🟢	🟢	🟢
Conformity with policies of Central Waterfront Secondary Plan	🔴	🟢	🟢	🟢	🟢	🟢
Agreement with the objectives of Union Station Master Plan	🔴	🟢	🟢	🟢	🟢	🟢
Agreement with the objectives of Union Station District Plan	🔴	🟢	🟢	🟢	🟢	🟢
Consistency with applicable provincial legislation and guidelines	🟢	🟢	🟢	🟢	🟢	🟢
Transportation Environment						
Potential to accomodate demand and attract new users	🔴	🟢	🟢	🟢	🟢	🟠
Accessibility to disabled	🟢	🟢	🟢	🟢	🟢	🟠
Connectivity to existing PATH network	🔴	🟢	🟢	🟢	🟢	🟢
Potential to provide connectivity with buildings currently lacking a PATH connection	🔴	🟡	🟢	🟢	🟢	🟢
Potential effects on Traffic / Intersection Operations (existing and future demands)	🟠	🟢	🟢	🟢	🟢	🟢
Urban Design / Public Realm Environment						
Potential to provide Public animation and interaction	🟡	🟢	🟢	🟢	🟢	🟢
Potential to provide high level of finish and detail	🟡	🟢	🟢	🟢	🟢	🟢
Ease of use for pedestrians	🟡	🟢	🟢	🟢	🟡	🟡
Geotechnical / Engineering Environment						
Potential effect on existing buildings	🟢	🔴	🔴	🟢	🔴	🟠
Potential effect on construction feasibility	🟢	🔴	🔴	🟡	🟡	🟡
Potential effect on the TTC	🟢	🔴	🔴	🟢	🟢	🟢
Potential effect on vehicular traffic flow during construction	🟢	🟢	🟢	🟡	🟡	🟡
Socio-Economic Environment						
Potential Effects on property and business access	🟡	🟠	🟠	🟢	🟢	🟢
Potential effects on Parking availability in commercial retail areas	🟢	🔴	🔴	🟢	🟢	🟢
Potential economic effects on adjacent businesses	🟡	🟢	🟢	🟢	🟢	🟢
Potential economic effects on residential property	🟡	🟢	🟢	🟢	🟢	🟢
Potential effects during construction	🟢	🟡	🟡	🟠	🟠	🟠
Cultural Environment						
Potential effects on built heritage, cultural and archaeological features	🟡	🟡	🟢	🟢	🟢	🟢
Natural Environment						
Potential effects on Air quality	🟡	🟡	🟡	🟡	🟡	🟡
Potential effects on Stormwater Management	🟡	🟡	🟡	🟠	🟠	🟠
Potential effects on groundwater	🟡	🟡	🟡	🟡	🟡	🟡
Potential effects on contaminated soils	🟡	🟡	🟡	🟠	🟠	🟠
Cost						
Potential effects on City / GO Transit Budget	🟡	🔴	🔴	🟢	🟢	🟢
Potential for cost sharing	🔴	🟡	🟡	🟢	🟢	🟢
Potential for revenue generation for the city	🔴	🟢	🟢	🟢	🟢	🟢
Legend and Total Score for Each Alternative						
Very Good	6	4	6	13	10	10
Good	2	12	12	10	11	9
Neutral	12	8	6	4	5	5
Poor	1	1	1	3	3	6
Very Poor	9	5	5	0	1	0

TORONTO GO ARUP

Preliminary Recommended Design



Option 3 Advantages

- highest potential to accomodate existing and future pedestrian demand and new users
- minimizes long term effects on businesses in the area
- maximizes connectivity with multiple potential connections to existing buildings and existing PATH
- most cost-effective option to construct
- least impact to the TTC subway tunnel and underground parking facilities
- minimizes accessibility issues (no ramps or elevators required)

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York Street Traffic Options

Option 1

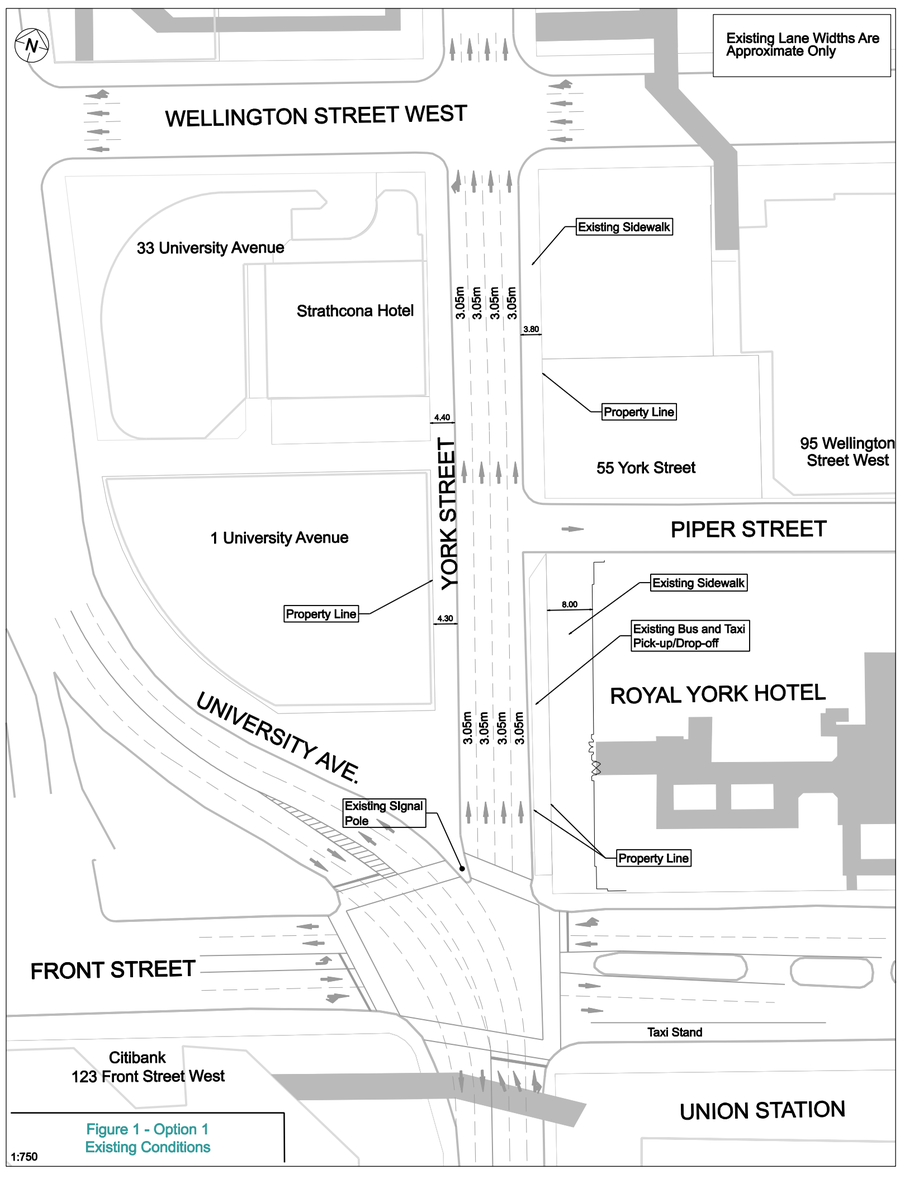


Figure 1 - Option 1
Existing Conditions

Option 2

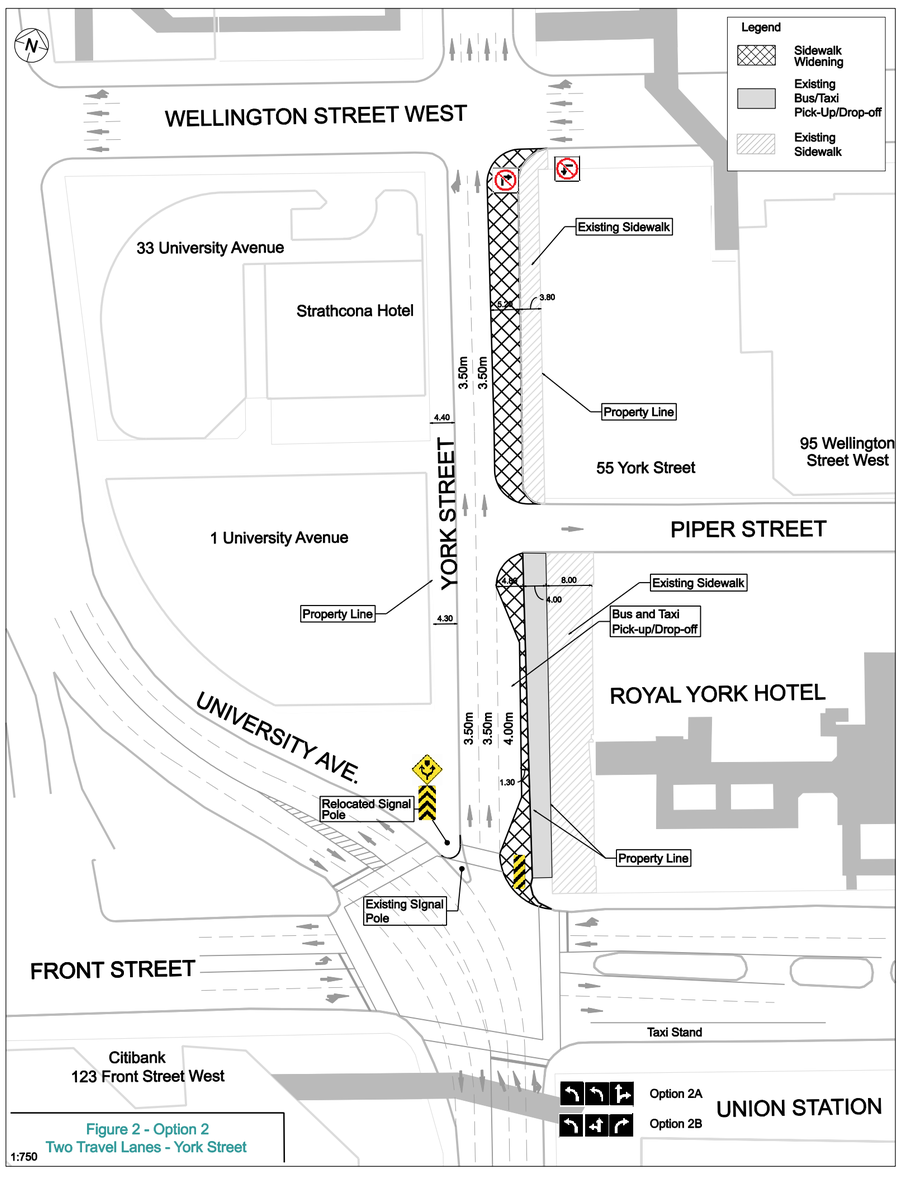


Figure 2 - Option 2
Two Travel Lanes - York Street

Option 3

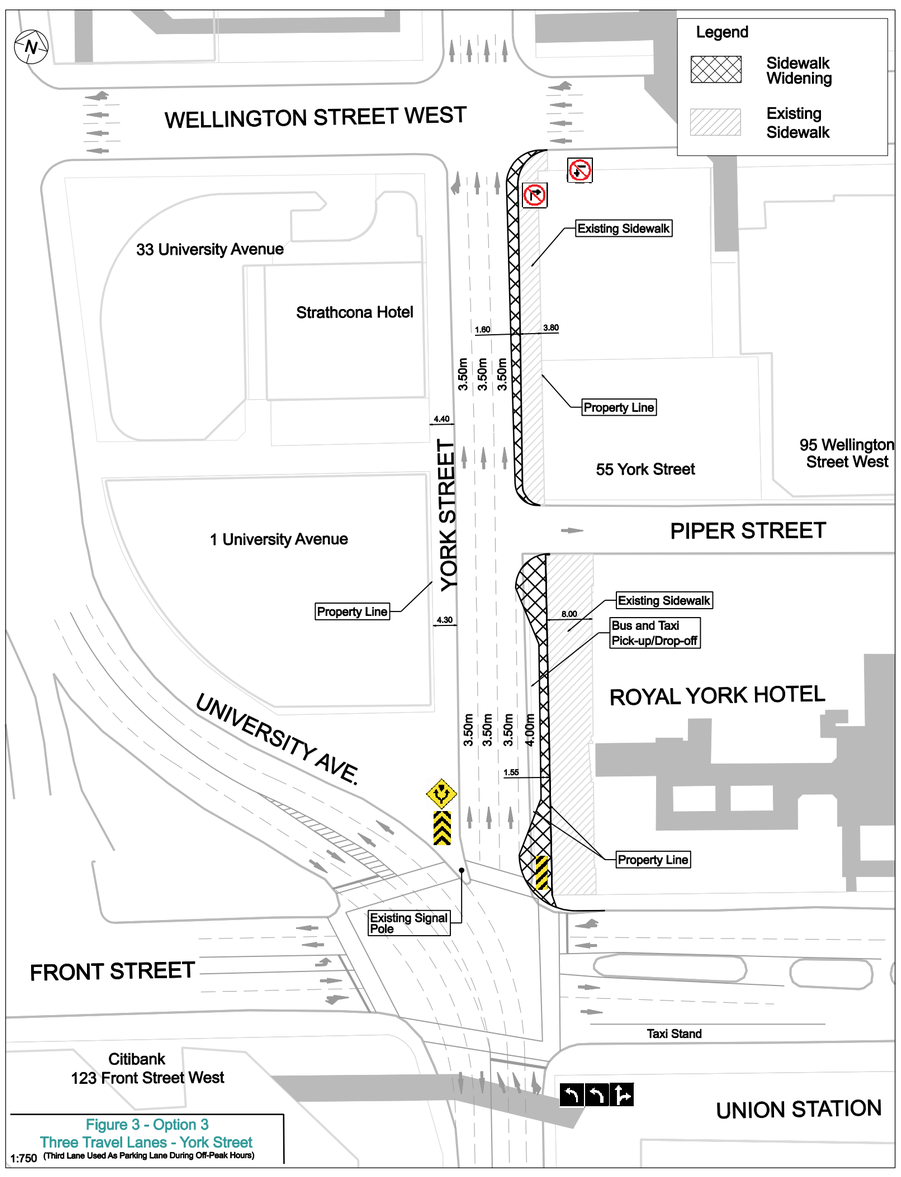


Figure 3 - Option 3
Three Travel Lanes - York Street
(Third Lane Used As Parking Lane During Off-Peak Hours)

Option 4

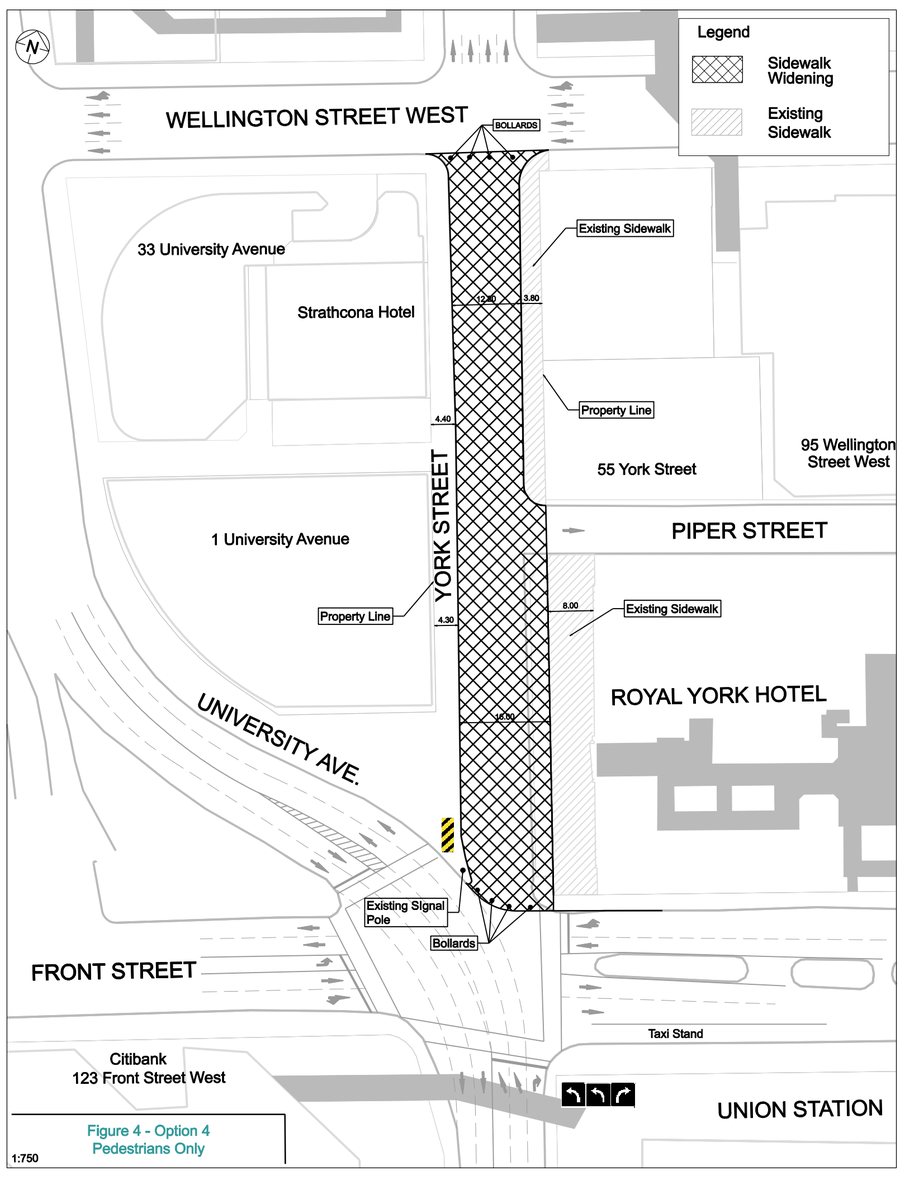
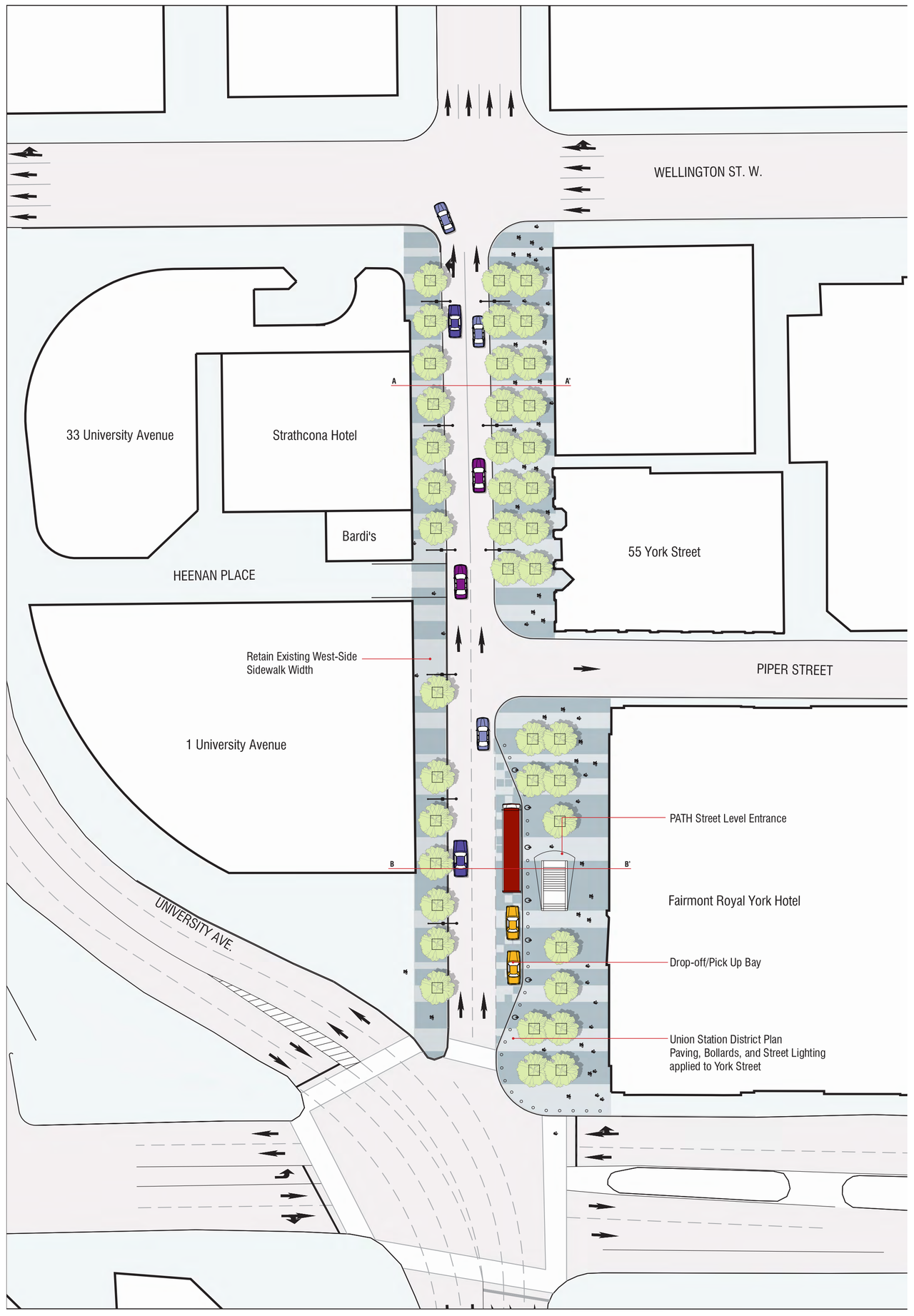


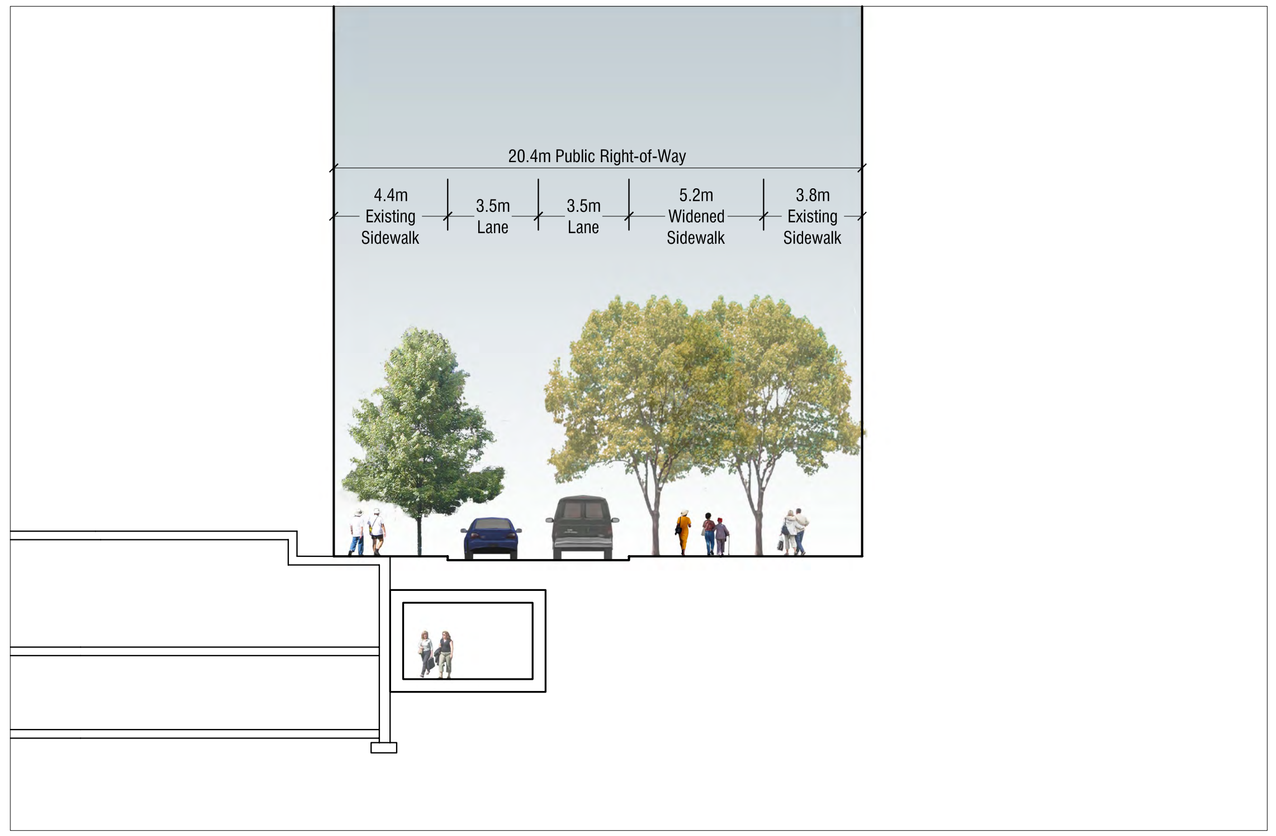
Figure 4 - Option 4
Pedestrians Only

Evaluation Matrix - Surface Improvements

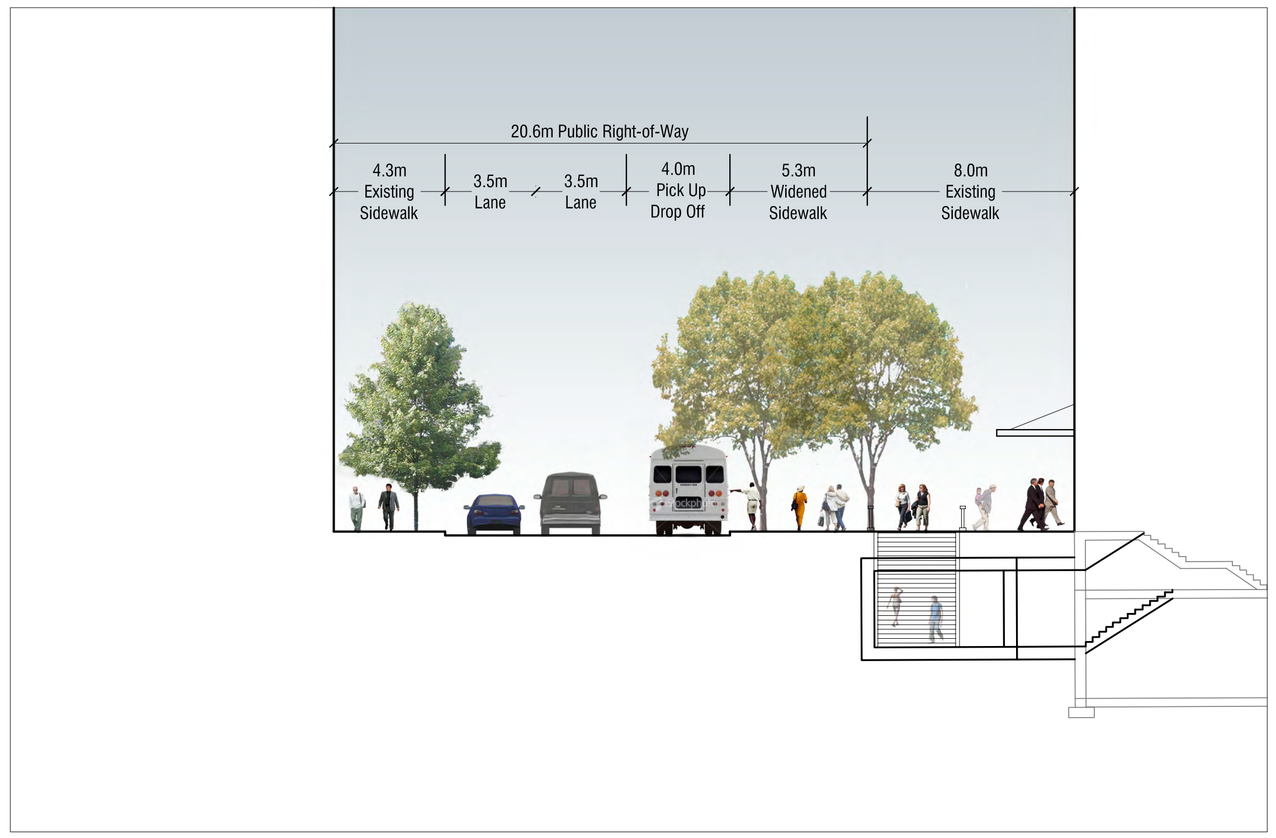
Evaluation Criteria	Option 1 (Do Nothing)	Option 2 (2 Lanes)	Option 3 (3 lanes)	Option 4 (Pedestrians Only)
Policy and Planning Environment				
Conformity with policies of City of Toronto Official Plan	🟡	🟢	🟢	🟢
Conformity with policies of Central Waterfront Secondary Plan	🟡	🟢	🟢	🟢
Agreement with the objectives of Union Station Master Plan	🔴	🟢	🟢	🟢
Agreement with the objectives of Union Station District Plan	🔴	🟢	🟢	🟢
Consistency with applicable provincial legislation and guidelines	🟡	🟢	🟢	🟢
Transportation Environment				
Potential to accomodate demand and attract new users	🔴	🟢	🟢	🟢
Accessibility to disabled	🟡	🟢	🟢	🟢
Potential effects on traffic/intersection operations	🟡	🟢	🟢	🔴
Potential effects on Corridor Traffic Operations	🟡	🟢	🟢	🔴
Potential effects on Municipal Operations	🟡	🟢	🟢	🟡
Potential effects on Emergency Vehicle Opertations	🟡	🟢	🟢	🔴
Potential effects on Pedestrians and Cyclists	🟡	🟢	🟡	🟢
Urban Design / Public Realm Environment				
Potential to provide public animation and interaction	🟡	🟢	🟢	🟡
Potential to provide high level of finish and detail	🟡	🟢	🟢	🟢
Ease of use for pedestrians	🟢	🟢	🟢	🟢
Geotechnical / Engineering Environment				
Potential effects on Constructions Feasibility	🟡	🟢	🟢	🟢
Potential effects on Traffic Flow	🟡	🟢	🟢	🔴
Potential effect on TTC	🟡	🟢	🟢	🟢
Socio-Economic Environment				
Potential effects on property and business access	🟢	🟢	🟡	🔴
Potential effects on parking availability in commercial retail areas	🟢	🟢	🟢	🟢
Potential economic effects on adjacent businesses	🔴	🟢	🟡	🟡
Potential economic effects on residential property	🟡	🟡	🟡	🟢
Potential effects during construction	🟢	🟡	🟡	🟡
Cultural Environment				
Potential effects on built heritage, cultural and archaeological features	🟡	🟢	🟢	🟢
Natural Environment				
Potential effects on Air Quality	🟡	🟢	🟡	🟡
Potential effects on Stormwater Management	🟡	🟡	🟡	🟡
Potential effects on Groundwater	🟡	🟡	🟡	🟡
Potential effects on Contaminated Soils	🟢	🟢	🟢	🟢
Cost				
Minimizes construction costs and additional utility cost	🟢	🟢	🟢	🟡
Legend and Total Score for Each Alternative				
Very Good	5	14	10	10
Good	1	11	11	6
Neutral	13	3	7	5
Poor	6	1	1	3
Very Poor	4	0	0	5

Preliminary Recommended Design





Section A-A': North of Royal York



Section B-B': PATH Entrance at Royal York

Option 2 Advantages

- highest potential to provide additional room for pedestrians at street level and maintain traffic flow for cars, trucks, and cyclists

- provides generous space for streetscape enhancements, design and landscaping

- good potential to maximize business attractiveness

UNION STATION PATH NORTHWEST | CONCEPT DEVELOPMENT

YORK STREET IMPROVEMENTS

ARUP
du Toit Allsopp Hillier
Totten Sims Hubicki

2007-07-09

Next Steps...

- Comments received from this PIC will be considered along with those received from review agencies in order to confirm the selection of the preferred design.

- The study team will select the preferred designs for the underground route and above-ground improvements to be carried forward.

- Finalize preliminary design of the recommended designs.

- Prepare Environmental Study Report (ESR) for public review and approvals.

- Report to Planning and Growth Management Committee and City Council.

- File the ESR in the public record in accordance with the requirements of the Municipal Class Environmental Assessment Process.

Thank you for your participation!

Please visit the project web site at:

http://www.toronto.ca/union_station

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Comment Sheet for PIC #2

July 10, 2007

Municipal Class Environmental Assessment Study (Schedule 'C') for a New Northwest PATH Connection (Union Station to Wellington Street)

Introduction

The City of Toronto and GO Transit are currently undertaking a Municipal Class Environmental Assessment Study (Schedule 'C') for a new northwest pedestrian connection that will extend from Union Station to Wellington Street. The purpose of this new connection will be to relieve congestion and support future downtown growth and pedestrian activities generated by GO Transit's service expansion over the next twenty years. A new connection will also serve to more effectively disperse underground pedestrian activity in the PATH system, which is currently oriented to the northeast quadrant of Union Station.

Alternative Underground Routes

The study team is considering six alternative routes to address the need for additional underground pedestrian connections:

1. Do Nothing - No changes or improvements would be undertaken to the existing PATH system. This alternative acts as a comparative benchmark.
2. Option 1: University – Underground connection along University Avenue
3. Option 2: University – Variation of an Underground connection along University Avenue
4. Option 3: York – Underground connection along York Street
5. Option 4: Royal York to York – Underground connection through the Royal York and along York Street
6. Option 5: Royal York to York – Variation of an underground connection through the Royal York and along York Street

Above-Ground Improvements

The study team is also considering four above-ground improvements to address the need for additional above-ground pedestrian capacity:

1. Option 1: Do Nothing – No improvements would be undertaken
2. Option 2: 2 lanes – Widen Sidewalks and reduce York Street to 2 lanes
3. Option 3: 3 lanes – Widen Sidewalks and reduce York Street to 3 lanes
4. Option 4: Pedestrian Only – Make York Street pedestrian only from Front St. to Wellington St.

Next Steps

Comments received from this Public Information Centre will be considered along with those received from review agencies in order to confirm a preferred route and locations for improvements. Over the next months, the study team will prepare detailed concept designs and complete the Environmental Study Report for submission to the Ministry of the Environment.

TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

Option No 3 for York ST. PATH
Option No3 for Traffic Options
minimal addition of trees – people do prefer to use the street level over tunnel!
make the sidewalk concrete only, with decorative designs painted or embedded with colour.

Please forward your comments by July 27th, 2007 to either:

Tim Laspa
Program Manager, Transportation Planning
City of Toronto – City Planning
Metro Hall, 55 John Street, 22nd Floor
Toronto, Ontario M5H 2N2
Telephone: 416-392-0070
Fax: 416-392-3821
E-mail: tlaspa@toronto.ca

David Pratt, P. Eng.
Project Manager
ARUP Canada Inc.
160 Bloor Street East, Suite 205
Toronto, Ontario M4W 1B9
Telephone: 416-515-0915
Fax: 416-515-1635
E-mail: david.pratt@arup.com

Thank you for your participation.

The information presented at the Public Information Centre and additional information on this study is available at www.toronto.ca/ union_station

TORONTO

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Do you have any comments about the study?

I THINK OPTION 3 OR 2 MAKE MOST SENSE WITH MORE NORTH-SOUTH ROUTING THAN OTHER OPTIONS

FOR YORK STREET, I LIKE OPTION 2 (RECOMMENDED). WOULD PREFER OPTION 2A FOR TURN LANES.

Please forward your comments by July 27th, 2007 to either:

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TORONTO

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Do you have any comments about the study?

- I also like option 3 for under ground
- Would like to see bike lanes on the narrowed Yorkville St.
- Build it soon, it is too hot out side today -

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TORONTO

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Do you have any comments about the study?

#3 does seem fairly reasonable.
I do have a reservation about how we might be missing a complication, a transit opportunity on Front St. as we've not been able to think of restoring transit to Front St. yet, and the EA. for the Front St. Extension, which might lead us to explore a set of transit options for Front St., is still under appeal to the Minister, and referred back to the City over four years later.
So it would be nice if we could design Phase 1 streetcar/LRT on Front St. as inside street level at most level, some year/decade.
At least what's proposed, at right angles could become a stop/barricaded point somehow, so it may be complementary.
Enclosed is a rough design for a Front St. transitway

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TORONTO

Your input into this study is important. Please provide us with your comments about the materials presented at the Public Information Centre.

Do you have any comments about the study?

Option three sounds like it would be the easiest option for accessibility. I take the path a lot and I find it difficult to use the lifts because my wheelchair is fairly large. Sometimes, in order to do a more accessible route I have to go 2 miles where someone who walks could go one mile. For instance, to get from BCE place to Scotia Plaza, I'd have to go through the Royal Bank Plaza, TD Centre and First Canadian Place, whereas a normal wheelchair would be able to get up the ~~the~~ lift to Commerce Court. I realize that this doesn't address the specific options laid out, but the situation remains similar no matter what routes.

Please forward your comments by July 27th, 2007 to either:

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TORONTO

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Do you have any comments about the study?

It would be good to see all options on the project -- to close up Front Street to all traffic IS NOT a good idea.

(1) Keep Front Street's transit option open (eg drop-off for Greyhound, Airport Coach etc - and - TAXIS - is there enough space - WHO? (need more area)

(2) PATH through Postal garage - it has been a hazard before City Hall (fines, vehicles etc), but could secondary PATH still go through the [illegible] the lot?

(3) Is there an option for existing buildings to get PATH connections?

(4) With present TTC construction at Union will this affect any results??

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TORONTO

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Do you have any comments about the study?

The recommended Option 3 looks very good provided it serves the largest number of pedestrians. * Emailed Aug change

We are now waiting to connect Union Station's south exit by a PATH to Queens Quay. A portion will be included in the new Maple Leaf Square.

Another important PATH should serve the Sony Centre (formerly the Hummingbird) as well as St. Lawrence Centre for the Arts.

Ulla Callgress
Chair
York Quay Neighbourhood Assoc
YQNA

Please forward your comments by July 27th, 2007 to either:

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E-mail: david.pratt@arup.com

Thank you for your participation.

The information presented at the Public Information Centre and additional information on this study is available at www.toronto.ca/ union_station

TORONTO

KING STREET WEST

KING STREET WEST

YORK STREET

SIMCOE STREET

EMILY STREET

ORILLIA STREET

BAY STREET

WELLINGTON STREET WEST

WELLINGTON STREET WEST

UNIVERSITY AVENUE

HEENAN PLACE

PIPER STREET

FRONT STREET WEST

SIMCOE STREET

STATION STREET

YORK STREET

BAY STREET

Union Station

Drawing U-1 - Existing Utilities

0 5 10 15 20m

ARUP

TORONTO