

TORONTO TRANSIT COMMISSION REPORT NO.

MEETING DATE: November 17, 2009

SUBJECT: TORONTO-YORK SPADINA SUBWAY EXTENSION PROJECT
HIGHWAY 407 STATION
APPROVAL OF CONCEPTUAL DESIGN

ACTION ITEM

RECOMMENDATION

It is recommended that the Commission approve the conceptual design for Highway 407 Station which will be presented through the public consultation process.

FUNDING

Sufficient funds for this expenditure are included in the Toronto-York Spadina Subway Extension (TYSSE) Project, as set out on pages 1479 to 1482 of the TTC 2010-2014 Capital Program (Category - Expansion) which was approved by the Commission on September 24, 2009 and amended by the Commission on October 29, 2009.

BACKGROUND

The TTC is planning the design and construction of an underground subway line from the existing Downsview Station on the Spadina Line located in the City of Toronto, to the proposed Vaughan Corporate Centre located in the City of Vaughan, Region of York as shown in Exhibit 1. The new 8.6 km long line will include both tunnelled and cut and cover sections.

The Toronto-York Spadina Subway Extension (TYSSE) project is being funded by the Government of Canada, the Province of Ontario, the City of Toronto, and the Regional Municipality of York. The TTC is managing the design and construction of the YYSSE project and will own and operate the subway extension.

At the Commission Meeting of October 23, 2008, Contract A85-75D for the design of Highway 407 Station was awarded to the design team lead by Earth Tech Canada Inc. (now doing business as Aecom). The architectural firm for this team is Aedas.

At its meeting of September 24, 2009, the Commission approved the YYSSE Design Philosophy with additional emphasis on achieving high quality architecture, urban design,

streetscape, and landscape architecture as follows:

- Integrated design of all elements with strong aesthetics, high-quality urban design, and public artwork;
- Column-free structures wherever possible with high ceilings and simple flow of space;
- Bright, open spaces with daylight penetrating deep into stations where possible;
- Barrier-free with at least one fully accessible entrance;
- Use of TTC standard elements; and
- Sustainable design to meet the Toronto Green Standard.

In developing this concept, staff, and the station designer have met and reviewed concepts with major stakeholders including staff from York Region, GO Transit/Metrolinx, MTO, and the City of Vaughan.

DISCUSSION

Highway 407 Station is located west of Jane Street and south of Highway 407 on the west bank of Black Creek per the Site Plan in Exhibit 2. A hydro corridor runs just south of the station. The Highway 407 Station is intended to be a multi-modal transportation hub with parking for 600 commuters, a 30 space PPUDO, and an 18 bay YRT and GO Transit bus terminal. The design also contains provisions for future connection to the proposed MTO Highway 407 Transitway. A new bridge structure over Black Creek, which was not included in the preliminary budget, provides access to the bus terminal and parking lot.

The bus terminal and PPUDO will be owned and maintained entirely by GO Transit and York Region and as such will require only their approval. The concept is still under development with input from GO Transit and YRT and will be brought forward to the Commission for information.

Exterior – Exhibit 3 - Aerial View

Due to ongoing negotiations with stakeholders, surface facilities are not at the same level of development as the below ground structures, including:

- At grade bus terminal for YRT and GO Transit;
- Provision for future MTO Highway 407 Transitway facilities;
- Pedestrian entrance;
- Site development, landscaping, parking lot and PPUDO; and
- Passenger Concourse under the bus terminal to the fare line.

Interior – General

Station finishes, materials, colour and artwork will be further developed as part of the detailed design and will be presented at the second Public Open House and included in a subsequent Commission Report.

Street Level - Exhibit 4 – Section
- Exhibit 5 – Street Level

The section shows the unique features of this station that result from the depth of the subway tunnels. Passengers will be able to enter the concourse level from the surface, from the bus terminal, from the parking/PPUDO entrance, or from a level connecting to the future MTO Highway 407 Transitway. The east side of the station structure is next to Black Creek and contains sloped windows which allow daylight to penetrate into the concourse and down to platform level.

Passengers arriving at the station will enter through the main entrance at the Passenger Pick Up and Drop Off facility (PPUDO) which contains an elevator, escalators, and stairs to the concourse. Bicycle parking is located next to the main entrance. Passengers arriving by GO Transit or YRT bus will enter the concourse by elevator, escalators, and stairs. All bus passengers enter the unpaid side of the concourse as there are no TTC buses in the terminal.

Concourse Level - Exhibit 6 – Concourse Level

The concourse funnels passengers from the PPUDO, parking and bus terminal to the fare line. The future Transitway will also connect into the concourse. Passing through the fare line leads to a landing which projects into a large multi-storey space with a view out through a bank of sloped glass windows east towards Jane Street. The landing, referred to as the “lily pad”, leads to an elevator, three escalators and one staircase which run approximately 12m down to platform.

The concourse level also contains TTC service spaces. The north end of the station box includes a void for the future Highway 407 Transitway to run through the station box.

Maintenance Level - Exhibit 7 – Maintenance Level

The maintenance level is not accessible to the public, who move through this level on the elevator or escalators. This level contains TTC service rooms including the emergency ventilation fans.

Platform Level - Exhibit 8 – Platform Level

The subway platform level is served by an elevator from the concourse level and by four escalators and a stair. Due to significant structure required to resist buoyancy there are no columns on the platform, which allows an open view up to the sky through the sloped windows above.

Emergency exit stairs have been provided at both ends of the platform.

Maintainability

Maintainability and cleaning issues and costs related to the high ceilings, large glazed windows and light cone will be addressed by engineering solutions. Easy access and minimum maintenance requirements for cleaning, inspection and repair on a regular basis and replacement of major elements on an end of life program will be addressed in the design.

Artwork

A Public Art selection process resulted in the selection of David Pearl as the public artist for Highway 407 Station. An art concept will be included in the second Public Open House for this project.

Project Impacts

As this site and surrounding area is largely undeveloped, there is limited impact of the station on the surrounding community with the exception of during the construction period. The Design team is working closely with the TRCA to address the impacts of the design and construction of the station components on Black Creek. Highway 407 Station will be the site of the Tunnel Boring Machine (TBM) launch shafts for construction of the twin tunnels running north towards Vaughan Corporate Centre Station, and southeast towards Steeles West Station.

To address the above impacts, the following steps are being advanced during design development:

- Discussions with the Toronto and Region Conservation Authority (TRCA).
- An Environmental Management Plan (EMP) will be in place to address the effects of dewatering, stormwater management, and erosion and sediment control.
- Instrumentation, inspection and response procedures will be in place to monitor and mitigate construction noise, vibration and dust control.

Cost and Schedule

The budget for construction of Highway 407 Station is \$95 million. The estimated final cost of construction costs for Highway 407 Station is \$134 million.

The main impacts to the original estimate and current budget are:

- Escalation of construction cost during the period 2006-2008 higher than budgeted;
- High water table;
- Extra depth (5m) for adjoining tunnels passing under Black Creek;
- Increased number of bus platforms;
- Provision for future integration with the 407 Transitway; and
- Provision of access bridge over Black Creek.

Negotiations are ongoing with MTO/GO for funding of additional elements relating to the bus terminal and future Transitway connections. As design progresses, additional value engineering studies will be undertaken to optimize station costs. If the project remains over budget as design develops, additional funds will be provided from budget contingencies.

The proposed project schedule reflects completion of design development to 100% in late Spring 2010. Highway 407 Station is scheduled for Substantial Completion in Late Spring 2014.

Next Steps

Following the first Public Open House in January 2010, the design will be developed leading to a second Public Open House in Summer 2010. A report will also be submitted to the Commission for finishes and artwork. A report is scheduled to be submitted for contract award approval in October 2010.

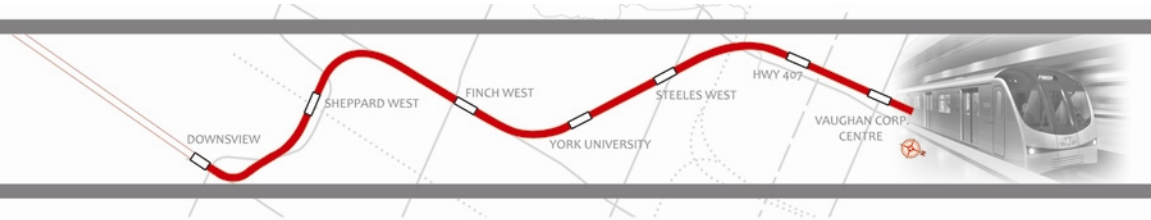
JUSTIFICATION

Approval is required to allow the station designers to progress their design and commence public meetings.

October 26, 2009
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Attachments Exhibits 1 to 8



Toronto-York Spadina Subway Extension



Toronto-York Spadina Subway Extension

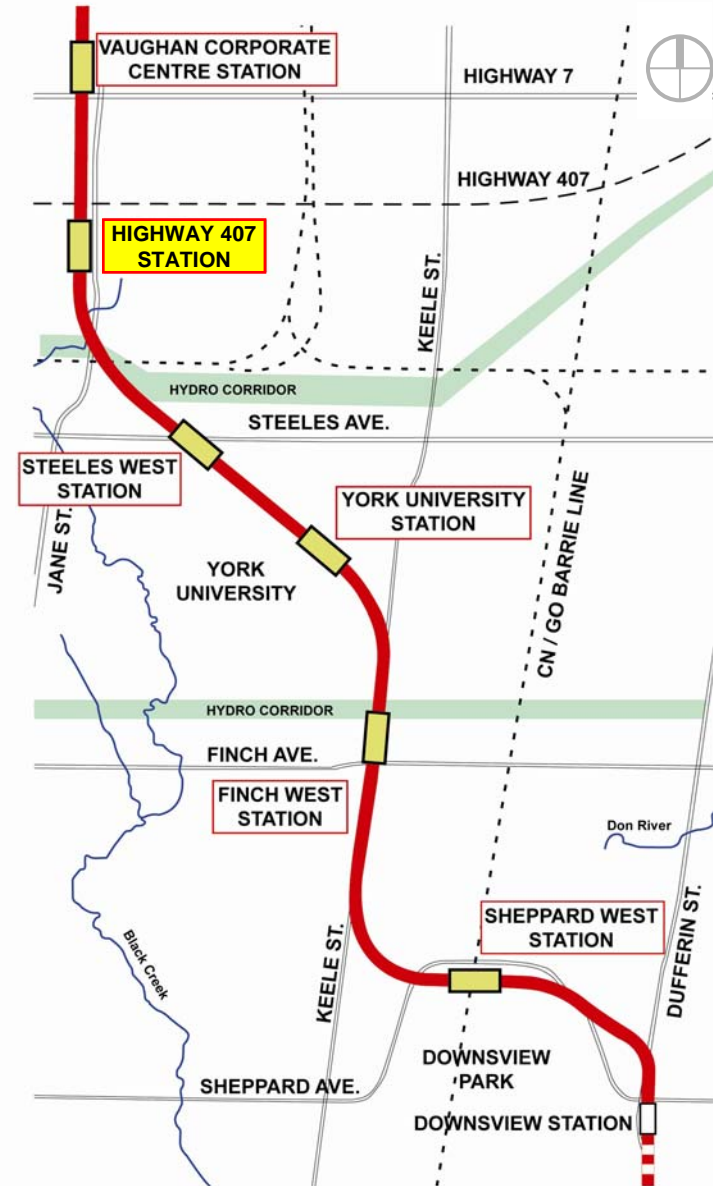
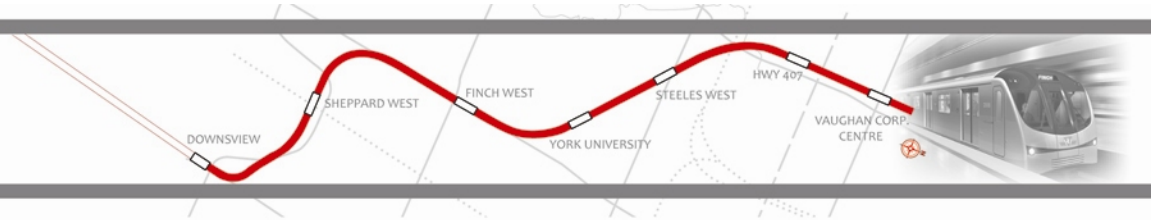


Exhibit 1 - TYSSE Map



Highway 407 Station

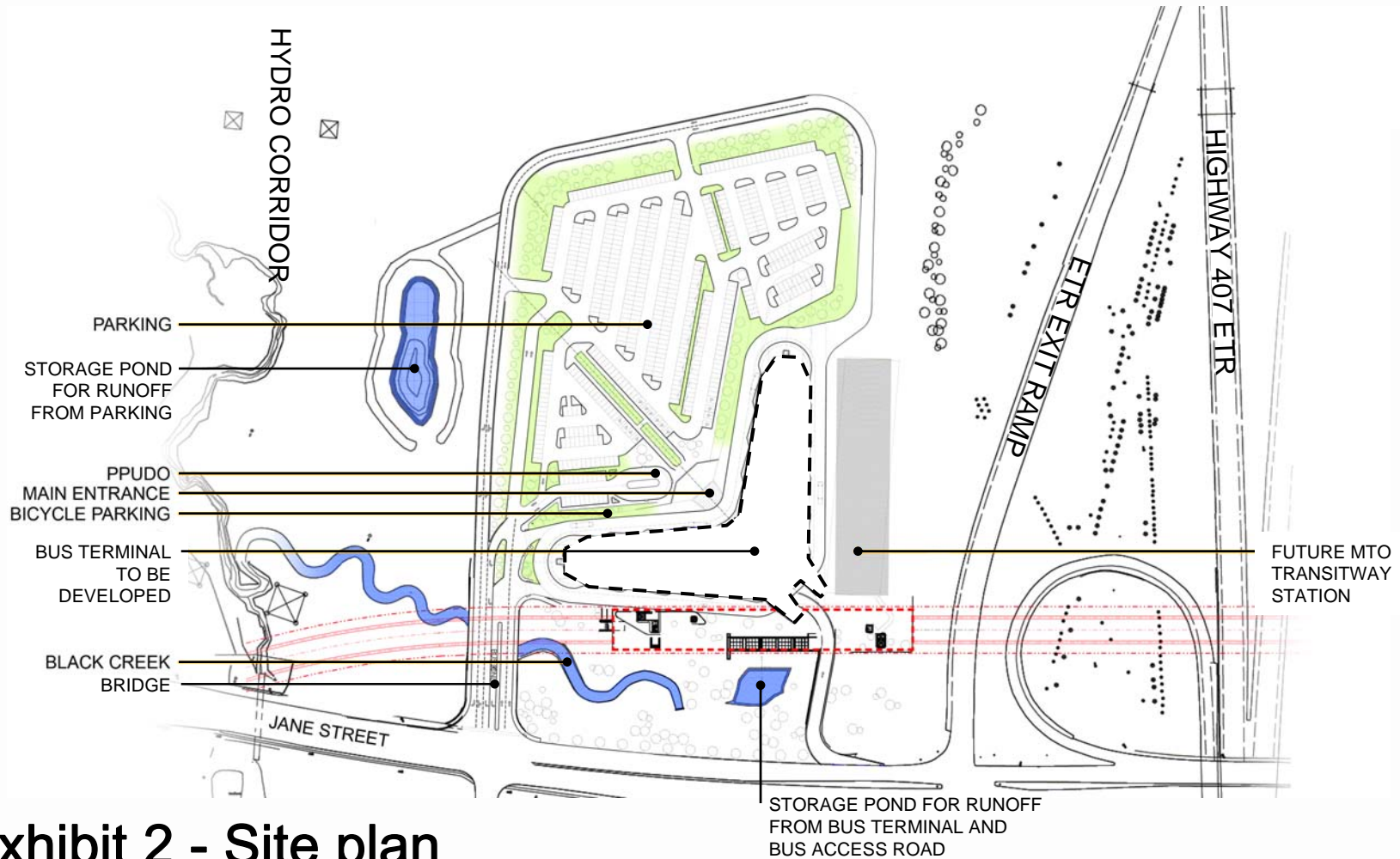
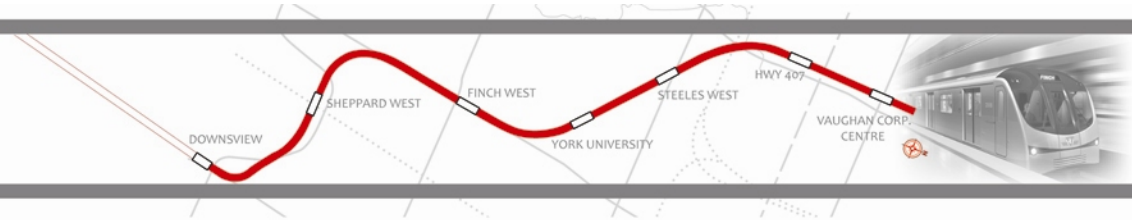


Exhibit 2 - Site plan



Toronto-York Spadina
Subway Extension



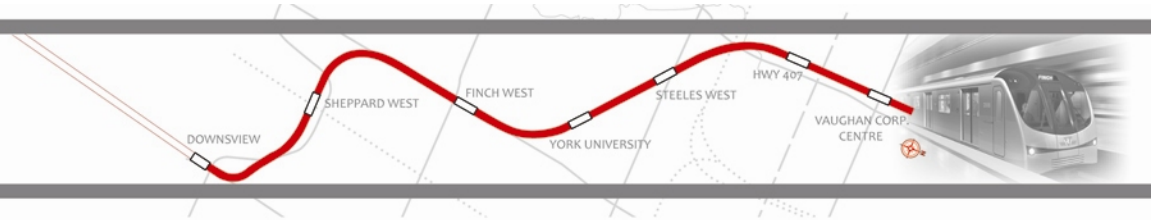
Highway 407 Station



Exhibit 3 - Aerial View



Toronto-York Spadina Subway Extension



Highway 407 Station

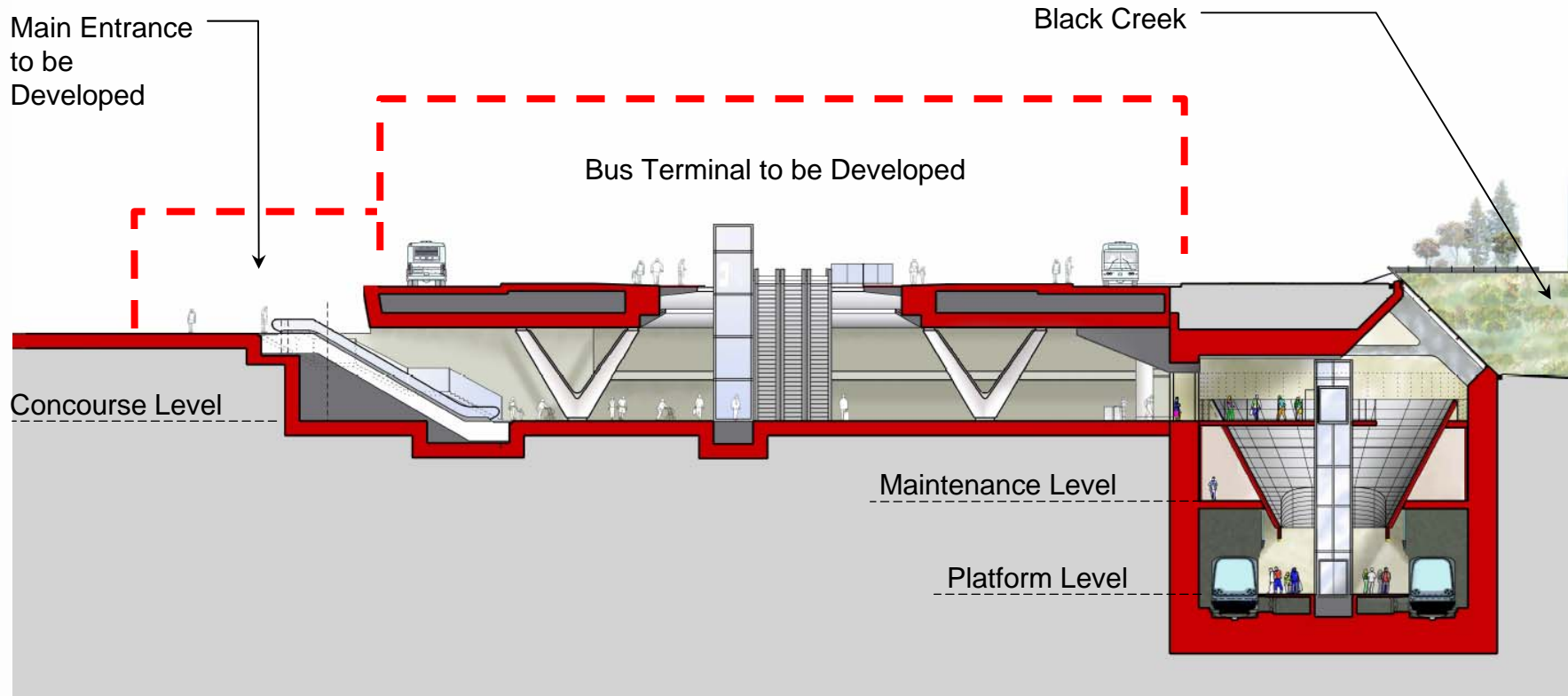
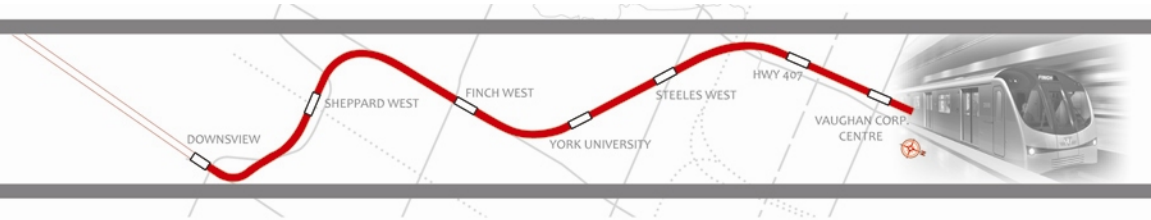


Exhibit 4 - Section



Highway 407 Station



LEGEND

- PUBLIC- PAID AREA
- PUBLIC- UNPAID AREA
- NON PUBLIC AREA
- RETAIL AREA
- EMERGENCY STAIR EXIT

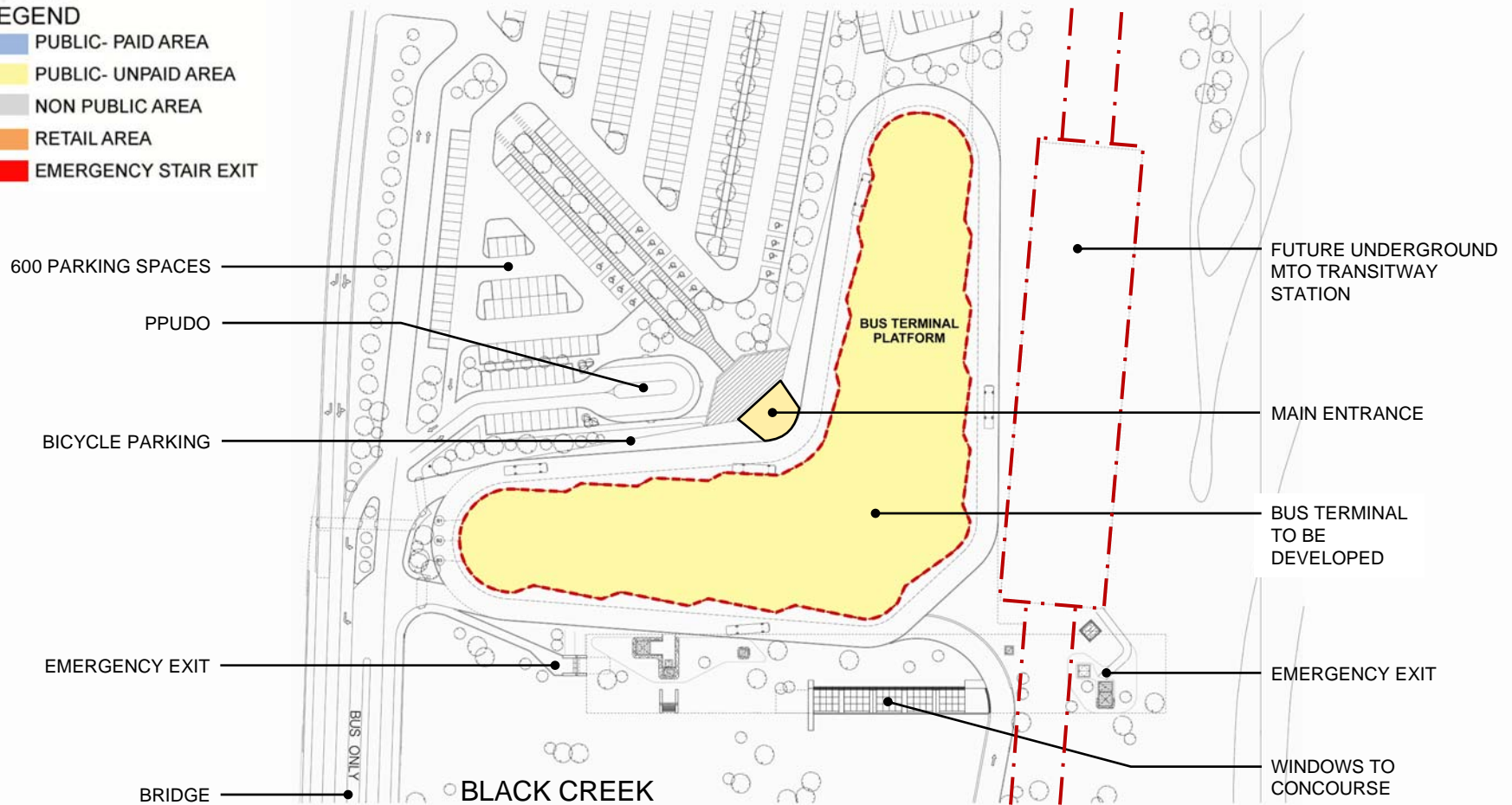
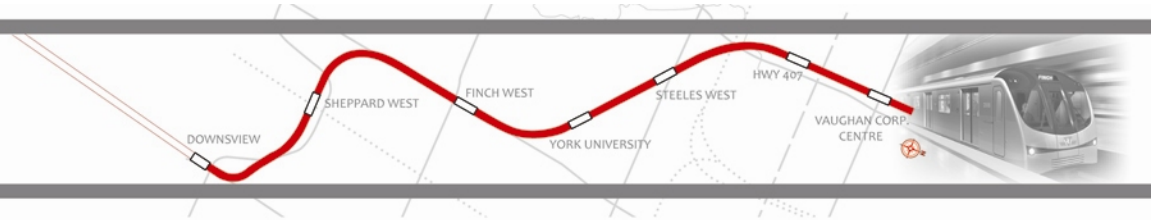


Exhibit 5 - Street Level



Highway 407 Station



LEGEND

- PUBLIC- PAID AREA
- PUBLIC- UNPAID AREA
- NON PUBLIC AREA
- RETAIL AREA
- EMERGENCY STAIR EXIT

NOTE:
Location and configuration of stairs, escalators and elevator to bus terminal is under development

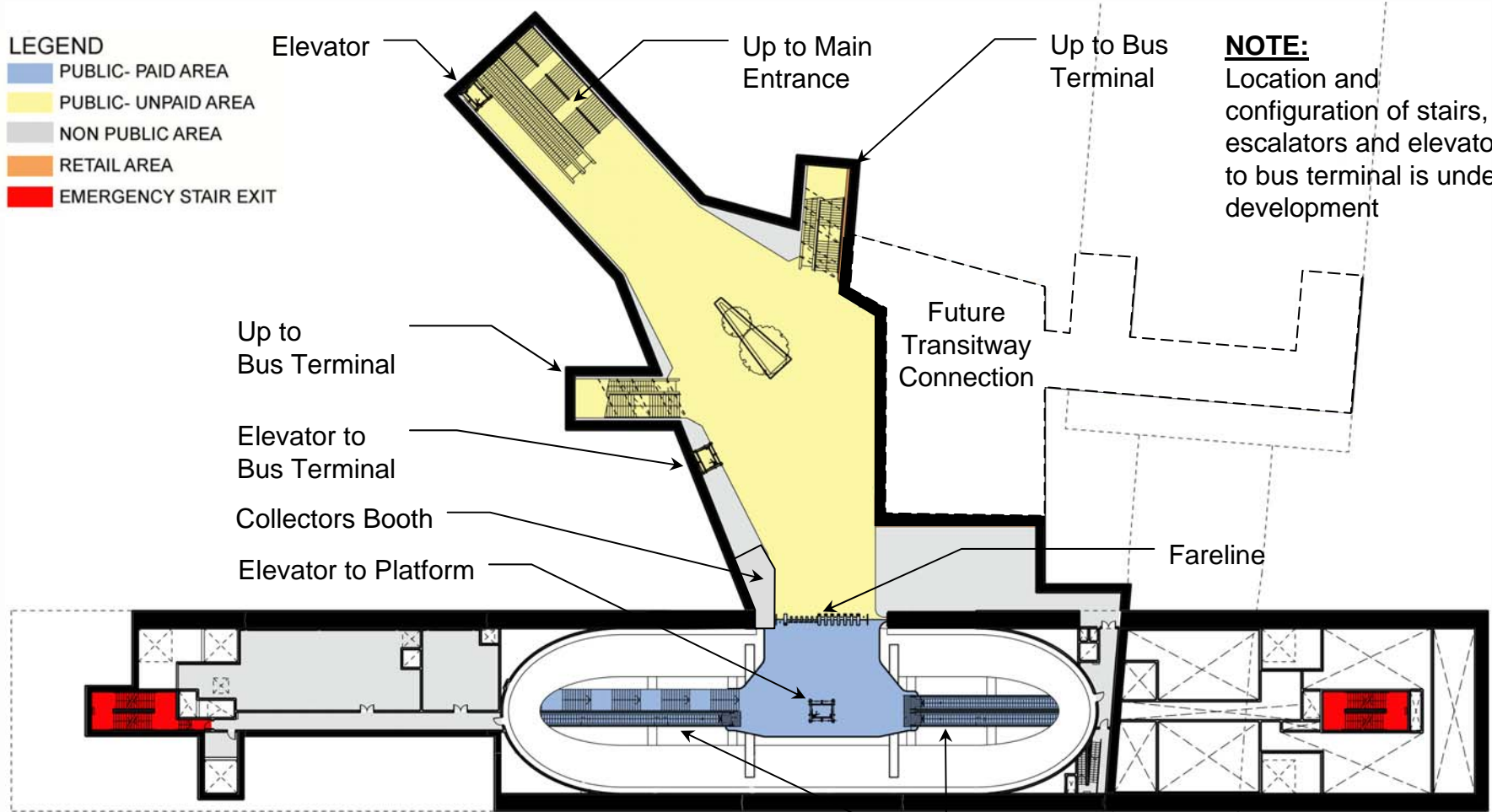
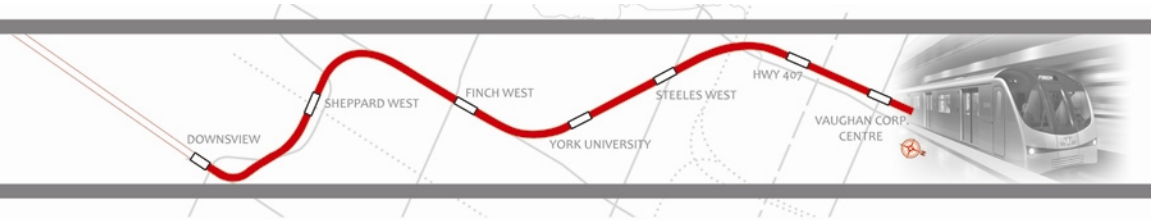


Exhibit 6 - Concourse Level

Down to Platform



Toronto-York Spadina Subway Extension



Highway 407 Station



LEGEND

- PUBLIC- PAID AREA
- PUBLIC- UNPAID AREA
- NON PUBLIC AREA
- RETAIL AREA
- EMERGENCY STAIR EXIT

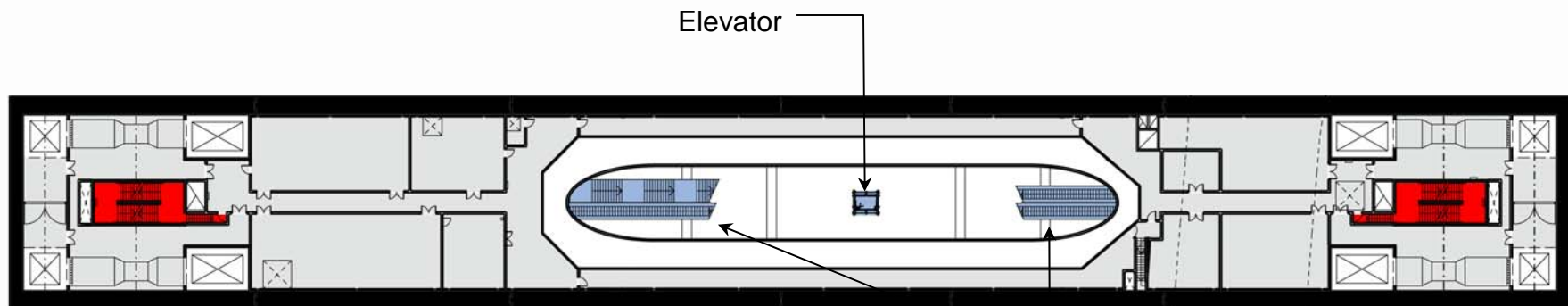
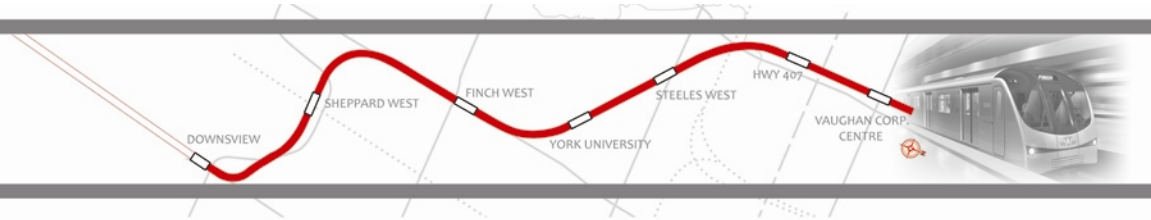


Exhibit 7 - Maintenance Level

Down to Platform



Toronto-York Spadina Subway Extension



Highway 407 Station



LEGEND

- PUBLIC- PAID AREA
- PUBLIC- UNPAID AREA
- NON PUBLIC AREA
- RETAIL AREA
- EMERGENCY STAIR EXIT

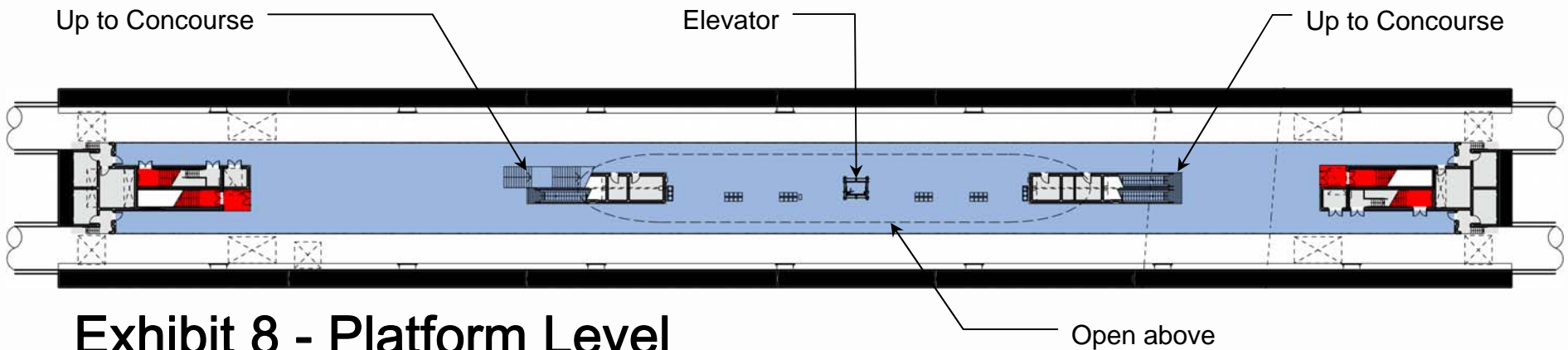


Exhibit 8 - Platform Level