



EAST BAYFRONT TRANSIT EA COMMUNITY LIAISON COMMITTEE MEETING AGENDA

Project: TTC-TWRC Waterfront Transit Environmental Assessments

Date: May 29, 2007

Time: 6:00 – 8:00 pm

Location: TWRC Board Room, 20 Bay Street

Item

1. Review of Minutes

2. Update Project Status – PIC on June 21, location t.b.d.

3. Presentation of Consultation Team on recommendations
 - Ridership Update
 - Technology Issue – Bus versus streetcar
 - Technology Issue – Shuttle/people mover to Union Station
 - Portal Options

4. Discussion - CLC Comments

5. Next Meeting



MEETING NOTES

PROJECT: TTC-TWRC
East Bayfront Transit Environmental Assessment

MEETING NO: CLC 5

FILE NO.: 6377

DATE: May 29, 2007 **TIME:** 6:00 p.m.

PLACE: TWRC Boardroom, Suite 1310, 20 Bay Street

PRESENT: **Community Liaison Committee (CLC)**
Daniel Belanger Central Waterfront Neighbourhood Association
Tom Davidson Office of Councillor Pam McConnell
Dennis Findley Port Lands Action Committee
David Fisher Rocket Riders
David Jackson West Don Lands Committee
Braz Menezes YQNA and QQHBIA
Steve Munro Transit Advocate
Bob Traver Gooderham & Worts Neighbourhood Association
David White Waterfront Action
John Wilson Task Force to Bring Back the Don

Project Team (PT)
Bill Dawson TTC Service Planning
Pina Mallozzi Waterfront Toronto
Antonio Medeiros Waterfront Toronto
Tim Laspa City of Toronto Transportation Planning
Dennis Callan McCormick Rankin Corporation (MRC)
Hank Wang McCormick Rankin Corporation (MRC)
Alun Lloyd BA Group
John Hillier du Toit Allsopp Hillier (DTAH)

Moderator
Pino DiMascio Urban Strategies (USI/Waterfront Toronto)

PURPOSE: EBF Community Liaison Committee Meeting #5

PROCEEDINGS:

ACTION BY:

1. Review of Minutes

- a) EBF CLC Meeting 4 Minutes approved.

2. Update Project Status – June 21 PIC at Novotel Hotel

- a) PIC/Public Workshop 2 will be held at Novotel Hotel (Champaign Room), 45 The Esplanade.

3. Project Team Presentation – Recommendations

3.1 Ridership Update

- a) Ridership forecast from the City's travel demand model was recently updated as the original work was not meant to provide detail information about travel pattern in the immediate vicinity of Union Station. As a result of further review, refinements were made to better capture potential walking trips from the areas immediately south of Union Station. Some transit trips – heading to destinations north of the Spadina/Front area – originally assigned to the 510 streetcar were re-assigned to the subway. It was concluded that although the 510 streetcar could save travel time for these riders (improved speed, improved headway, and no transfer required), it seemed unlikely that passengers will pass up on the subway for a southbound streetcar to get to destinations north of Spadina/Front. Overall, the refinements to the model resulted in a much lower demand at Union Station (see Slide 5 of the presentation).
- b) **CLC:** Do you know how many streetcar riders transferred at the Bloor/Yonge intersection before the Bloor subway was constructed in the 1950s?
- c) **PT:** We do not have that information right now.
- d) **CLC:** Trips to/from the Ferry Docks are made mostly on weekends only?
- e) **PT:** Yes. Demands are highest during weekends.

3.2 Technology – Shuttle/Moving Walkway to Union Station

- a) D. Callan described the concept of the shuttle/moving walkway option and summarized the Project Team's assessment on the option. It was concluded that the shuttle/moving walkway will not be carried forward by the Project Team.
- b) **CLC:** It struck me that some of the issues against shuttle/moving way are not as critical to a moving walkway as they may be to a shuttle operation.
- c) **PT:** Keep in mind that the factor that had the most influence on our decision was the Quality of Service. The Project Team's assessment applied equally to a shuttle or a moving walkway operation.
- d) **CLC:** Accessibility is also a major issue with a moving walkway.

3.3 Technology – Streetcar or Bus

- a) D. Callan provided a summary of the Project Team's comparative analysis on the feasibility of an East Bayfront bus service versus an East Bayfront streetcar service. D. Callan illustrated how the existing Bay Street tunnel

PROCEEDINGS:

ACTION BY:

would have to be widened in order to accommodate buses. It was concluded that streetcar will be carried forward as the preferred transit technology.

- b) **CLC:** In one of your slides, the future vehicle demand at Union Station is stated as 55 vehicles per hour (streetcar-only) or 74 vehicles per hour (mixed streetcar and bus). In the following slide, the arriving headways are stated respectively as 106 seconds and 67 seconds. May I point out that 74 vehicles per hour do not translate into a 67-second headway.
- c) **PT:** The 106/67-second headways are of vehicles arriving from Queens Quay East only. The combined headways, accounting for streetcars from Queens Quay West and Bremner Boulevard, are less than 106/67 seconds. We will revise the wording of the slides to make that distinction more clearly. MRC
- d) **CLC:** You mentioned that the existing tunnel would have to be widened in order to accommodate buses, but what about the portal? Would you not have to widen the portal too?
- e) **PT:** Not the existing portal as long as we don't run buses through it. The new portal would have to be wide enough to accommodate buses.
- f) **CLC:** I have seen your conclusion coming all along so this is no surprise to anyone. My question is, given that a streetcar service on Queens Quay East will operate at two-minute headways or better, are we giving ourselves enough flexibility for any future ridership growth?
- g) **PT:** Our analysis is based on ridership projection 30 years into the future and beyond. Our expectation is based on a fully-developed scenario for the Eastern Waterfront and the railway lands west of Union Station – this scenario may take 30 years or more to materialize. The bottom line is we are designing for a fully-developed waterfront.
- h) **CLC:** What about a future Lake Shore line? If the line connects with the Union Station loop you will need extra capacity to meet the additional demands.
- i) **PT:** It is unlikely that a future transit service on Lake Shore Boulevard will connect directly to the Union Station loop. A future Lake Shore line will likely to be an east-west through service along the Lake Shore corridor. As discussed at earlier CLC meetings, future transit trips heading from the Eastern Waterfront to Union Station will be met by the Queens Quay East line.

3.4 Portal Location

- a) D. Callan recapped the Project Team's preliminary conclusion at the last CLC meeting. Following the discussions with the CLC, the Project Team re-examined the Bay Street options and felt that it may be structurally feasible – though certainly not ideal – to fit a portal on Bay Street. The Project Team decided to revisit these options and determine whether or not the options are operationally feasible. For discussion purposes, revised version of the two Bay Street portal options was presented to the CLC. Overall, it was concluded that Bay Street should be carried forward – along

PROCEEDINGS:

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with Queens Quay – for further analysis at the next stage of the study. Harbour Street will be considered as an alternative to Queens Quay if options on Bay Street are determined as infeasible.

- b) **CLC:** What is the rationale for carrying forward Bay Street this time?
- a) **PT:** The two portal options on Bay Street were drawn at a 6% gradient – the TTC’s maximum desirable ramp gradient. Upon further review, we discovered that it may be structurally feasible to fit a portal on Bay Street at a 7.5% gradient. Although a 7.5% gradient exists elsewhere in the system, it is a less than ideal condition from an operation perspective. Nonetheless, the Project Team decided to reconsider that possibility and determine whether a portal on Bay Street is operationally feasible.
- b) **CLC:** What about the Yonge Street option that was suggested at the May 3 meeting?
- c) **PT:** The Yonge Street option was screened out primarily because it would result in a tight loop curve and require an underground tunnel within close proximity of adjacent condominiums. The option would also create a circuitous route for streetcars traveling to/from Queens Quay West. Yonge Street ranked less favourably compared to Bay Street.
- d) **CLC:** Can we rule out Queens Quay options right now?
- e) **PT:** The Project Team still needs to assess and evaluate the short-listed alternatives (Bay Street and Queens Quay) in greater detail before a preferred option can be recommended. We will be asking the public for their input as well at the upcoming public workshop/PIC. Comments received at the workshop/PIC as well as comments from the CLC will help inform the Project Team in the process of evaluating the alternatives.
- f) **CLC:** Have you also looked at York Street as an alternative to Bay Street?
- g) **PT:** Yes we have and it was discussed at the May 3 CLC meeting. We screened it out primarily because we could not fit it on York Street without blocking the Harbour/York intersection – Harbour Street is effectively the eastbound lanes of Lake Shore Boulevard. Secondly, the York Street option would result in an underground tunnel either directly underneath, or in close proximity of, two heritage buildings on Harbour Street. Thirdly, the York Street option would create a circuitous route for streetcars traveling to/from Queens Quay East. York Street is ranked less favourably compared to Bay Street.
- h) **CLC:** When you examine the option on Bay between Harbour and Queens Quay, will you consider raising the Harbour/Bay intersection so as to make the portal fit in the street?
- i) **PT:** Once we have done our analysis, we will then confirm whether or not it is operationally feasible to fit a portal there.

4. General Comments

- a) **CLC:** Look at the tunnel’s cross-section: it is clear that you can fit two moving walkways in there one in each direction. Let’s “dress up” this tunnel and create a strong pedestrian link from Union Station to the

PROCEEDINGS:

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Waterfront.

- b) **PT:** Keep in mind that Queens Quay is more than half a kilometer away from Union Station – where the majority of transit users will be heading. By forcing these passengers to get off their streetcars and walk their way up, you are creating a major inconvenience to these people for no apparent reason. It will not be obvious for someone from Spadina and beyond to understand why he/she has to get off their streetcar at Queens Quay and walk half a kilometer or more when the streetcar could have taken them to Union Station directly. You can draw any line to expand the station's footprint and it will not change the fact that Union Station is located on Front Street.
- c) **CLC:** Remember that 5000+ passengers per hour is a huge number of people. I don't think moving walkways can handle that volume in reality.
- d) **PT:** If we confirmed that a portal could work on Bay Street, would you still be looking at a shuttle or a moving walkway?
- e) **CLC:** I could live with having a portal on Bay Street.
- f) **CLC:** Although closing the existing portal on Queens Quay may be desirable for some people, relocating it on Bay Street will instead obstruct the view of the waterfront.
- g) **PT:** Even if there were no streetcar portal on Bay Street, at the foot of Bay Street there is already a portal that obstructs the view of the waterfront – we are talking about the underground parking garage entrance at the south side of the intersection.
- h) **CLC:** I thought we were supposed to know by now where the portal is going to be, and yet we are still looking at Bay Street and Queens Quay.
- i) **PT:** Even if we did pick Queens Quay over Bay Street now, we still would not be able to tell you right now where the portal will be on Queens Quay. We still need to assess and evaluate the short-listed options before we can comfortably recommend a preferred alternative.
- j) **CLC:** West 8's on-going work on Queens Quay West also has an implication on our Queens Quay portal options.
- k) **CLC:** From an urban experience, the second Bay Street portal option (between Lake Shore Boulevard and Harbour Street) would be an important consideration. The YQNA could support closing Bay Street south of Harbour Street and turning it into a transit-only facility. However, at the end of these studies (Central Waterfront Design and East Bayfront Transit EA), is there a decision-making hierarchy that takes the recommendations of one study and supersedes those of the other?
- l) **PT:** No, there is no hierarchy at all. Both studies are proceeding as a team. D. Callan and J. Hillier are key members on both studies. At the end, both consulting groups will make sure that the two studies mesh with one another.
- m) **CLC:** If the portal is on Queens Quay than the location should definitely match with West 8's design. If the portal is on Bay Street, then the West 8

PROCEEDINGS:

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design will be less of a factor.

- n) **CLC:** Whatever the recommendation is, the YQNA wants to ensure that pedestrian connections will be considered as an integral part of the recommended design.
- o) **CLC:** I would like to bring up the Bay Street transit mall concept again – assuming that the City will allow us to do this. I can see the traffic implications with closing Bay Street from private vehicles, not to mention the impact on Lake Shore Boulevard. However, assuming that the new TTC streetcar fleet will be comprised of double-ended vehicles (thus eliminating the need for a loop) you can fit three tracks on Bay Street – one of which being a stub-end track – and create an on-street terminal at Union Station.
- p) **PT:** Note that there are only a few north-south avenues – Bay Street being of them – that lead traffic into the CBD. From the point of view of the City’s Transportation Services department, they would proceed with the transit mall concept cautiously. During consultation on the Union Station District Study, it was quickly recognized by study participants that closing Bay Street from traffic was a non-starter.
- q) **CLC:** We have been focusing most of our discussions on the intersection of Queens Quay and Bay, but so far we have not discussed the other key intersection – the connection at Parliament Street/Queens Quay/Cherry Street. It is a very crucial part of this study and the West Don Lands study – decisions from both studies will affect the kind of transit services that will operate on Cherry Street in the future.
- r) **PT:** The connection issue at Parliament/Queens Quay/Cherry will be examined by this study as part of the development of ROW design alternatives. With the recent completion of the Lower Don Lands Design Competition, we now have a general idea of how Queens Quay may connect to Cherry Street. At the end of this study, our EA report will specify that the connection concept as proposed by this study will have to be incorporated into any future network plan for the area. As a side note, Waterfront Toronto is currently engaging the winning design team to initiate a master plan study for the Lower Don Lands. Waterfront Toronto is directing all of the studies. Efforts will be made to ensure continuity.

5. Next Meeting

- a) The next East Bayfront CLC meeting will be held after the June 21 Public Workshop/PIC.
- b) The next West Don Lands CLC meeting will be held on June 25.

The foregoing represents the writer’s understanding of the major items of discussion and the decisions reached and/or future actions required. If the above does not accurately represent the understanding of all parties attending, please notify the undersigned within 48 hours of receiving these meeting notes at 905-823-8500.

Notes prepared by,
McCormick Rankin Corporation
Hank Wang

TTC - WATERFRONToronto Transit Environmental Assessments

East Bayfront

CLC Progress Meeting #5

May 29, 2007



**TTC-TWRC East Bayfront
Environmental Assessment**



Agenda

- Review of last meeting
- Ridership
- Technology discussion
 - Shuttle or moving walkway
 - Bus
 - Streetcar
- Portal Locations discussion



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Review of May 3, 2007 Meeting



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Previous Meeting

Ridership

- Spoke about updating some ridership numbers

Technology

- Reviewed technology issues with respect to buses and streetcars
 - Request to also consider a shuttle service to Union Station

Portal Locations

- Reviewed various portal locations
 - Preliminary screening of some portals
 - Request to look at possible portal on Yonge Street if Bay Street was not possible



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Updated Forecast Ridership Demands



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Alternative Technologies



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Connection between Union Station and Queens Quay



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Union Station – Queens Quay

- A suggestion was made to replace underground transit service to Union Station with an underground **shuttle** or **moving walkway**
- Expected Benefit: improved streetscape and urban design
 - Removes the existing portal at Queens Quay/Bay
 - Avoids the need for a second portal



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Suggested Routes



Bay Street Considered for Discussion

- Consider Bay Street for further discussion because:
 - Most direct route
 - Utilizes most of the existing infrastructure and minimizes need for additional tunnelling
- All routes share the same concept
- Not defining shuttle vehicle or moving walkway attributes
 - Treat all options as fundamentally equal
- Focus on the basic concept required to make this shuttle/moving walkway scheme work

Shuttle/Walkway Fundamentals

- Basic concept of the shuttle/moving walkway scheme:
 - o Connects Queens Quay with the Union Station Loop
 - o Underground, utilizes the Bay Street tunnel
 - o Requires a new surface-to-underground transfer terminal at Queens Quay end
 - o Must provide capacity to accommodate forecast demand

Before – Transit Connection



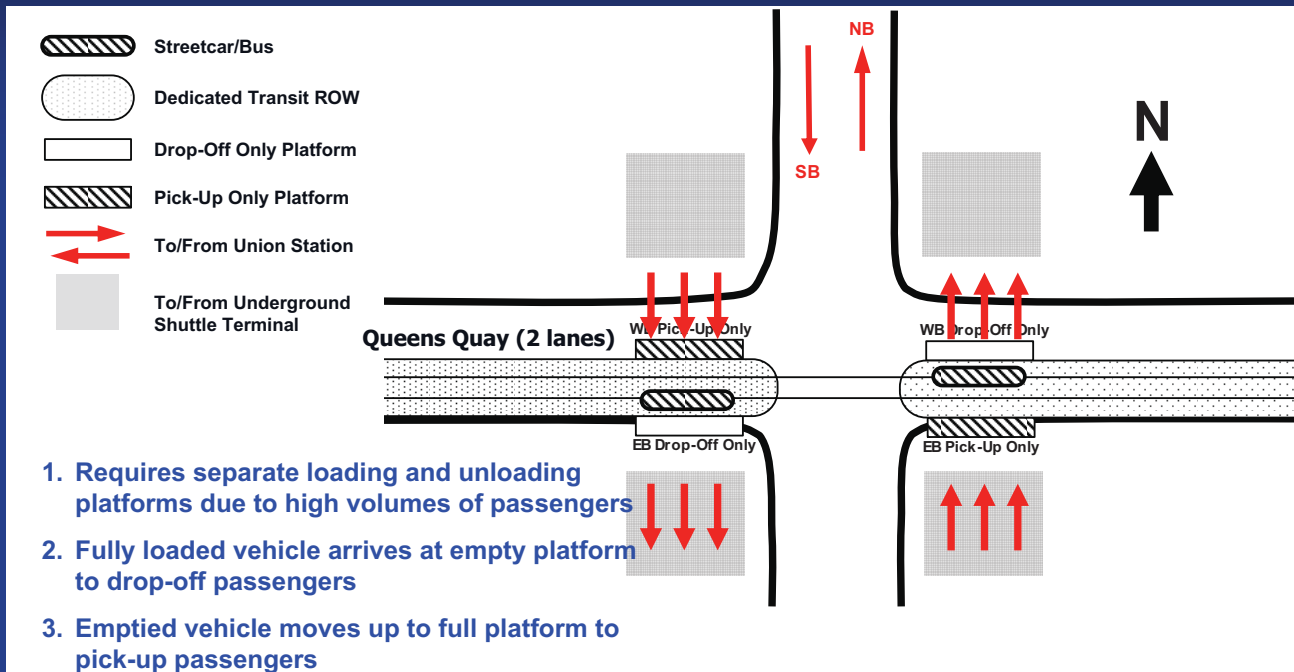
After – Shuttle/Walkway Connection



On-Street Terminal Concept For Illustration



Proposed Terminal Concept



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Peak Hour Passenger Volumes (1)

- Inbound passengers from surface transit on Queens Quay:
 - 4200 from Queens Quay East
 - 1200 from Queens Quay West
 - Total of 5400 peak hour passengers that must get off streetcar/bus from QQW and QQE to transfer underground
- For comparison, peak passengers per hour transferring at King and Yonge today is 1150 per hour and at College and Yonge is 1400 per hour



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Peak Hour Passenger Volumes (2)

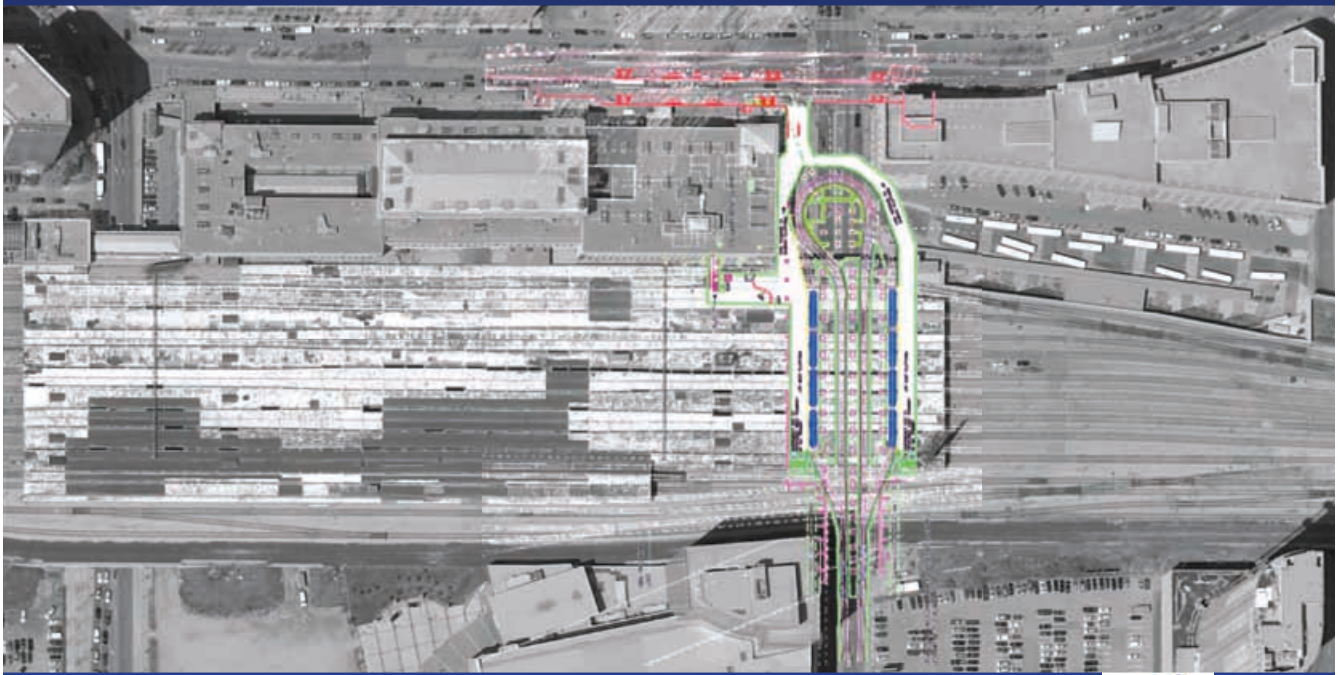
- In addition to passengers from QQE and QQW, the shuttle must also carry passengers destined to/from the Queens Quay/Ferry Docks Station
- Total volume of passengers boarding the shuttle during the peak hour:
 - Approx. 5600 northbound
 - Approx. 5100 southbound



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Proposed Union Station Loop Expansion



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Shuttle Requires a Terminal At Both Ends

- High volumes boarding and alighting are same volumes as those who got on and off at Queens Quay after transfer from surface
- Need to provide similar high-capacity passenger terminal at south end

Shuttle/Walkway Assessment (1)

Quality of Service:

- Would result in reduced transit ridership from QQW and QQE
 - Estimated 10% to 20% reduction in attraction because of forced transfer
 - Counter-intuitive to the project's purpose
- Creates a major inconvenience for passengers heading to/from QQW and QQE – would not be considered a good transit service

Shuttle/Walkway Assessment (2)

Infrastructure Needs:

- Requires construction of a second underground terminal (at Queens Quay) comparable in size to an expanded Union Station Loop
- Requires modifications to the Bay Street tunnel currently in use for streetcars

Shuttle Assessment (3)

Shuttle Vehicle & Track Maintenance:

- Taking shuttle vehicles and maintenance vehicles in/out of the tunnel is a major challenge
 - requires either a portal for vehicle access or
 - major construction of underground maintenance facilities (not likely feasible, very expensive and would still require a surface access to the tunnel for eventual supply/removal of vehicles)

Shuttle/Walkway Conclusion

- A shuttle/moving walkway option could improve streetscape and urban design by avoiding the need for tunnel portal(s)
- But, forcing 5400+ peak hour passengers to transfer is poor service for transit riders and would reduce ridership/mode split
- In addition to tunnel modifications, shuttle requires surface access for vehicles
- High capital and operating costs related to tunnel modifications and surface access for vehicle maintenance
- **CONCLUSION:** Shuttle/moving walkway not carried forward for further analysis

Streetcar/LRV or Bus

Streetcar/LRV in Dedicated Right of Way



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Bus in Dedicated Right of Way



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Vehicle Assumptions

- To handle demands we are assuming
 - 18 m buses (articulated) or
 - 28 m new streetcar/LRV
- Propulsion
 - Streetcars – electric
 - Buses – clean diesel, hybrid, fuel-cell, trolley (electric)
- Vehicle service loads
 - Articulated bus - 80 passengers/vehicle
 - Streetcar/LRV - 125 passengers/vehicle
- Passenger demand to/from Union Station controls headways



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Updated Forecast Ridership Demands



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Total Vehicle Demand at Union Station (From Both East and West)

- 6800 passengers per peak hour northbound at Union Station requires:
 - o For streetcar only: approx. **55 vehicles** per hour
 - 10 (QQW) + 10 (Bremner) + 35 (QQE) = 55
 - o For streetcar plus bus: approx. **74 vehicles** per hour
 - 10 (QQW) + 10 (Bremner) + 54 buses (QQE) = 74

Vehicles from QQE

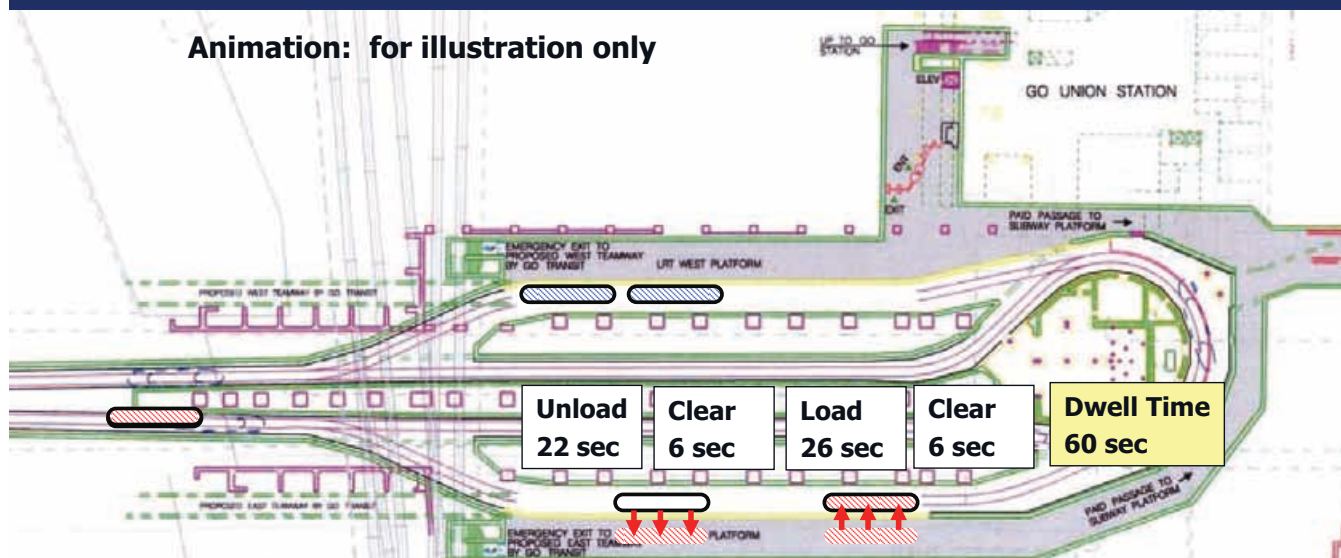
- Arriving headways of vehicles from Queens Quay East:
 - o Streetcars: 35 veh/hr = 1 vehicle every 106 sec.
 - o Buses: 54 veh/hr = 1 bus every 67 sec

Gap Between Stopped and Arriving Vehicles

- Headway is the time between 2 moving vehicles
- Gap is the time between a moving vehicle arriving at a platform and the preceding vehicle (from a stopped position) vacating the platform
- Gap is what controls service reliability and the need for additional station passing lane(s)
- TTC generally starts to experience service reliability problems when there are 30 or more vehicles per hour at a platform without a passing lane

Gap (QQE Buses)

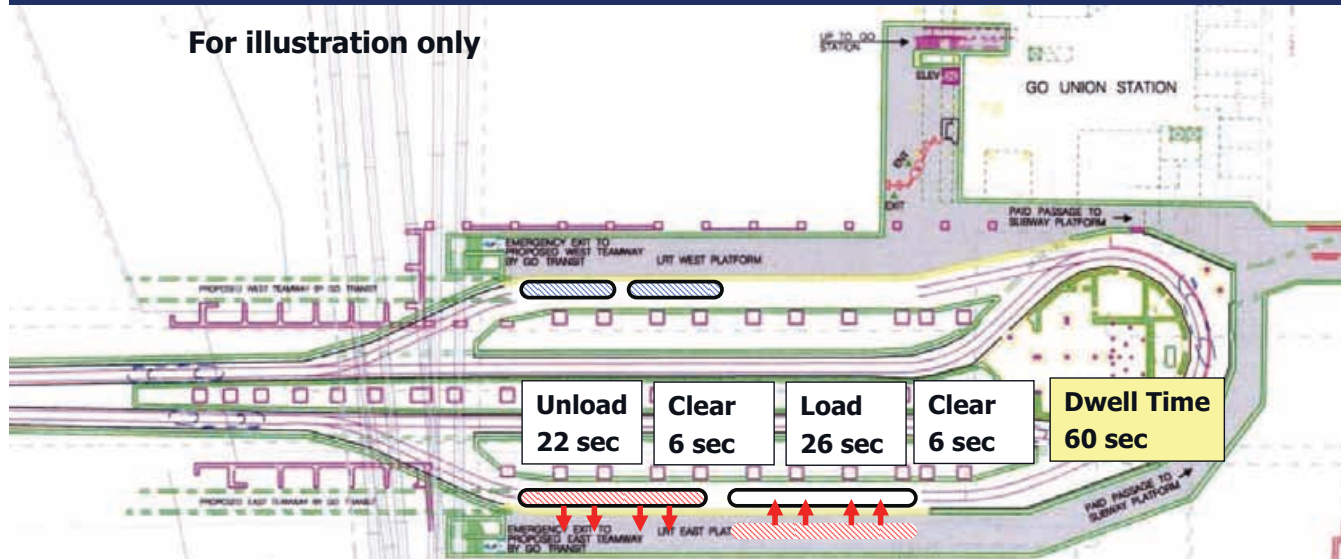
Animation: for illustration only



Bus Gap = Headway – Dwell Time = 67 – 60 = 7 sec before next QQE bus arrives

Gap (QQE Streetcars)

For illustration only



Streetcar Gap = Headway – Dwell Time = 106 – 60 = 46 sec before next QQE car arrives



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Gap and Passing Track

- Gap
 - QQE streetcars: approx. 46 seconds before next car arrives
 - QQE buses: approx. 7 seconds before next bus arrives
- Passing track
 - 54 buses per hour (over 30) requires a second passing lane in order to provide a reliable service



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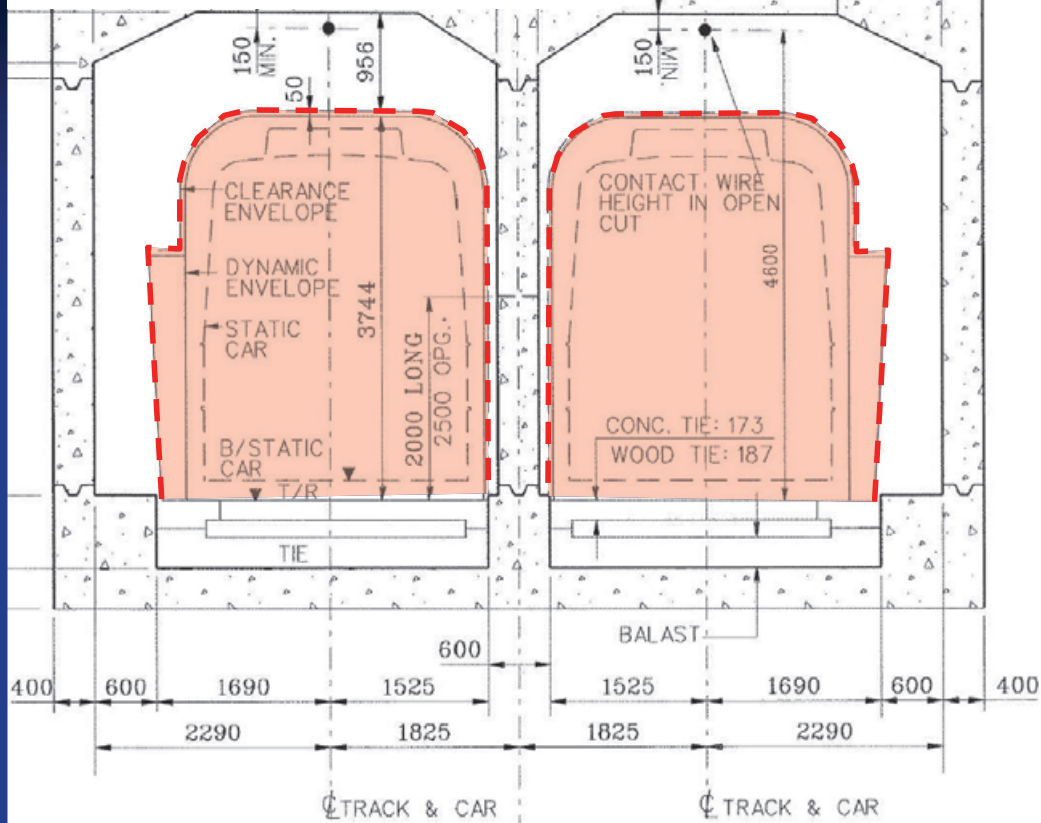
Bus vs Streetcar Service Reliability

- 54 buses per hour arriving at Union Station
- Theoretical gap of only 7 seconds between buses will result in continuous delays, platooning and unreliability of service
- Once delay occurs in part of line, entire service will be impacted
- Bus headways of 67 seconds required for this service with no passing lane in the tunnel or at station
- Shortest existing bus headway on any TTC route today is 90 seconds (Finch East – Yonge to Don Mills) but these buses can pass each other in the bus terminal
- **Conclusion** - Not possible to reliably provide this level of service using buses in the underground tunnel/loop

Clearance in Existing Bay Street Tunnel



TTC Streetcar Tunnel Clearance Standard



Tunnel Clearance

- Streetcars and Buses are the same width (2.59 m excluding mirrors)
- Existing streetcar tunnel is 3.25 m driving width plus .665 m clearance for evacuation (includes open vehicle door)
- Buses require extra width for manoeuvrability

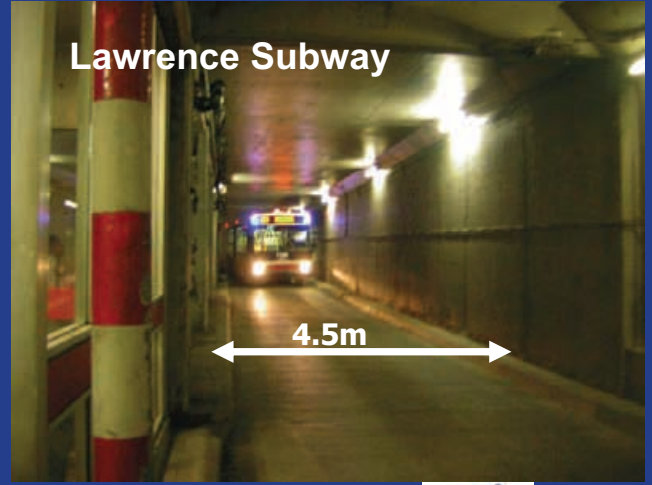
Lawrence Bus Terminal

- TTC's narrowest bus tunnel
 - Approx 4.5 m per lane at the narrowest point
 - Poor bus operation (slow speed and difficult to manoeuvre)

Lawrence Subway



Lawrence Subway



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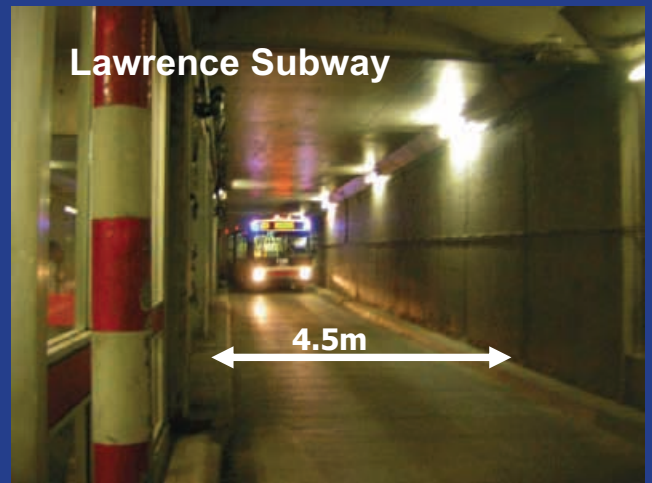
Bay Street Tunnel

- Bay Street tunnel would require widening and paving in order to accommodate buses
- For a desirable bus operation, tunnel lane has to be wider than 4.5 m plus extra width for an evacuation catwalk

Bay Street Tunnel



Lawrence Subway



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Don Mills Bus Terminal

- Wider tunnel provides better bus manoeuvrability and improves operation



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Cost of Tunnel Widening

- Cost of widening/reconstructing the existing tunnel will be comparable to building a whole new tunnel
- Approx. length of tunnel requiring widening/reconstruction
 - o 500 m
- Estimated costs of tunnel widening/reconstruction
 - o Approx. \$40 M to \$50 M



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Technology Assessment Summary

Bus versus Streetcar :

- o Shorter bus headways will result in low service reliability – **not possible** in practice to maintain reliable **bus service** operation and carry the required ridership
- o Significantly more expensive than streetcar due to the need to both widen/rebuild and pave the entire Bay Street tunnel to support bus operation
- o Lack of network continuity/connectivity with the Harbourfront LRT to the west and the future West Don Lands streetcar to the north-east

Technology Conclusion

- **Streetcar/LRV selected as the Preferred Technology**
 - o Carried forward in conjunction with assessment/evaluation of portals and ROW design for Queens Quay East

Portal Location Discussion



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Previous Portal Options



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Previous Portal Screening

- Tentatively ruled out Bay and York
- Since then, have re-examined Bay Street options
- May be able to make a portal work on Bay Street
 - Still very tight and need to investigate with more detailed drawings
 - Will impact traffic on Bay south of Gardiner/Lakeshore
 - Turning tracks will be at surface

CONCLUSION: Carry Bay Street forward for further investigation



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Revised Bay Street Portal Option 1



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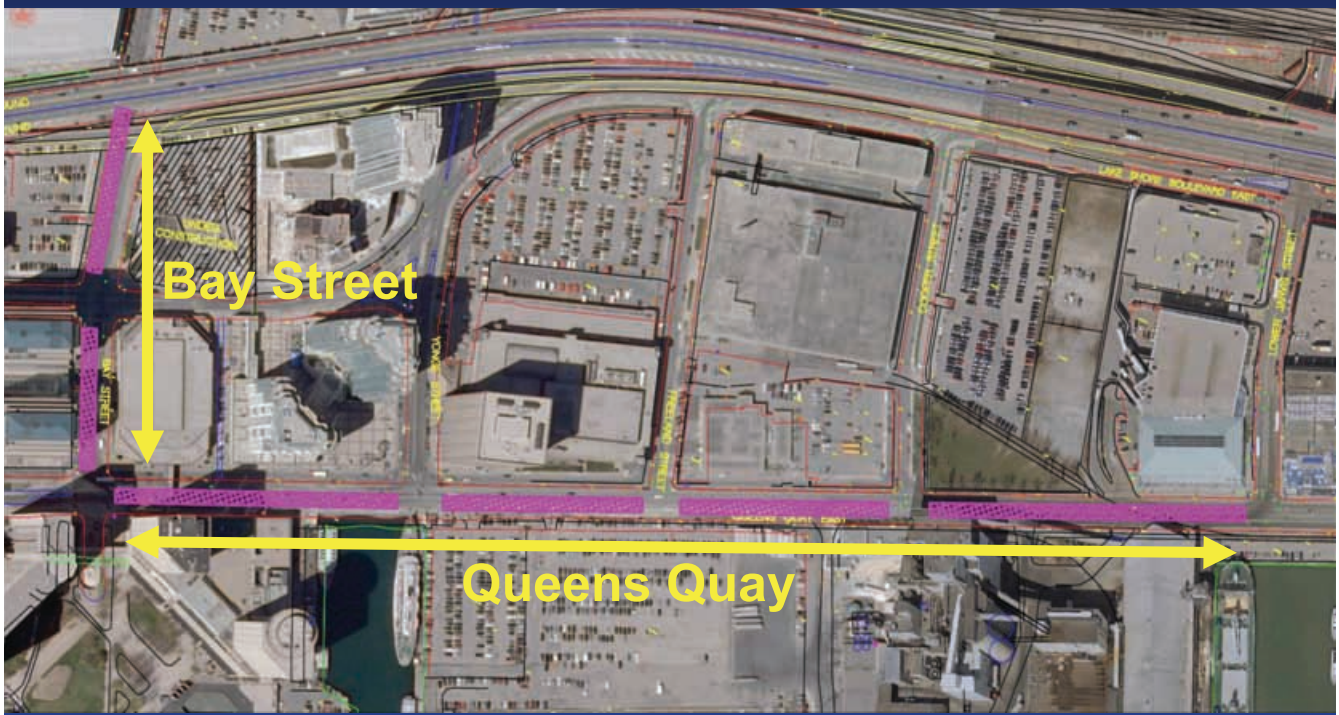
Revised Bay Street Portal Option 2



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Portal Location(s) – Primary Analysis Areas



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Portal Conclusions

- Carry forward for more detailed review into next phase:
 - Portal options on Bay street
 - Portal options on Queens Quay
 - Portal option on Harbour Street (if Bay Street is not possible)

Questions?