

To: City of Toronto

Date: January 23th, 2017

From: MMM Group Limited

Job No.: 3216026

Subject: Glen Road Pedestrian Tunnel - Field Investigation Memorandum

1. BACKGROUND

MMM Group Limited (MMM), on behalf of the City of Toronto (City), is undertaking a Class Environmental Assessment (EA) on the Glen Road Pedestrian Bridge. Included in this EA is a pedestrian tunnel adjacent to the bridge. This memo presents the findings of the field investigation for the pedestrian tunnel.

1.1 Structure location

The tunnel, carries pedestrian traffic under Bloor Street East, is located approximately 200 m east of Sherbourne Street in the City of Toronto, Ontario. It connects the Glen Road Pedestrian Bridge (over Rosedale Valley Road) across Bloor Street East to the Toronto Transit Commission (TTC) Sherbourne Subway Station (see Figure 1).

For the purposes of this report, and for design and construction purposes, the tunnel is considered to have a north-south alignment.

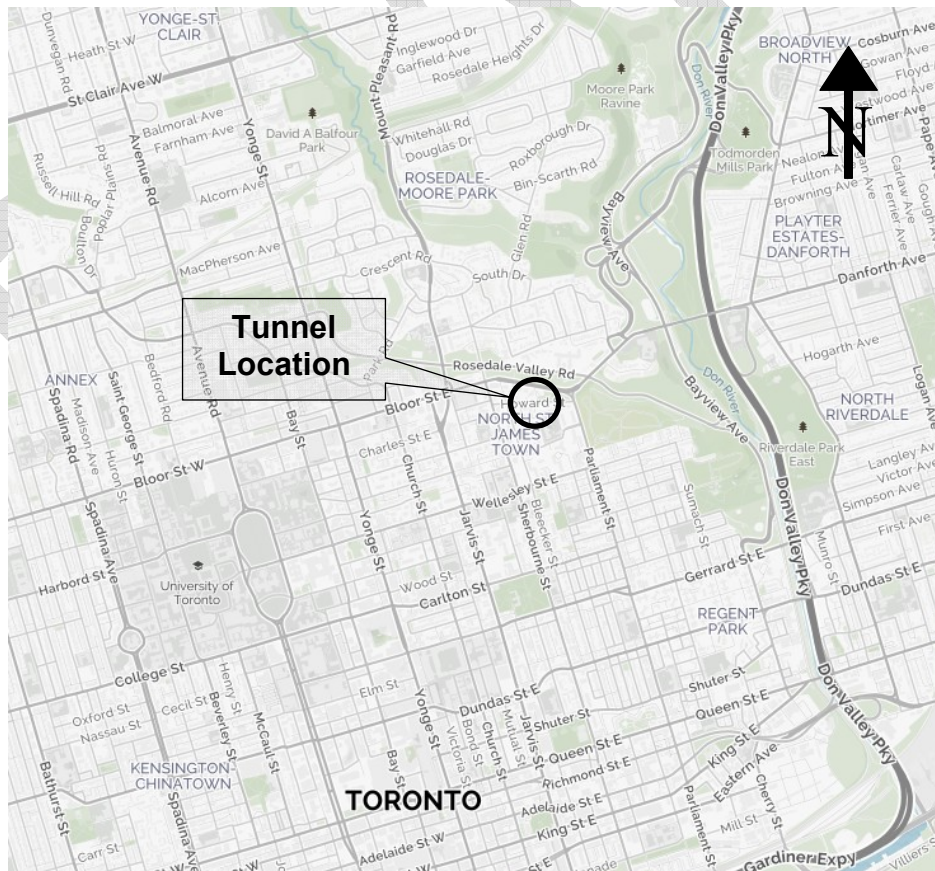


Figure 1: Glen Road Pedestrian Tunnel, (across Bloor Street) Toronto, Ontario

1.2 Existing Structure

The original structure at this location was constructed in 1918 to carry Bloor Street over Glen Road and consisted of a steel/timber tunnel with a 6.4 m clear span and a 1.7 m wide separated sidewalk. In 1951, Glen Road under Bloor Street was infilled and the structure was re-built as a 1.7 m wide by 2.6 m tall dedicated pedestrian tunnel. The existing tunnel was subsequently constructed in 1962 and consists of a 26.2 m long rigid frame reinforced concrete box structure with a 2.4 m opening height by 2.9 m clear span with 250 mm thick walls and slabs. See Figure 2 below for a general elevation of the existing tunnel's elevation looking east.

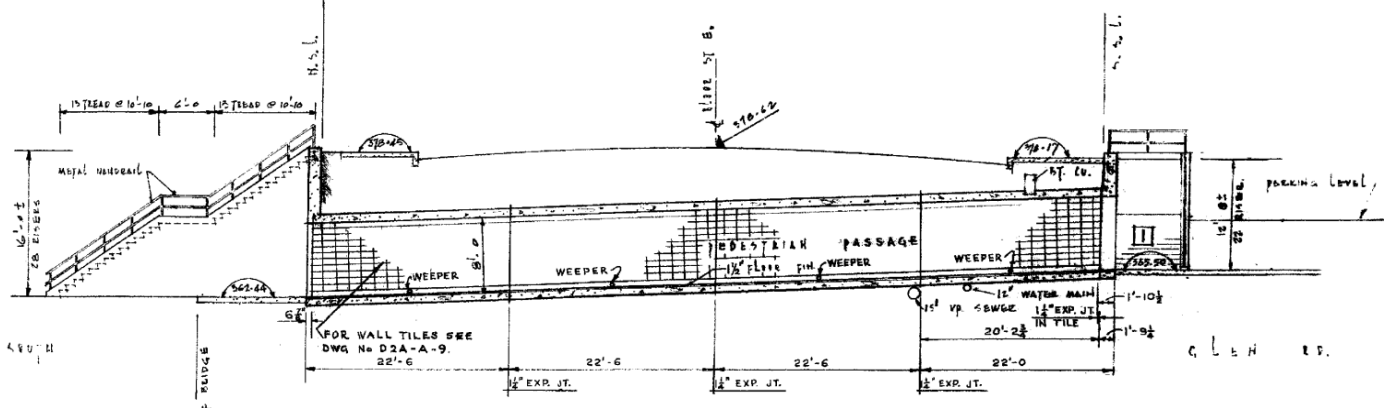


Figure 2: Tunnel Elevation (Bloor Street Section)

Original design drawings are available for the existing tunnel structure. The specified strength of concrete was 20.7 MPa and the top and sides were parged with asphalt waterproofing. The walls of the structure were originally finished with a glazed tile and have since been covered with painted murals. Figure 3 below shows the typical tunnel cross section from the original design with glazed tile finish.

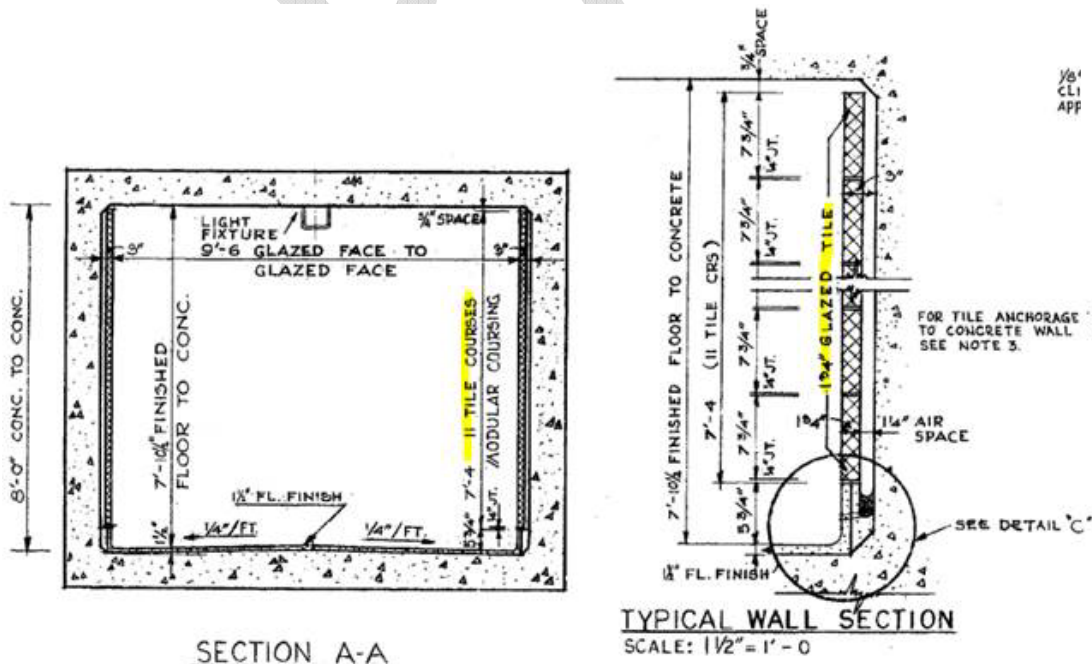


Figure 3: Tunnel Section

In 2001 the Pedestrian Bridge over Rosedale Valley Road (south of Pedestrian Tunnel) was rehabilitated. As part of the rehabilitation scope the tunnel was closed and the following repairs were completed:

- Removal and replacement of the north stairs;
- Repainting of stair railings;
- Concrete patch repairs to tunnel soffit;
- Removal and replacement of timber crib (retaining wall) above tunnel at north end; and,
- Concrete repairs to south stairs.

The existing structure is easily accessible from Glen Road (south), and from Bloor Street East as well as Glen Road (north) via the Glen Road Pedestrian Bridge. The next closest crossing of Bloor Street for pedestrians is about 190 m to the west at Sherbourne Street.

Typical photographs of the structure are included in Appendix 'A' and drawings are attached in Appendix 'B'.

1.3 Utilities

Overhead lighting is currently present along the middle of the roof slab.

From the original design drawings, it is understood that the tunnel was constructed above a 300 mm diameter watermain and a 380 mm diameter vitrified clay pip (VP) sewer. In addition, a 400 mm diameter gas main, 150 mm diameter watermain and a 300 mm diameter VP sewer run parallel to the east of the tunnel.

During the field investigation it was also observed that new watermain, hydrant and services have been installed to the south and east of the tunnel.

2. FIELD INVESTIGATION

MMM staff visited the site on January 5, 2017 to complete a field investigation and assess the existing condition of the structure. The investigation included a close-up visual assessment of material defects and performance deficiencies, in accordance with the Ontario Structure Inspection Manual, 2008 (OSIM).

A detailed delamination survey of the structure walls was not feasible due to the presence of the surficial tile wall finish.

2.1 Significant Findings

The following is a summary of the significant findings:

Soffit – is in generally good condition with localized spalling noted near the north entrance (see Photograph 15) and medium to wide cracks noted at the construction joints and parallel to the south entrance fascia (see Photograph 16).

Floor Slab – is in generally fair to good condition with localized delamination, spalling and medium cracks noted at the south entrance and scaling noted (see Photograph 23).

Walls – the reinforced concrete walls of the tunnel were unavailable for inspection due to the presence of the glazed tile finish.

Asphalt (above tunnel) – is generally in good to fair condition with unsealed cracks in the northernmost Bloor Street lane (see Photographs 7 and 8).

Railings – are generally in fair to poor condition with peeling paint, rust and scaling throughout (see Photograph 24).

South Stairs – are generally in good condition with evidence of resurfacing (see Photograph 3).

North Stairs – are generally in good condition with evidence of resurfacing. Noted the east curb has some spalled concrete from previous patches (see Photograph 4).

Retaining Walls – are generally in good to fair condition with some local spalls and delamination (see Photographs 2, 17, 21, 22 and 24).

In addition, it is anticipated that rehabilitation of the structure will impact the painted murals.

3. SUMMARY OF RECOMMENDATIONS

As outlined above, the field investigation identified local minor deterioration on the pedestrian tunnel structure and adjacent retaining walls and stairs. Based on the existing condition of the tunnel, rehabilitation is feasible.

Prepared By:

William Van Ruyven, P.Eng.
Project Engineer – Bridge Engineering
MMM Group Ltd.

Reviewed By:

Max Nie, P.Eng.
Project Manager – Bridge Engineering
MMM Group Ltd.

APPENDIX 'A'
PHOTOGRAPHS



**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 1: North Entrance

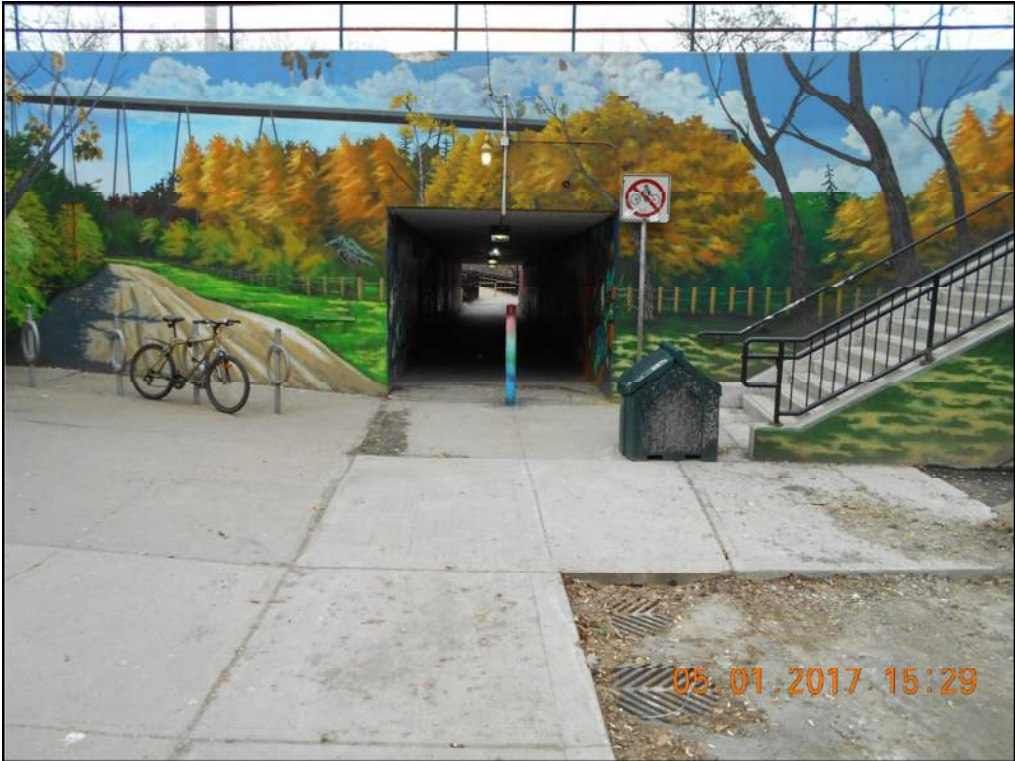


Photo 2: South Entrance

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 3: Stairs from South Entrance to Bloor Street



Photo 4: Stairs from North Entrance to Bloor Street

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 5: Typical Tunnel Barrel



Photo 6: Typical Light Fixture

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 7: Asphalt Wearing Surface above Tunnel (looking south)



Photo 8: Asphalt Wearing Surface above Tunnel (looking north)

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 9: Northeast Embankment and Retaining Wall



Photo 10: Northwest Embankment and Retaining Wall

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 11: TTC Vent Shaft to Southeast of Tunnel



Photo 12: Sherbourne Subway Entrance (Southwest of Tunnel)

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 13: Looking West above the Tunnel (on Bloor Street, Fire Station Noted)



Photo 14: Looking East above the Tunnel (on Bloor Street)

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 15: Spall at North Entrance Soffit



Photo 16: South Entrance Soffit

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 17: Crack and Spall in South Retaining Wall



Photo 18: Spalling of Patch on North Stair Curb

**Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario**



Photo 19: Glen Road at South Entrance



Photo 20: Pedestrian Bridge North of Tunnel

Glen Road Pedestrian Tunnel
Under Bloor Street, Toronto, Ontario



Photo 21: North Stairs Wall (Newer Concrete Curb)

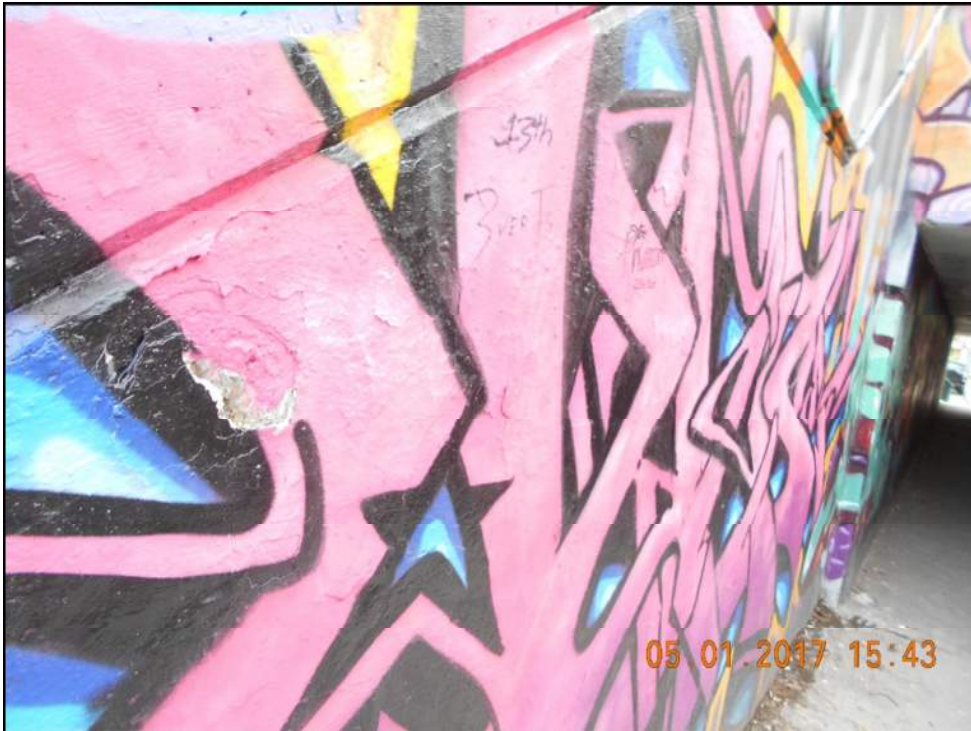


Photo 22: North Stairs Wall (Original Concrete Curb)



Photo 23: South Entrance Floor Slab



Photo 24: Construction Joint in South Retaining Wall and Typical Railing Condition

**APPENDIX 'B'
DRAWINGS**

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