

## Board of Governors of Exhibition Place

EP2.9	ACTION	Amended		Ward: All
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### Proposed Improvements to Toronto Transit Commission (TTC), Light Rail Transit (LRT) at Exhibition Place

#### Board Decision

The Board of Governors of Exhibition Place recommends that:

1. City Council consider prioritizing the Toronto Transit Commission (TTC) projects including TTC Waterfront Light Rail Transit (LRT) expansion project, which will further the success of the Exhibition Place, in the next phase of design and funding for transit expansion.

#### Decision Advice and Other Information

The Board of Governors of Exhibition Place:

1. Requested the Chief Executive Officer, Exhibition Place to:
  - a. Work with the Toronto Transit Commission (TTC) on any meetings or information related to the proposed improvements to the TTC and Light Rail Transit (LRT) at Exhibition Place; and
  - b. Report to the Board on the impact of the TTC expansion projects (the Dufferin Bridge construction, the potential extension of the Harbourfront LRT to Dufferin Street, and its future expansion west to connect to the Lakeshore LRT) on the construction of a new parking facility at Exhibition Place, as directed by City Council at its meeting of August 25, 2014 in its decision on Item EX44.3 titled Proposed Basketball Training Centre at Exhibition Place.

Cheryl Murray, HDR Inc. gave a presentation on Waterfront Transit Streetcar Connection: Exhibition Loop - Dufferin Gates Loop.

#### Origin

(March 27, 2019) Report from the Chief Executive Officer, Exhibition Palce

## **Summary**

The Exhibition Place LRT loop and the Exhibition GO Station have been an area of congestion for users for quite some time. As the Exhibition Place grounds, Liberty Village, Ontario Place, The Bentway, Fort York neighborhood and other areas continue to grow, the current LRT loop and GO Station configuration will not support the future increased volumes using the TTC and requirements for west bound LRT.

The LRT streetcar track extension west to Dufferin received Environmental Approval in 2008 and the project has received City Council approval as recently as January 2018 as part of the Waterfront Transit Network Plan.

The TTC will attend the Board meeting and will provide a presentation on the proposed improvements/changes.

## **Background Information**

(March 27, 2019) Report from the Chief Executive Officer, Exhibition Place on Proposed Improvements to Toronto Transit Commission (TTC), Light Rail Transit (LRT) at Exhibition Place

<http://www.toronto.ca/legdocs/mmis/2019/ep/bgrd/backgroundfile-131405.pdf>

Presentation from HRD Inc. on Waterfront Transit Streetcar Connection: Exhibition Loop - Dufferin Gates Loop

<http://www.toronto.ca/legdocs/mmis/2019/ep/bgrd/backgroundfile-131927.pdf>



Exhibition Place

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## REPORT FOR ACTION

# Proposed Improvements to Toronto Transit Commission (TTC), Light Rail Transit (LRT) at Exhibition Place

**Date:** March 27, 2019

**To:** The Board of Governors of Exhibition Place

**From:** Dianne Young, Chief Executive Officer

**Wards:** All Wards

### SUMMARY

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The Exhibition Place LRT loop and the Exhibition GO Station have been an area of congestion for users for quite some time. As the Exhibition Place grounds, Liberty Village, Ontario Place, The Bentway, Fort York neighborhood and other areas continue to grow, the current LRT loop and GO Station configuration will not support the future increased volumes using the TTC and requirements for west bound LRT.

The LRT streetcar track extension west to Dufferin received Environmental Approval in 2008 and the project has received City Council approval as recently as January 2018 as part of the Waterfront Transit Network Plan.

The TTC will attend the Board meeting and will provide a presentation on the proposed improvements/changes.

### RECOMMENDATIONS

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The Chief Executive Officer recommends that:

1. The Board request the Chief Executive Officer to work with the Toronto Transit Commission on any meetings or information related to the proposed improvements to the TTC and LRT at Exhibition Place.

### FINANCIAL IMPACT

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There are no negative financial implications of receiving the report.

### DECISION HISTORY

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The Exhibition Place 2017 – 2019 Strategic Plan has a Public Space and Infrastructure Goal to improve all forms of access needs to and within the grounds by actively supporting the enhancement of public transit access to the grounds.

## COMMENTS

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During 2018 and over the past few months, the Toronto Transit Commission (TTC) has been in consultation with Metrolinx, City of Toronto Planning, City of Toronto Transportation and Exhibition Place staff on the 30% design for the expansion of the Harbourfront LRT that runs from Union Station to a terminating loop at the Exhibition Place TTC/GO station. This initial expansion design is to continue the Harbourfront LRT service from Union Station to Dufferin Street and then north, to connect to the King Street and Queen Street streetcar routes. The expansion will improve year-round TTC streetcar service to Exhibition Place, from both the east and from the west; will allow the removal of most TTC bus operations from inside Exhibition Place; will provide more operational flexibility and resiliency to the TTC; and will improve TTC-GO connections. The LRT expansion is the first phase of the proposed Waterfront Transit project endorsed by City Council on January 31, 2018.

Thirty (30%) LRT design and planning has to occur now, as the plan has to interface with many changes happening in the area and being undertaken by several different partners:

- the new GO Station and platform alterations by Metrolinx
- the removal and replacement of the overhead Gardiner deck by City Transportation
- the 1.4 meter elevation change requirement of the permanent Dufferin Bridge to facilitate the electrification of the tracks by City Transportation
- the replacement of the water mains running over the rail corridor by City Water
- the track extension connecting service between the Dufferin Loop and Exhibition Place, complete with new platforms on Exhibition Place grounds at Dufferin Street by TTC
- the protection for future west track expansion of the TTC to connect to the Etobicoke Lakeshore LRT by TTC
- the track replacement at the Dufferin Loop by TTC
- 2019 Master Plan development for Exhibition Place

Exhibition Place is a member of the Technical Advisory Committee working with strategic partners such as the Toronto Transit Commission, Metrolinx and City Planning to develop options for improving safety and the customer experience at the Exhibition TTC / GO Station and surrounding area. The report and the TTC presentation that will be provided at the Board meeting is an overview of the work that has been completed to date and recommendations being made to the TTC Board on the future upgrades. A Public Consultation with stakeholders will be scheduled after this report is accepted by the TTC Board.

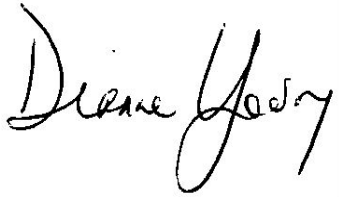
## **CONTACT**

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Mark Goss, GM, Operations, 416-263-3660, mgoss@explace.on.ca

## **SIGNATURE**

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A handwritten signature in black ink that reads "Dianne Young". The signature is written in a cursive style with a large initial "D".

Dianne Young  
Chief Executive Officer



TORONTO TRANSIT COMMISSION  
ENGINEERING DEPARTMENT

## Waterfront Transit Streetcar Connection: Exhibition Loop – Dufferin Gates Loop

April 10, 2019

# PDR Presentation for Exhibition Place Board of Governors

# Project Areas

**Dufferin Gate Loop**

- Replacement of Existing Tracks
- Signalization
- New facilities for Streetcar and Bus
- Regrade Streetcar and Bus area to match Dufferin Street

**Liberty Village**

- Area redevelopment

**Exhibition Place**

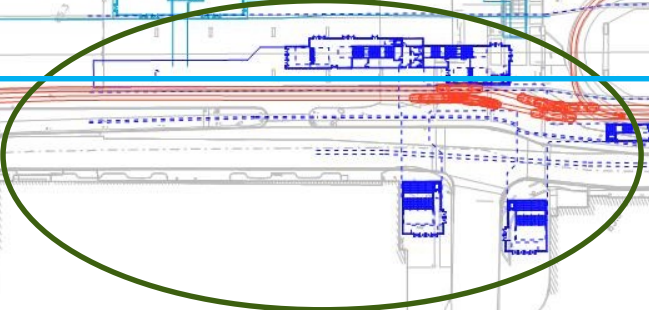
- New connection to GO platforms
- New access building & tunnel

**Dufferin Bridge**

- Replacement of Bridge
- Grade raise
- Protect for future streetcar extension, signalization

**Track Extension**

- Connection of service between Dufferin Loop and Exhibition Place



**Exhibition Place**

- New westbound platform and amenities
- Grade separated pedestrian crossings

**West Track Extension**

- Protect for future extension

**Centennial Park**

- New Stop
- Pedestrian connections to Park
- Pedestrian connections to Dufferin Street
- Protect for future westerly extension

**Exhibition Place**

- BMO Expansion
- Existing and New events

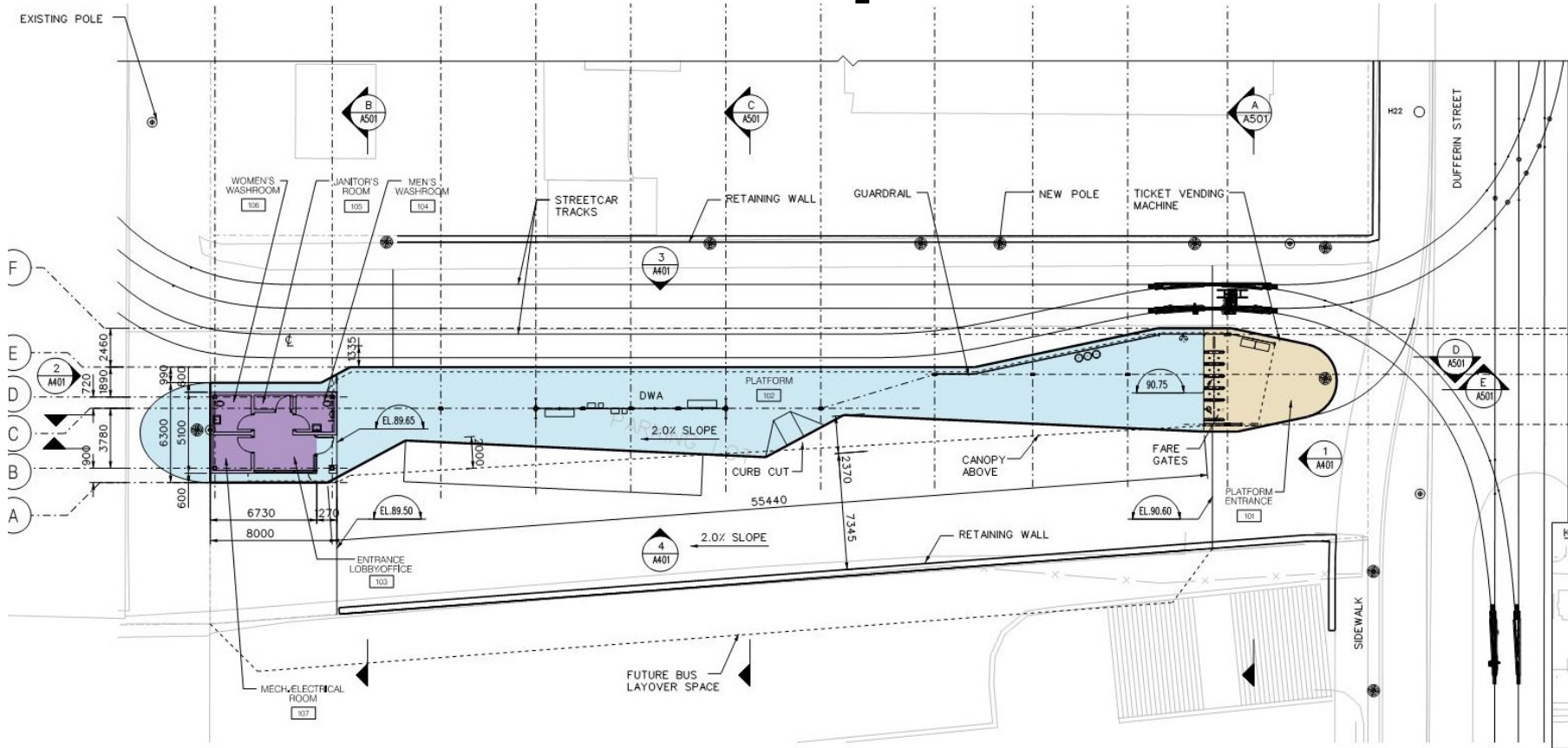




# Dufferin Gate Loop

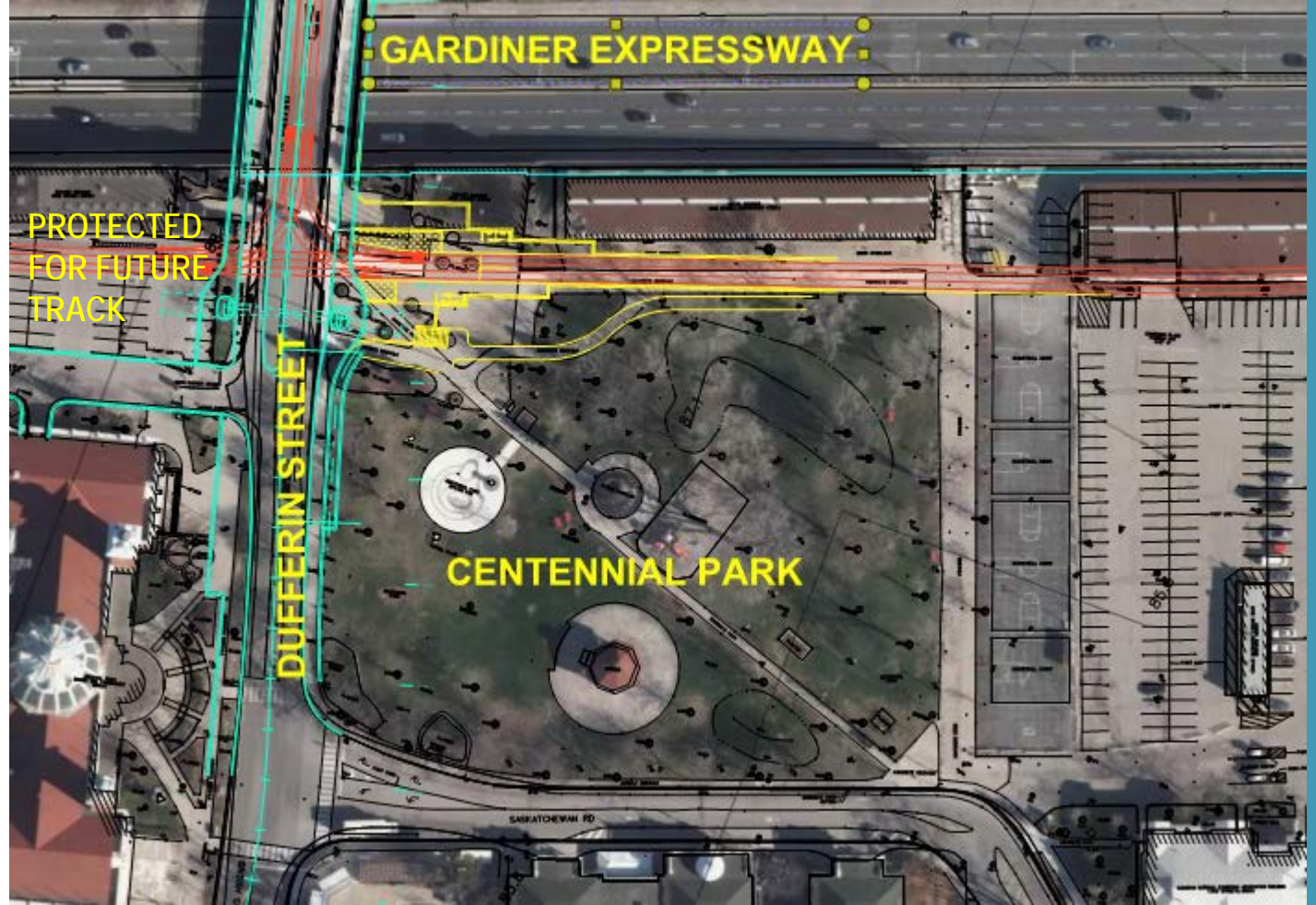


# Dufferin Gate Loop



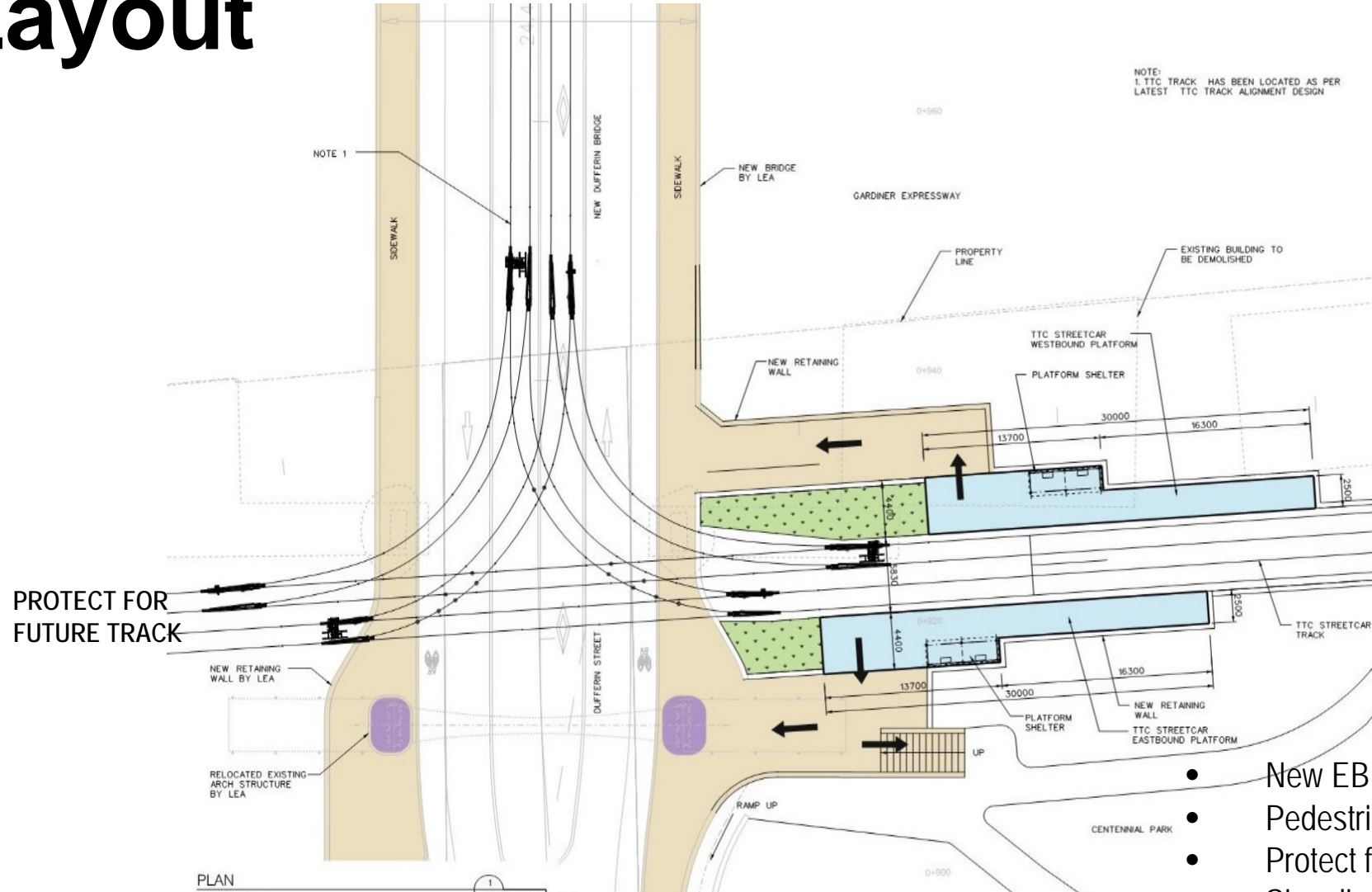
- New platform serving 2 streetcars, 2 articulated buses
- New surfacing in the loop area
- Accommodate day-to-day and special events
- Updated customer areas/shelters
- Constructed as part of the Dufferin Bridge replacement





# Centennial Park Stop

# Centennial Park Stop – Draft Functional Layout



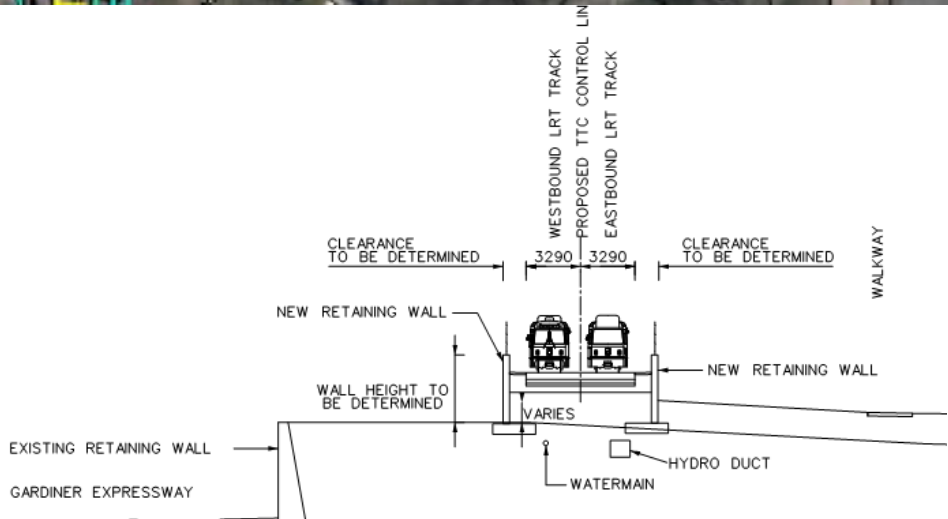
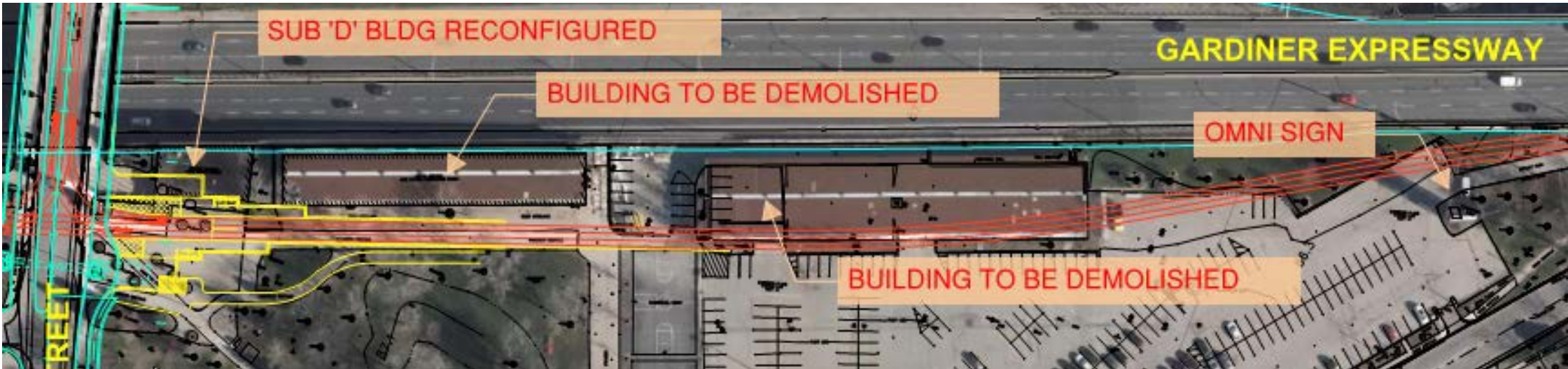
- New EB & WB platforms east of Dufferin Street
- Pedestrian connections into Centennial park
- Protect for westerly extension
- Signalized intersection to control pedestrians, cars, and inbound/outbound streetcars
- Under review by TTC



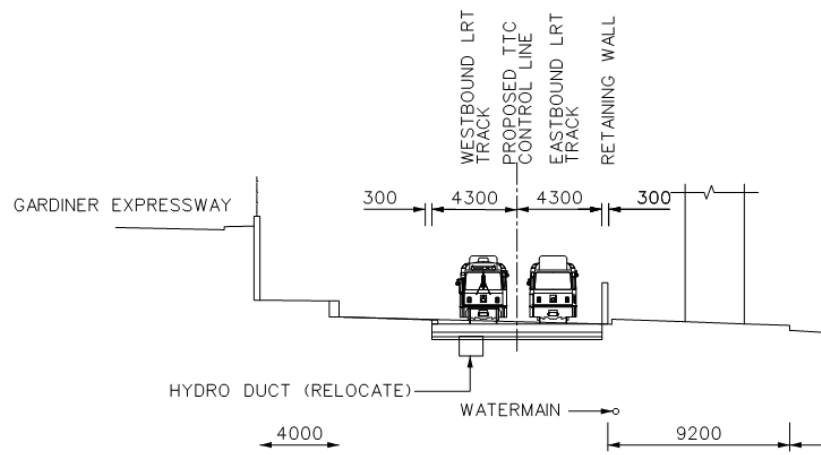


# Track Extension – Dufferin Loop to Exhibition Place Loop

# Track Extension

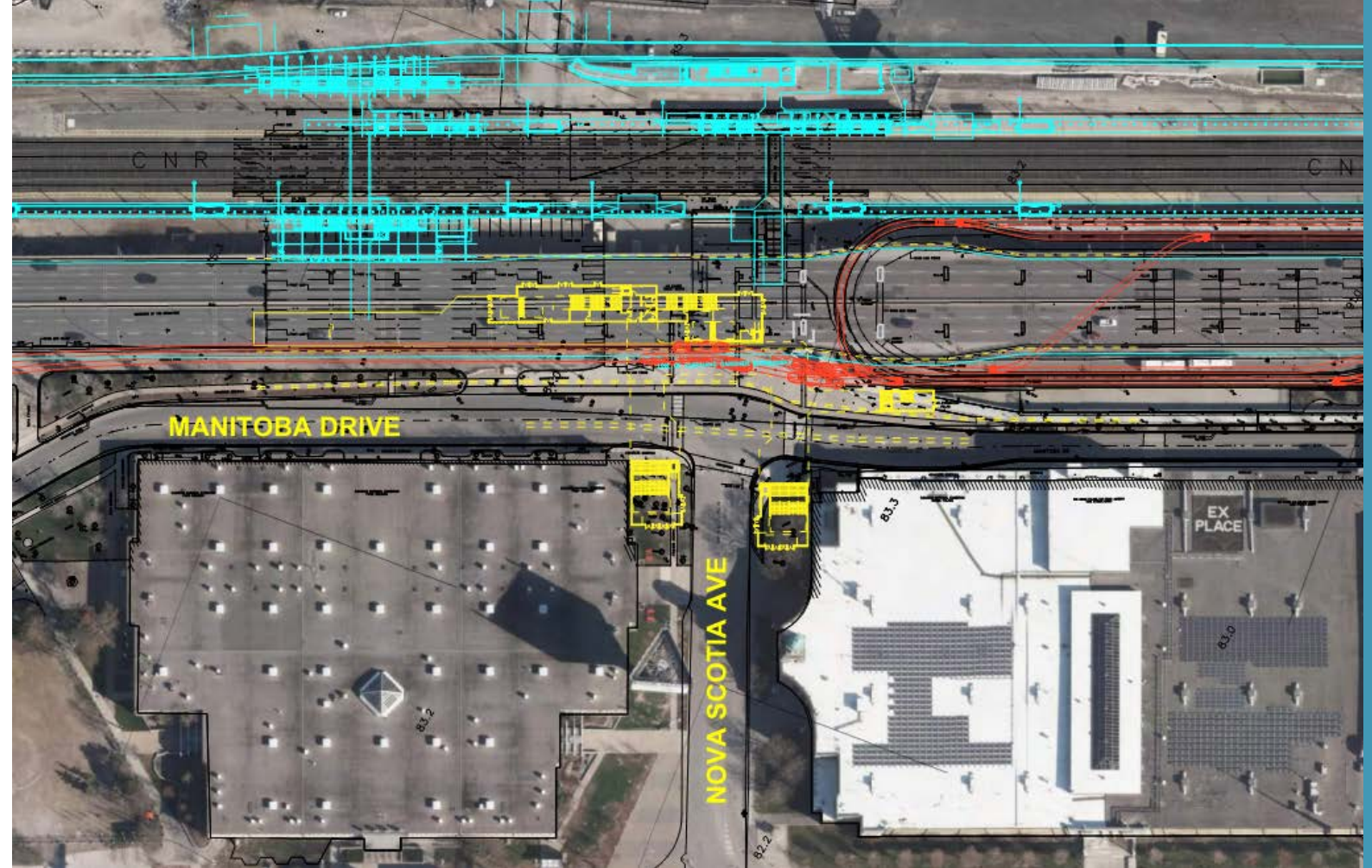


Near Dufferin Street



Near Exhibition Place



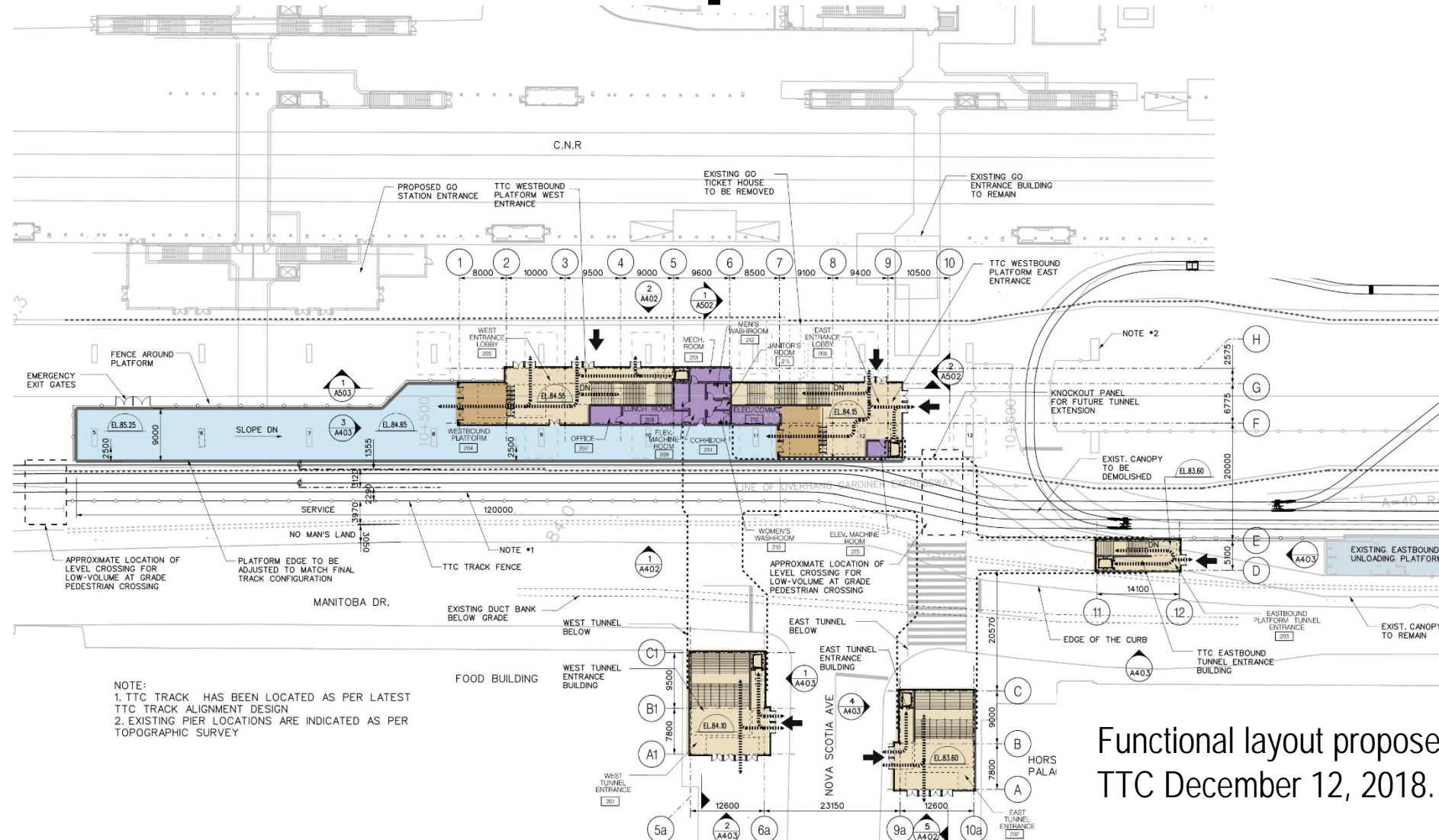


# Exhibition Place Loop



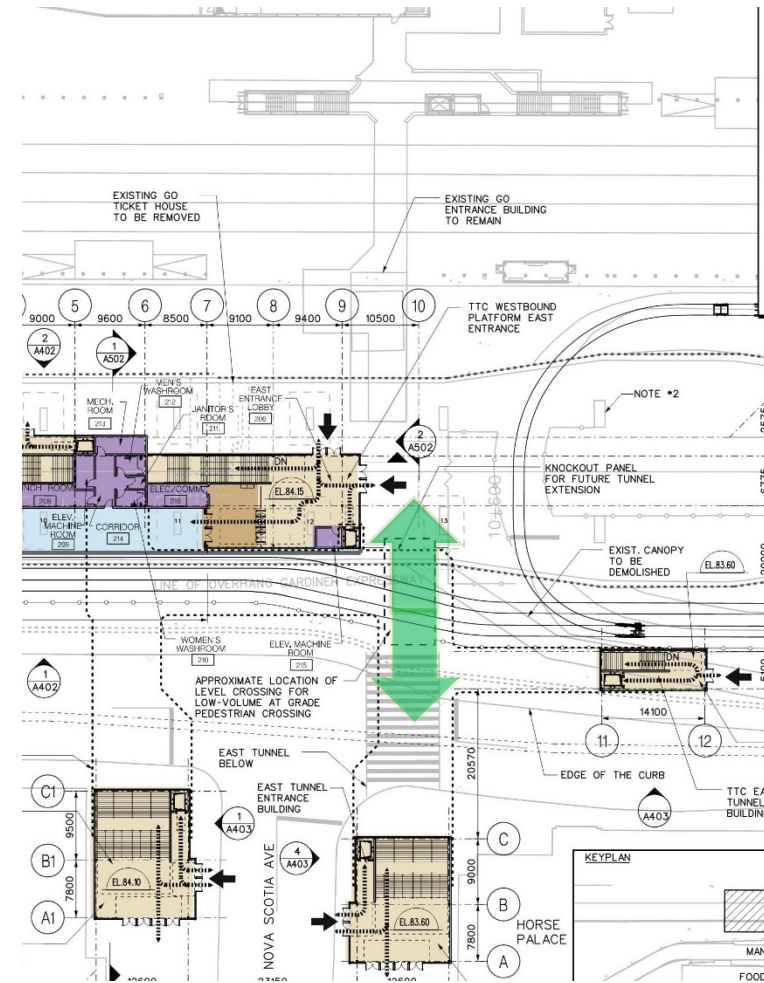
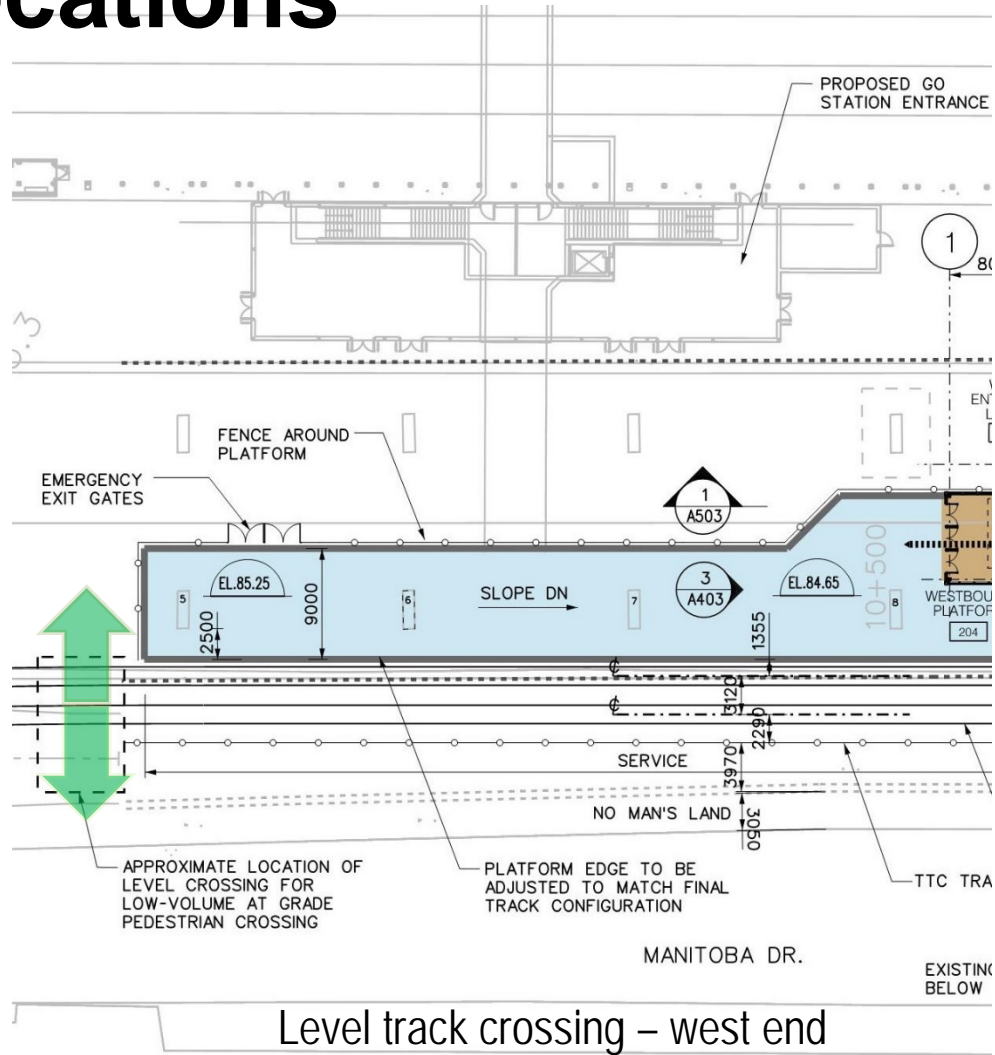


# Exhibition Place Loop - Ultimate



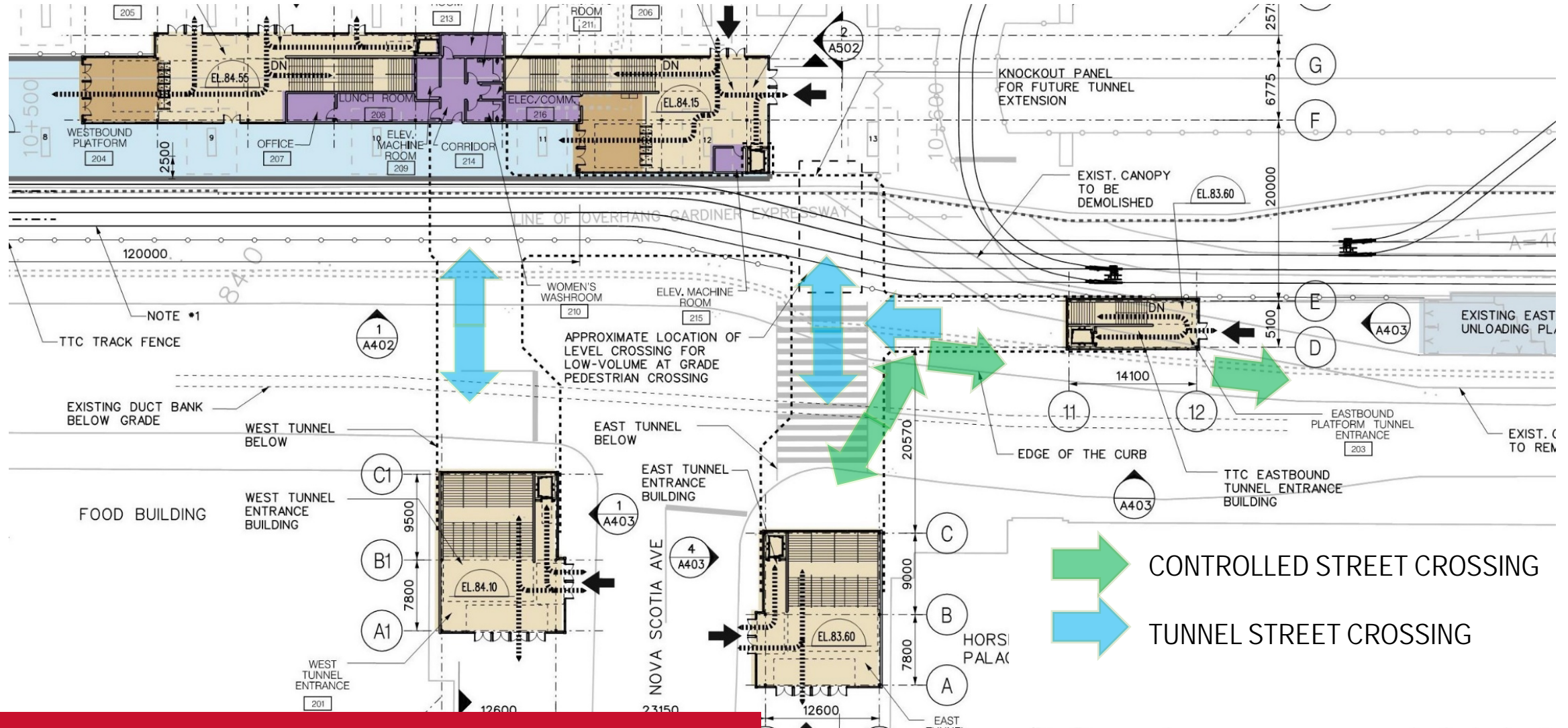
Functional layout proposed by  
 TTC December 12, 2018.

# Exhibition Place Loop – Daily service crossing locations

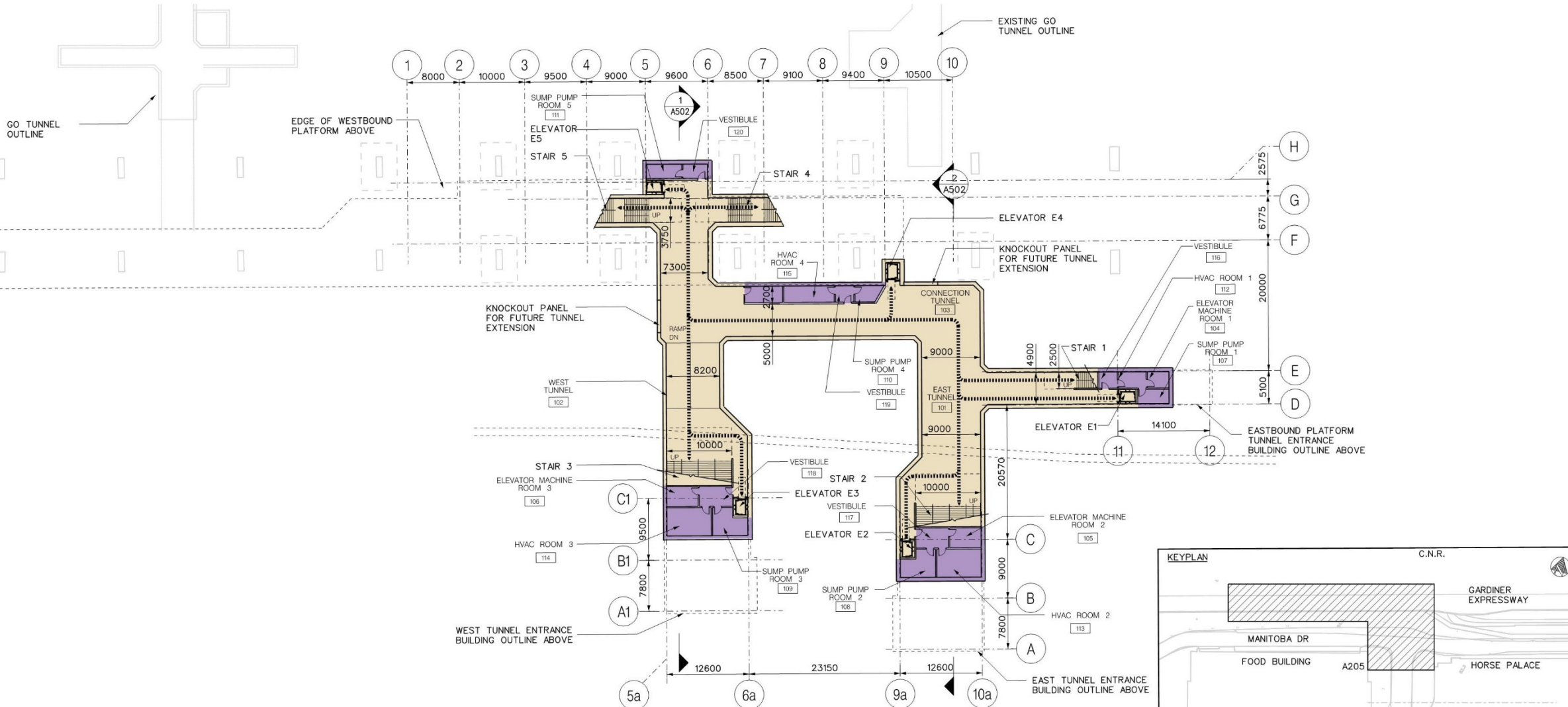




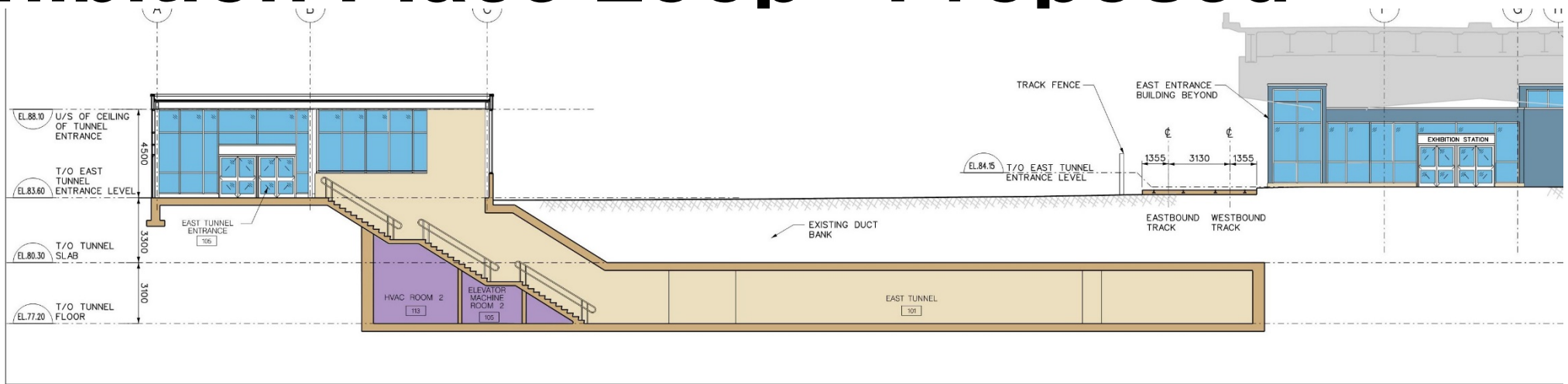
# Exhibition Place Loop – Busy and Special Event crossing locations



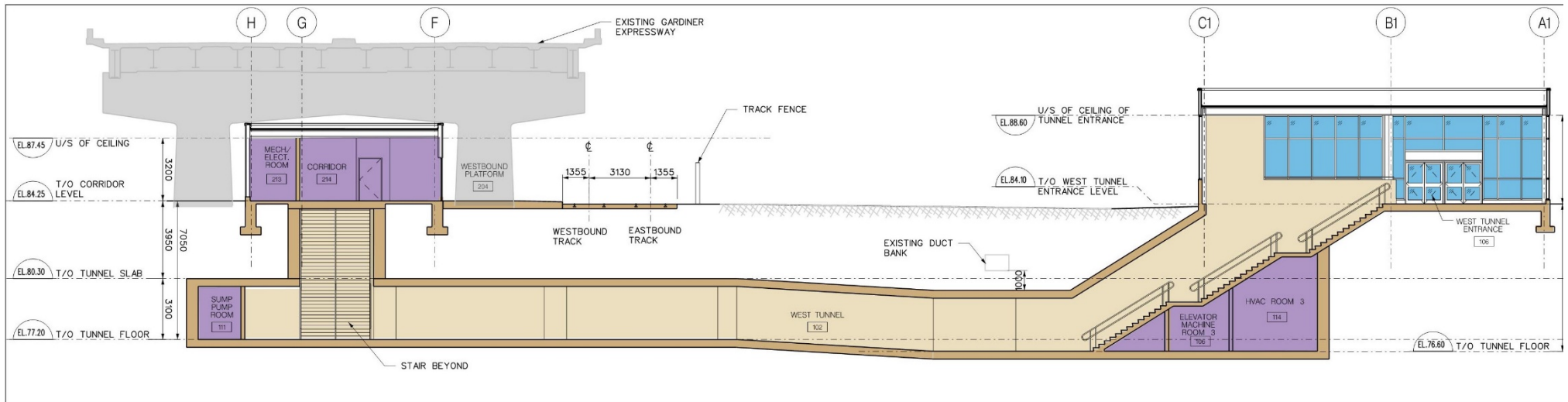
# Exhibition Place Loop - Proposed



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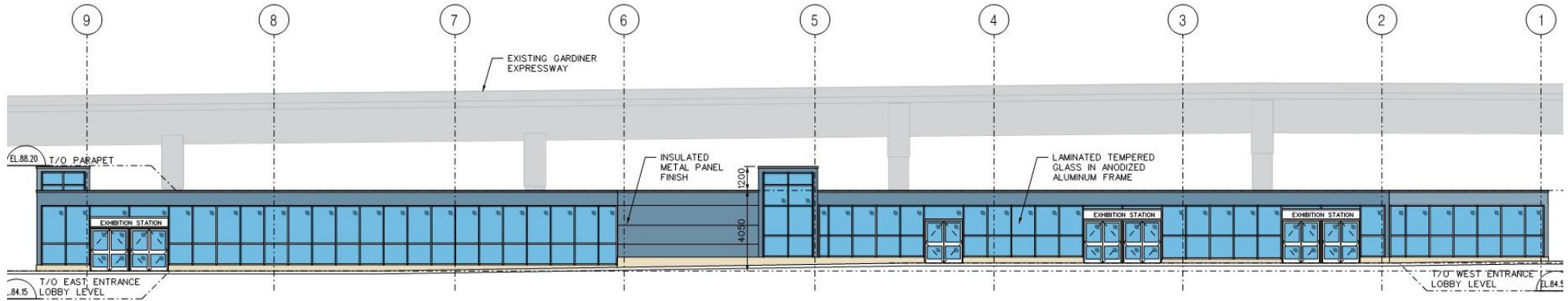
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SECTION THROUGH EAST TUNNEL  
P6-16-A203



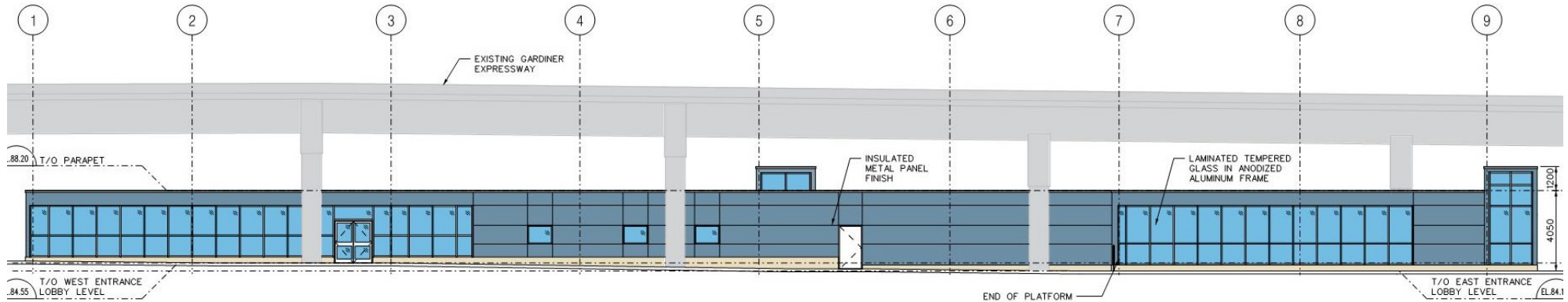
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SECTION THROUGH WEST TUNNEL  
P6-16-A203



# Exhibition Place Loop - Proposed



EVIATION  
TBOUND PLATFORM ENTRANCE BUILDING - NORTH  
P6-16-A203



EVIATION  
TBOUND PLATFORM ENTRANCE BUILDING - SOUTH  
P6-16-A203





# Exhibition Place Loop – Concerns heard from stakeholders

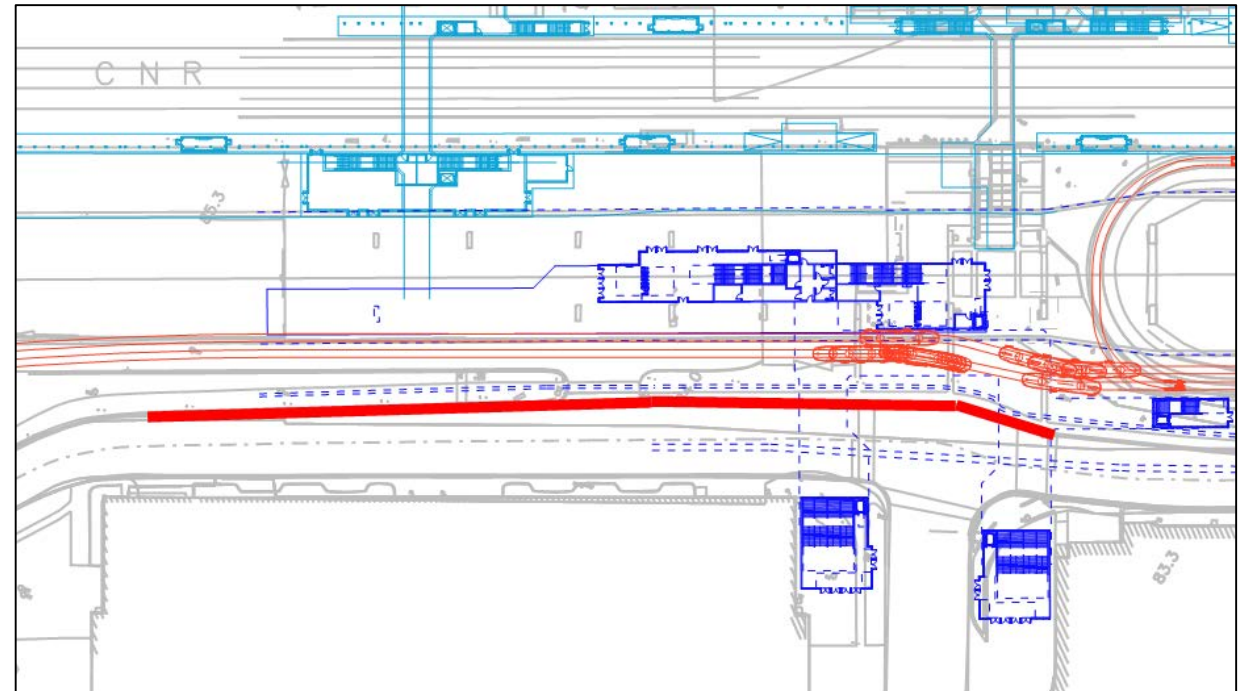
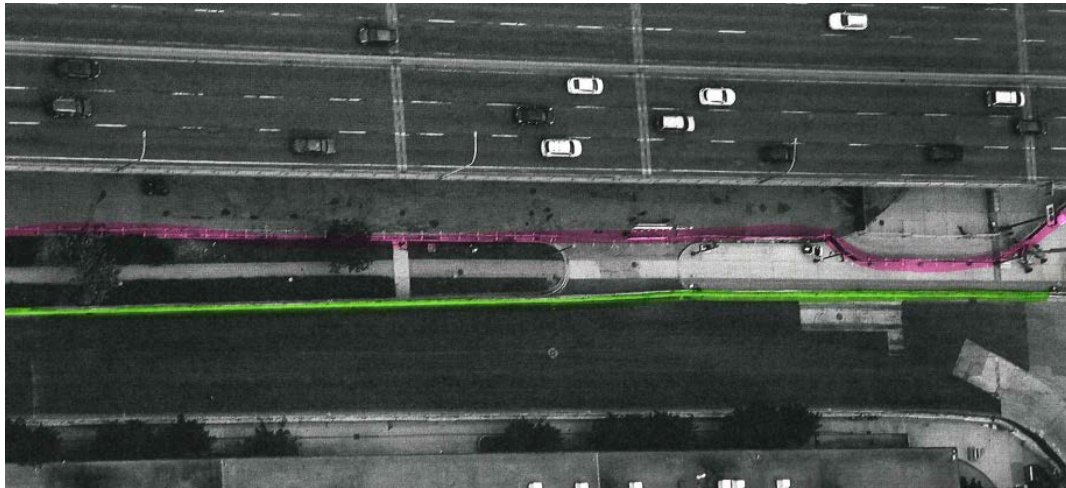
- Size of circulation area between GO accesses and TTC platform
- High volume of users during special events
- Level track crossing for daily operations
- Possible heritage issues for tunnel entrances adjacent to Horse Palace and Food Building
- Providing Indy Car clearances to allow for streetcar operations during the race
- Robust pedestrian modeling to define location, number, width and access locations for grade separated crossings (tunnels) to serve high volumes at special events



# Exhibition Place Loop – Indy Car

## Indy car safety requirements

- No-Man's Land - 10 ft from roadway curb
- Service/Emergency Access Road – 15 ft beyond the No-Man's land
  - Must be unobstructed for emergency vehicle use (fire code)
- Perimeter Fence



# Exhibition Place Loop – Pedestrian Modelling

Initial work: Reviewed the passenger flow capacity of the proposed station and tunnel design to identify potential deficiencies

3 Scenarios were examined:

- 15,000 Transit Passengers
- 25,000 Transit Passengers
- 75,000 Transit Passengers



# Pedestrian Modelling – Context

Data from: *Revised Transportation Strategy, Proposed BMO Expansion*, City of Toronto April 2015, MMM Group Limited (22,500 to 30,000)

Table 4.1 Surveyed Modal Split

Travel Mode	Modal Split	
	Surveyed by MLSE (July, 2013)	Surveyed by MMM (May 3, 2014)
Auto (Driver and Passenger)	49.2%	48.5%
Taxi	1.0%	5.8%
Drop-off/Pick-up	1.3%	3.3%
TTC Streetcar and Bus	22.5%	12.8%
GO Train	18.4%	21.2%
Walk	5.6%	7.8%
Bike	2.0%	0.5%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>

- MLS: modal split survey with TFC fans in July 2013. (40.9% transit)
- MMM: modal split survey during TFC match May 3, 2014 (34% transit)

BMO Seating Capacity – 30,000 (up to 40,000 with temporary seating)

Attendees using transit:

$$30,000 \times 41\% = 12,300 \quad 40,000 \times 41\% = 16,400$$

$$30,000 \times 34\% = 10,200 \quad 40,000 \times 34\% = 13,600$$

Table 11.1 Estimated Transit Capacity during Special Events

Route	Peak Hour Crowding Standard/Capacity (No. of Passengers)	Transit Headway (Frequency of Service)	Capacity per hour (No. of Passengers)
29 Dufferin Articulated Bus	77	3 min (20 buses/hr)	1,540
511E Bathurst Express Bus	51	5 min (12 buses/hr)	612
193 Dundas West Station Express Bus	51	5 min (12 buses/hr)	612
509 Harbourfront (streetcar)	130	3 min (20 streetcars/hr)	2,600
511 Bathurst (streetcar)	130	3 min (20 streetcars/hr)	2,600
Lake Shore GO Train - Westbound	1,944 <sup>(1)</sup>	30 min (2 trains/hr)	3,888
Lake Shore GO Train - Eastbound	1,944 <sup>(1)</sup>	30 min (2 trains/hr)	3,888
<b>Total</b>			<b>15,740</b>

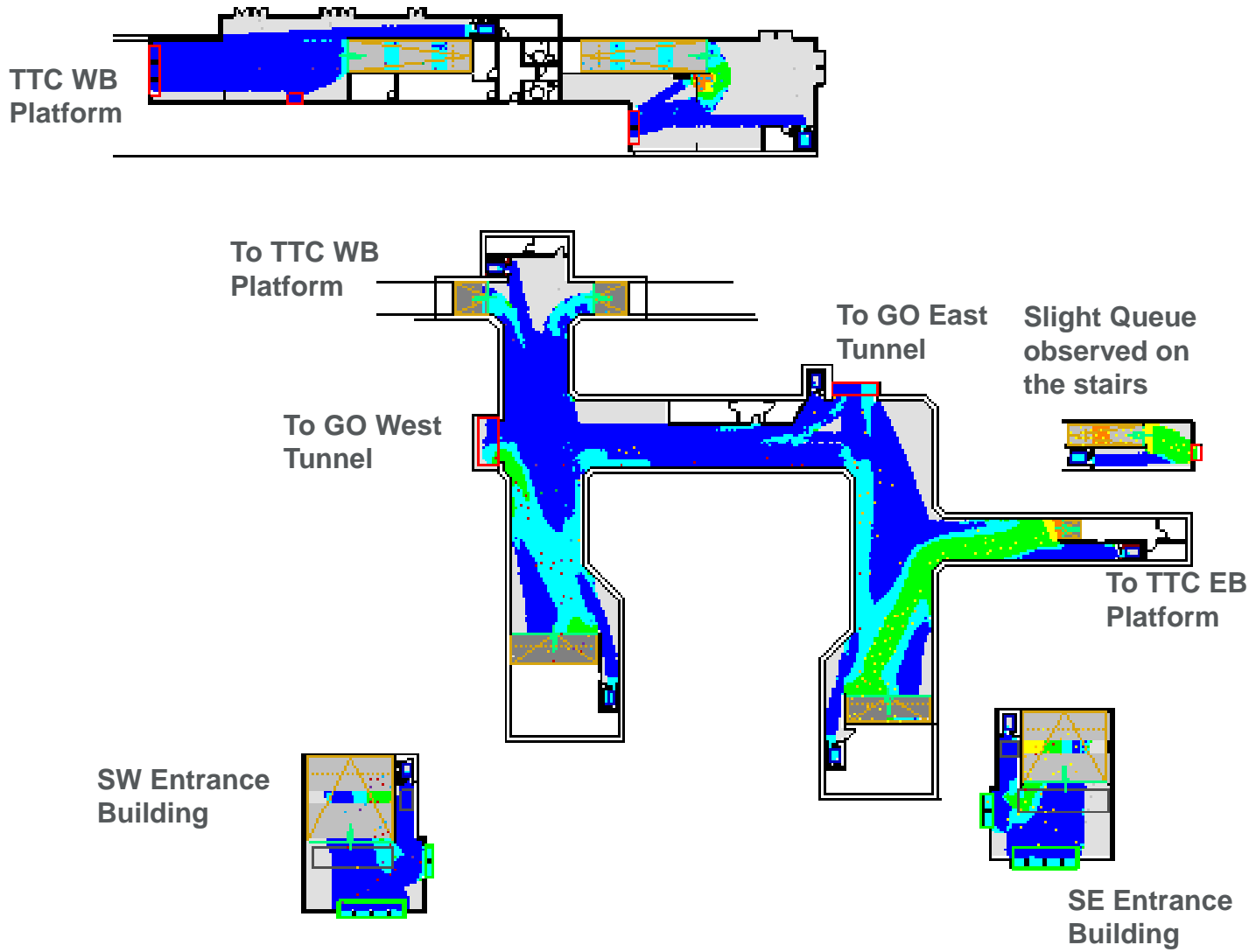
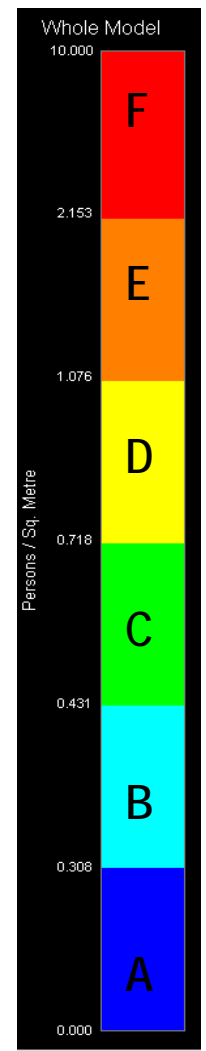
(1) Capacity of GO Train varies depending on the number of bi-level coaches on each train. 1,944 represents the maximum seated capacity per train.

Table 11.2 Projected Future Transit Ridership vs. Estimated Transit Capacity

Design Attendance Level: 22,500			
Transit Service	Modal Split (Surveyed by MLSE)	Projected Transit Ridership (No. of Passengers/hr)	Available Transit Capacity per Hour (No. of Passengers)
TTC Bus/Streetcar	22.5%	5,063	7,964
GO Train	18.4%	4,140	7,776
<b>Total</b>	<b>40.9%</b>	<b>9,203</b>	<b>15,740</b>



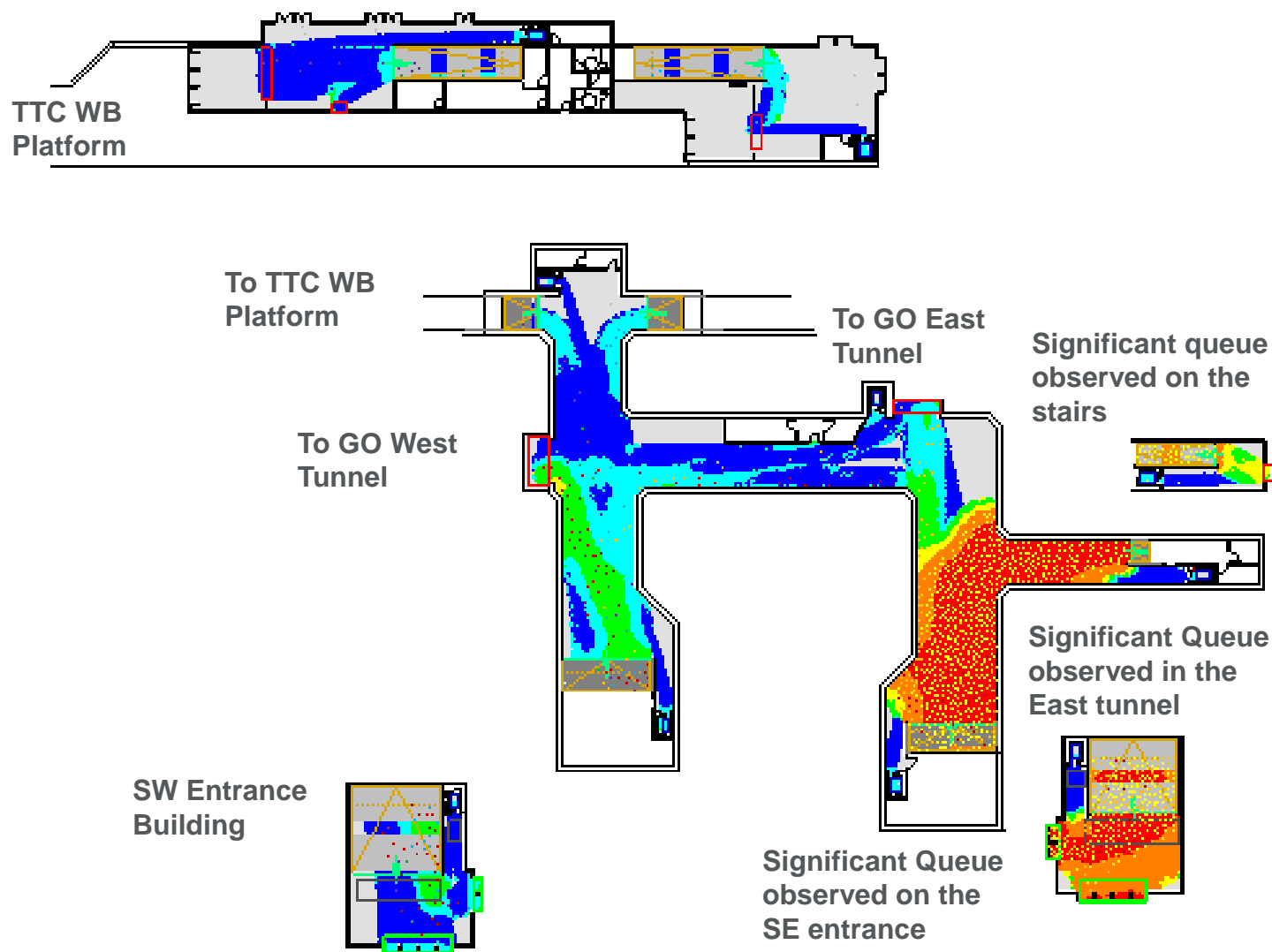
# Scenario 1 - PM Event Peak 15-min Cumulative Mean Density (Fruin Walkways)



- ❖ Scenario 1
  - The proposed station/tunnel design can accommodate 15,000 passengers during the peak hour
  - Platform Level: Minor queues are observed in front of the stairs to the north-east exit (to TTC WB platform). All other entrances and exits are operating at good conditions;
  - Tunnel Level: Minor queues are observed on the stairs leading to the TTC EB platform. Overall both sides of the tunnel operate at good LOS.



# Scenario 2 - PM Event Peak 15-min Cumulative Mean Density (Fruin Walkways)

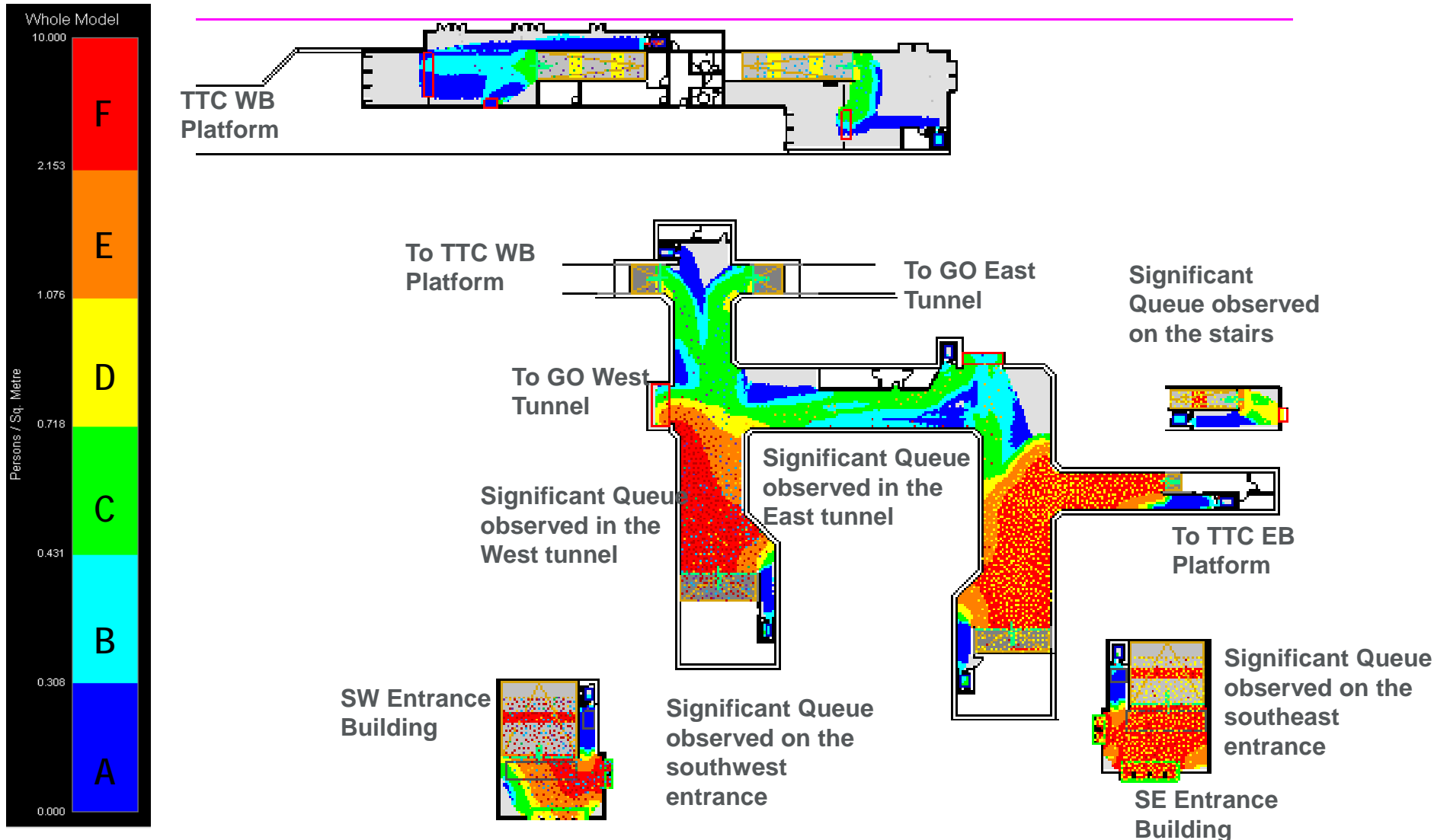


- ❖ Scenario 2
  - The east tunnel would reach its capacity when passenger volumes approach 25,000;
  - **Platform Level:** Significant queues are observed on the east exit and the southeast entrance;
  - **Tunnel Level:** Significant queues are observed at the east tunnel and the stair leading to the TTC EB Platform. The main reason for this is because the stair has reached its capacity. It is recommended to either widen the stair to accommodate more flow/capacity or to add another stair further east to distribute the passengers.



# Scenario 3 - PM Event Peak 15-min Cumulative Mean Density (Fruin Walkways)

- ❖ Scenario 3
  - Sensitivity analyses indicate that both tunnels could reach its capacity with 75,000 passengers;
  - **Platform Level:** Significant queues are observed on the east exit and the southeast entrance;
  - Significant queues also observed on the southwest entrance;
  - **Tunnel Level:** Significant queues are observed at the west tunnel and the stair which connects to the east exit. Significant queues are observed at the east tunnel due to the capacity issue;
  - The southwest entrance is predicted to reach its capacity first before the west tunnel reaches its capacity. The maximum capacity for the southwest entrance should be between 30,000-35,000.



# Next Steps

- **Complete enhanced pedestrian modeling**
- **Continue with Stakeholder outreach/coordination**
- **Optimize design elements at Exhibition Place for:**
  - Access opportunities,
  - Crossing location(s) & configuration
  - Capacity
- **Complete design at Centennial Park**
- **Complete 30% designs**
- **Update the Preliminary Design Report (fall 2019)**

