REPORT FOR ACTION

Implementation Update – Safety Barriers Along Leaside Bridge

Date: October 15, 2025
To: Infrastructure and Environment Committee
From: Acting General Manager, Transportation Services and Chief Engineer and Executive Director, Engineering and Construction Services
Wards: 14 - Toronto Danforth, 15 – Don Valley West

SUMMARY

The Leaside Bridge, also known as the Millwood Overpass Bridge (Structure ID 105), has been identified as a high-risk location for suicide. Research indicates that implementing safety barriers and other supporting intervention measures on bridges can significantly reduce the risk of suicide deaths.

In April 2025, a report on the outcome of a study reviewing the feasibility of implementing a permanent barrier on the Leaside Bridge to mitigate suicide attempts was brought forward to Infrastructure and Environment Committee. In response to that report, City Council directed that Transportation Services and Engineering & Construction Services, in consultation with Toronto Public Health, investigate options to accelerate the installation of barriers, as well as other interim safety measures for the Leaside Bridge.

In response to the direction from City Council, this report identifies interim safety measures, timelines and costs, to address suicide prevention for the Leaside Bridge. The report also provides an update on the permanent barrier design and structural work, including updated procurement and installation timelines and costs.

HELP IS AVAILABLE

If you or someone you know is at risk of suicide, seek help right away. Support is available from experienced professionals who are ready to listen and assist.

In an emergency: Call **911** if you are in immediate danger, experiencing a crisis, or need urgent medical assistance.
For suicide support: Call or text **9-8-8** for free, 24/7, and confidential support.
For other services: Call 211 to be connected to mental health and social services.
For more resources: Visit the City of Toronto's Mental Health Resources page.
You are not alone—help is just a call, text, or click away

MEDIA GUIDELINES FOR REPORTING ON SUICIDE

A substantial body of research suggests that media reports about people who have died by suicide, as well as the topic of suicide in general, can influence vulnerable people and is associated with higher subsequent rates of suicide. Emerging evidence also suggests that reports about people overcoming suicidal crises may lower suicide rates.

RECOMMENDATIONS

The Acting General Manager, Transportation Services and Chief Engineer and Executive Director, Engineering and Construction Services recommend that:

1. Infrastructure and Environment Committee request that the General Manager, Transportation Services and the Chief Engineer and Executive Director, Engineering Construction Services continue to proceed with the following actions as set out in this report:

a) a competitive procurement process for the installation of the interim safety barrier Option 3B – Curved Fence for immediate implementation on the Leaside Bridge;

b) undertake further expert consultation for other interim measures such as updated signage, in consultation with Toronto Public Health; and

c) permanent barrier design and installation as part of the next major state-of-good-repair project for the bridge, currently programmed for 2037.

FINANCIAL IMPACT

The recommended interim barrier Option 3B – Curved Fence is estimated to cost approximately $2.4 million.

Funding is included in the Transportation Services 2025-2034 Capital Budget and Plan. The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial implications.

DECISION HISTORY

On April 23 and 24, 2025, City Council directed the General Manager, Transportation Services and the Chief Engineer and Executive Director, Engineering and Construction Services, to investigate options to accelerate the installation of barriers and related construction on the Leaside Bridge and, in consultation with Toronto Public Health, to report to the Infrastructure and Environment Committee with an update on the permanent design and structural work, including updated procurement timelines, plans for further interim safety measures, potential costs and timelines for installation.
https://secure.toronto.ca/council/agenda-item.do?item=2025.IE20.8

On July 24 and 25, 2024, City Council requested the General Manager, Transportation Services report to the Infrastructure and Environment Committee by the first quarter of 2025 on the feasibility of implementing a permanent barrier on the Leaside Bridge (ID 105) to improve public safety and mitigate suicide attempts.
https://secure.toronto.ca/council/agenda-item.do?item=2024.IE15.9

In May 2018, the Executive Committee adopted for information, a report from the Medical Officer of Health on Interventions to Prevent Suicide from Bridges: An Evidence Review and Jurisdictional Scan. This report provides an overview of the burden of suicide deaths from bridges in Toronto, the evidence of the effectiveness of interventions to prevent suicide from bridges, as well as information on interventions used by other jurisdictions.
https://secure.toronto.ca/council/agenda-item.do?item=2018.EX34.16

COMMENTS

The Leaside Bridge, also known as the Millwood Overpass Bridge (Structure ID 105), is an eleven-span Warren truss bridge, with a length of 490 metres, supported by concrete piers that carries Millwood Road over the Don Valley Parkway, Don River and GO Transit Bala Subdivision railway. The bridge was originally constructed in 1927, rehabilitated in 1955, widened in 1968, and further rehabilitated in 1983 and 2004. A location map is provided in Appendix A1 and a photo of the bridge is shown in Appendix A2.

The City's approach to the installation of barriers was identified in 2018, through the Suicide Prevention Through Bridge Modification report, which outlined that high-risk locations for suicides would be reviewed for the feasibility of safety barrier installation, and other interventions, in conjunction with the Transportation Services Capital Program state-of-good repair bridge rehabilitation program.

Since 2018, barriers have been installed in conjunction with the Glen Road Pedestrian Bridge over Rosedale Valley Road (Structure ID 249) Rehabilitation Project (2021-2025) and designed for the Charles Hiscott Bridge carrying Overlea Boulevard over the Don River (Structure ID 315) with planned installation as part of the Transportation Services 2025-2034 Capital Program.

1. Input from Toronto Public Health

Toronto Public Health provided support to Transportation Services and Engineering & Construction Services by:

- Assessing the suitability of an interim bridge barrier option for the Leaside Bridge from a public health perspective; and,
- Providing an updated evidence summary on the effectiveness of additional measures to improve the safety of the Leaside Bridge, such as signage, crisis phones, and surveillance.

To inform their input, Toronto Public Health also undertook consultations with experts in mental health, suicide prevention and crisis response, within the City and externally. Participant organizations in the expert consultation group included:

- Centre for Addiction and Mental Health;
- 988 Suicide Crisis Helpline;
- Bell Let's Talk Mental Health Initiative;
- Distress Centres of Greater Toronto;
- Sunnybrook Health Sciences Centre;
- Department of Psychiatry, University of Toronto;
- Toronto Paramedic Services;
- Toronto Police Service; and
- Toronto Transit Commission, Safety & Environment Department.

1.1. Effectiveness of Different Bridge Barrier Designs and Safety Features

There have not been any systematic reviews of the effectiveness of different types of bridge barrier designs and safety features. However, reviews of bridge barriers have shown that effective barriers have taken many different forms. The nature of the bridge, its surroundings, and expert and community input have informed bridge barrier designs.

Overall, the evidence suggests two general criteria that must be met for a barrier to be most effective:

1. The barrier should span the entire bridge; and
2. The barrier should be of sufficient height and form to make it difficult to climb.

1.2. Use of Additional Bridge Suicide Prevention Measures

There is limited systematic research of the effectiveness of signage, crisis phones, and surveillance measures in preventing suicide or in achieving broader outcomes such as facilitating help seeking and bystander involvement. There is some evidence from individual studies that these measures may help prevent suicide deaths and may have the added benefit of guiding vulnerable individuals towards mental health services.

The expert consultation group agreed that any measures that help buy time to facilitate assistance to individuals in distress on a bridge are important. Combining a barrier with help-seeking measures, such as signage and crisis phones, would help with prevention efforts. Camera surveillance was not identified as a viable short-term measure due to cost and limitations in currently available technology.
Several issues for consideration were raised by experts and are recommended for further consultation with experts in relation to signage and crisis phones, such as:

- Signage and phones placement
- Signage content
- Use of the national Suicide Crisis Hotline (988) (https://988.ca/) and or the local helpline, 408-HELP (https://www.dcogt.com/408-helpline/).

The local helpline is currently promoted on existing signage, as shown in Appendix B1, at all four sidewalk approaches, leading to the Leaside Bridge and operated by the Distress Centres of Greater Toronto.

An example of signage developed by the national Suicide Crisis Hotline (988) for use at a site in Norfolk County is shown in Appendix B2. Similar signage would be considered for implementation on the Leaside Bridge, in combination with an interim safety barrier.

1.3. Media Communications

An important consideration raised by the expert consultation group was the impact of media reporting on the incidence of suicide, as has been observed in past studies showing increased suicide rates associated with media coverage.

Experts noted the value of raising media awareness of the importance of sensitive and responsible reporting. Sunnybrook Health Sciences Centre has organized media fora in the past to promote responsible reporting on suicides. The Canadian Psychiatric Association has published a Policy Paper for Media Guidelines for Reporting of Suicide (https://www.cpa-apc.org/wp-content/uploads/Media-Guidelines-Suicide-Reporting-EN-2018.pdf). The Policy Paper indicates that:

> *A substantial body of research suggests that media reports about people who have died by suicide, as well as the topic of suicide in general, can influence vulnerable people and is associated with higher subsequent rates of suicide. Emerging evidence also suggests that reports about people overcoming suicidal crises may lower suicide rates.*

In consideration of this issue, these guidelines will continue to be shared with media contacting the City on this report and the installation of the interim barrier.

1.4. Centre for Addiction and Mental Health (CAMH) Safety Barrier Consultation

As a follow-up to the Toronto Public Health group expert consultations, Transportation Services and Engineering & Construction Services met with staff of the CAMH Redevelopment Office to discuss CAMH experience with the implementation of safety barriers on the Toronto CAMH campus.

CAMH has implemented safety barriers in outdoor areas including balconies and terraces, using structural steel frames with combinations of glass panels and steel mesh panels. A photo of barriers used at the Toronto CAMH campus is shown in Appendix B3. Observations of the elements of the CAMH safety barrier elements include:

- Panel heights vary depending on the application (e.g. balcony versus terraces);
- Setback of 3 m from the panel to adjacent amenities and features (e.g., tables, raised planters, etc.) to ensure the functionality of the panel height;
- Any hardware used on the inside of panels (where people would be present) are near flush, to minimize foot and hand holds that could assist in climbing;
- Some panels contain horizontal elements at the top, to further limit the potential for climbing over the top of the barrier; and
- Gaps at the end of panels are eliminated through (near) flush mounting with the adjacent building/built form.

While the implementation of the CAMH safety barriers would not be applicable to the Leaside Bridge, due to load and capacity limitations (i.e., dead weight and wind load),

many of the principles used in their design can be considered for a safety barrier on the Leaside Bridge.

2. Interim Safety Barrier Options

To address immediate public safety concerns, it is recommended to implement an interim safety barrier solution. An interim safety barrier will provide immediate protection and reduce risks, safeguarding the public until a permanent safety barrier can be implemented as part of the next major bridge structure rehabilitation project.

On behalf of Transportation Services, Engineering & Construction Services engaged R.V.A. Associates Limited (RVA) to conduct a comparative evaluation of several practical short-term barrier options that would:

- Enhance public safety using principles of Crime Prevention Through Environmental Design (CPTED);
- Deter climbing through use of height, structural and surface features;
- Minimize visual impact on the surrounding environment and community;
- Ensure resilience against weather, potential tampering, and general wear; and
- Meet all relevant safety, accessibility, and municipal guidelines.

Three barrier types were considered as follows:

Option 1 – Wooden Hoarding consisting of 2.44 m (8 foot high X 4 foot wide) high solid plywood panels, mounted vertically on a timber frame.

Option 2 – Chain-Link Fence consisting of woven steel mesh mounted on steel posts. Chain-link fences are typically 1.8 m (6 foot) high with 50mm x 50mm large mesh openings.

Option 3 – Welded Wire Mesh Security Fence consisting of 2.44 m (8 foot) high rigid steel panels with narrow rectangular openings approximately 13 mm wide (1/2 inch), securely mounted to vertical posts and directly mounted on the parapet wall.

The three options were reviewed in consideration of resistance to climbing, additional wind load on the bridge, installation complexity, visual impact, and durability, with a summary of the findings provided in the Table 2.1, below.

Table 2.1 – Summary of Interim Options Criteria Findings

Option	**Resistance to Climbing**	**Additional Wind Load on Bridge**	**Installation Complexity**	**Visual Impact**	**Durability**
Wooden Hoarding	High	High	Moderate	High	Low

Option	Resistance to Climbing	Additional Wind Load on Bridge	Installation Complexity	Visual Impact	Durability
Chain Link Fence	Moderate	Moderate	Low	Moderate	Moderate
Welded Wire Mesh Fence	High	Low to Moderate	Moderate	Low	High

In addition, Toronto Public Health recommended the interim barrier span the entire bridge span, and the barrier be of a height to hinder climbing. All the above options facilitate these requirements to varying degrees.

2.1. Preferred Interim Safety Option

Two variants of the welded wire mesh fence system, Option 3, were further evaluated as interim barrier options:

1. Option 3A – Vertical Welded Wire Mesh Fence
2. Option 3B – Curved Welded Wire Mesh Fence

A comparative assessment of these two variants considered the following key criteria:

- Construction cost;
- Climb resistance and wind load performance;
- Impact on sidewalk width, clearance, and operations;
- Ease of installation and construction timeline;
- Access to bridge infrastructure (e.g., expansion joints, lamp posts);
- Visual impact and aesthetic compatibility;
- Durability, coating, and graffiti resistance; and
- Availability of spare parts and ease of future maintenance.

Both barrier options include a 10-year warranty on material, and an expected service life of 25 years.

Based on the evaluation criteria and comparative analysis, the recommended interim safety barrier is Option 3B: Curved Welded Wire Mesh Fence, as it provides:

- Superior anti-climb performance and reduced wind loading than Option 3A, due to the curved profile;
- Superior anti-cut performance due to stainless steel wire mesh construction;
- A clean, modern appearance with lower visual intrusion; and
- High durability and low maintenance.

An example of a similar safety barrier installation exists on the City's pedestrian bridge, 'Puente de Luz' (Bridge of Light), Structure ID 941, as shown in Appendix B5. A sketch of the curved welded wire mesh fence is shown in Appendix B6.

Following procurement, installation of this type of interim safety barrier is anticipated to take 4-6 months to construct, at a cost of $2.4 million.

3. Permanent Safety Barrier Options and Selection

On behalf of Transportation Services, Engineering & Construction Services requested R.V.A. Associates Limited (RVA) to conduct a comparative evaluation of the two proposed permanent safety barrier systems that had been short-listed for further evaluation from their earlier Feasibility Study Report:

1. Option 6 Angled Mesh-Link Frame as shown in Appendix C-1; and,
2. Option 7 Angled Tubes as shown in Appendix C-2.

Both types of these safety barriers have been considered and implemented as part of other state-of-good-repair bridge rehabilitation works in the City of Toronto.

Angled Mesh-Link Frames was implemented on the Glen Road Pedestrian Bridge over Rosedale Valley Road (Structure ID 249) Rehabilitation Project (2021-2025) as shown in Appendix C-3.

Angled Tubes have been designed for the Charles Hiscott Bridge carrying Overlea Boulevard over the Don River (Structure ID 315), with planned installation included in the bridge rehabilitation project planned for implementation in 2026-2028. As shown in example in Appendix C-4 this Angled Tube System was installed on Burgoyne Bridge in St. Catherines.

RVA's technical assessment focused on key factors, including:

- Bridge Strengthening
- Vibration Performance
- Durability
- Winter Hazards
- Maintenance
- Construction Duration
- Existing Conditions of Sidewalks and Parapet Walls
- Cost

RVA recommends Option 7 – Angled Tubes for Leaside Bridge, as this option demonstrates advantages in cost, construction duration, maintenance, and winter hazard mitigation. Both options perform similarly in terms of vibration performance and structural impact. A summary of the comparative evaluation is presented in Table 3.1, below.

As the permanent barriers would be designed to remain in place for the duration of the remaining functional life of the bridge, it would be necessary to complete extensive state-of-good-repair work on those elements to receive and support the permanent barriers. This includes patch repair, or replacement of deck, sidewalk, and parapet components. Due to cost and traffic impacts this work is best sequenced to be completed with the next major state-of-good-repair project for the bridge, currently programmed for 2037.

Estimated construction costs are in the magnitude of $8-9 Million, requiring lane reductions on the bridge through the anticipated 8 to 12-month construction period. The RVA's technical memorandum concludes that both permanent options will not require additional strengthening of the structural steel elements.

Table 3.1 – Summary of Comparative Evaluation of Permanent Barrier Options 6 and 7

Criteria	Option 6 – Angled Mesh-Link Frame	Option 7 – Angled Tubes	Preferred Option
Bridge Structural Steel Strengthening	No strengthening required	No strengthening required	Both
Vibration Performance	Slight exceedance, 2.3 mm over limit	Slight exceedance, 2.3 mm over limit	Both
Durability	High	Moderate	Option 6
Winter Hazards	Moderate – High	Minimal	Option 7
Maintenance	Moderate	Low – Moderate	Option 7
Construction Duration	~ 12 months (2 construction seasons)	~ 8 months (1 construction season)	Option 7
Construction Cost	$8.4M	$7.6M	Option 7
80-Year Life Cycle Cost	$9.4M (NPV)	$8.5M (NPV)	Option 7

Additional consultation with key partners would be undertaken as part of the detailed design process to determine the most appropriate solution for implementation as part of the next major state-of-good-repair project for the bridge, currently programmed for 2037.

4. Summary of Preferred Options and Next Steps

To facilitate the installation of the permanent barriers extensive repair work is required to the deck, sidewalk, and parapet elements supporting the barrier. Due to cost and traffic impacts this work is best sequenced to be completed with the next major state-of-good-repair project for the bridge, currently programmed for 2037. Transportation Services and Engineering & Construction Services would consult with key partners to refine the recommended design prior to construction.

To address the immediate public safety concerns it is recommended to install an interim barrier system consisting of Option 3B – Curved Welded Wire Mesh Fencing. Interim safety barriers will provide immediate protection and reduce risks, safeguarding the public until the full rehabilitation and permanent barrier installation can be completed.

Table 4.1 provides a summary of procurement timelines, costs, and comments for both the interim and permanent barriers.

TABLE 4.1 – Summary of Barrier Procurement and Installation Timelines and Costs

Description of Barrier Type	Approximate Cost ($millions)	Procurement Phase and Design Timelines	Installation Timeline	Comment
Interim Barrier				
Option 3B - Curved Welded Wire Mesh Fence	$2.4	Design Phase: 2 months. Conventional Tender for Construction: 16 weeks.	Four to six (4 - 6) months	Cost includes design, Contract Administration and construction.
Permanent Barrier				
Alternative 6 - Angled Mesh-Link Frame	$8.9	Design Phase: 12 months. Conventional Tender for Construction: 16 weeks.	Twelve (12) months (in approximately 2037)	Cost includes design, Contract Administration and construction.
Alternative 7 - Angled Vertical Tubes	$8.0	Design phase: 12 months. Conventional Tender for Construction: 16 weeks.	Eight (8) months (in approximately 2037)	Cost includes design, Contract Administration and construction.

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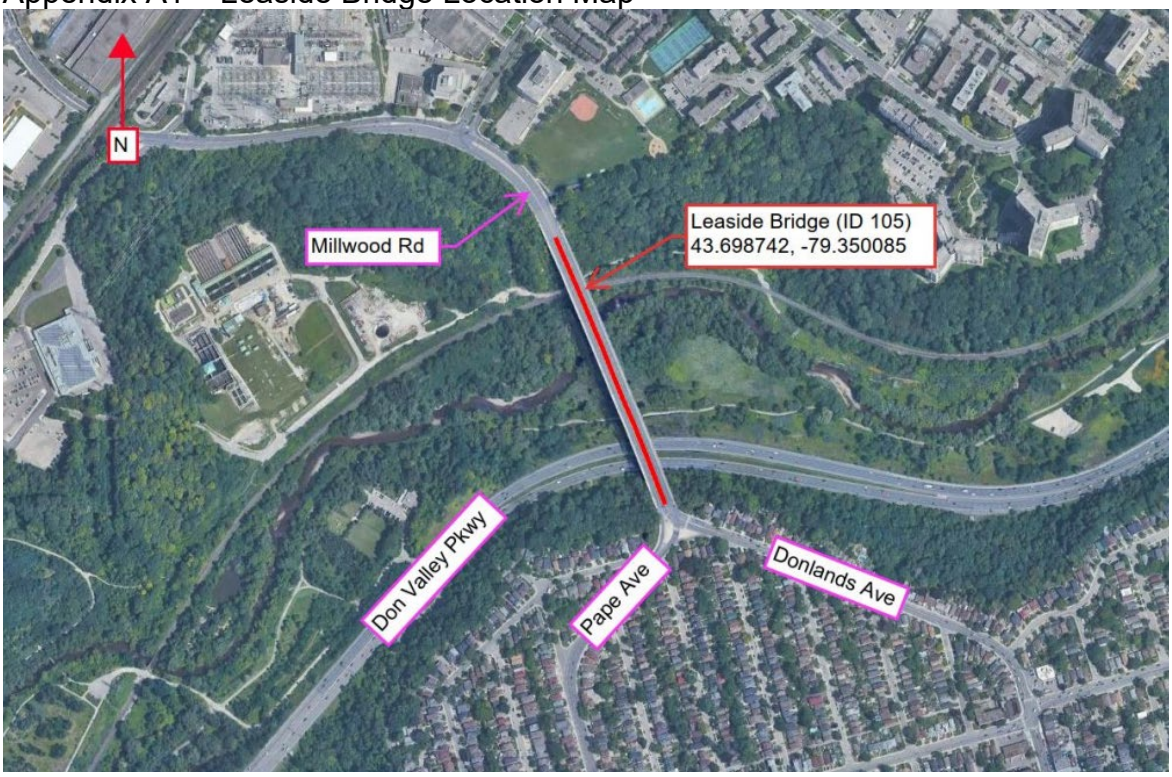
ATTACHMENTS

Appendix A1 – Leaside Bridge Location Map
Appendix A2 – Leaside Bridge Photo

Appendix B1 – Photo of Signage on South-East Sidewalk approach to Leaside Bridge
Appendix B2 – Example of National Suicide Crisis Line 988 Signage (used in Norfolk County, Ontario)
Appendix B3 – Photo of Safety Barriers used at CAMH
Appendix B4 – Example of Rampart 358 Welded Wire Fence
Appendix B5 – Example of Mesh Panel on Puente de Luz/Bridge of Light (Structure ID 941)
Appendix B6 – Sketch Option 3B – Curved Welded Wire Mesh Fence

Appendix C1 – Permanent Barrier, Alternative 6 - Angled Mesh-Link Frame
Appendix C2 – Permanent Barrier, Alternative 7 - Angled Vertical Tubes
Appendix C3 – Example of Alternative 6, Angled Mesh Frame Barrier on the Glen Road Pedestrian Bridge over Rosedale Valley Road (Structure ID 249)
Appendix C4 – Example of Alternative 7, Angled Vertical Tubes Barrier on the Burgoyne Bridge in St. Catherines, Ontario

Appendix A1 – Leaside Bridge Location Map

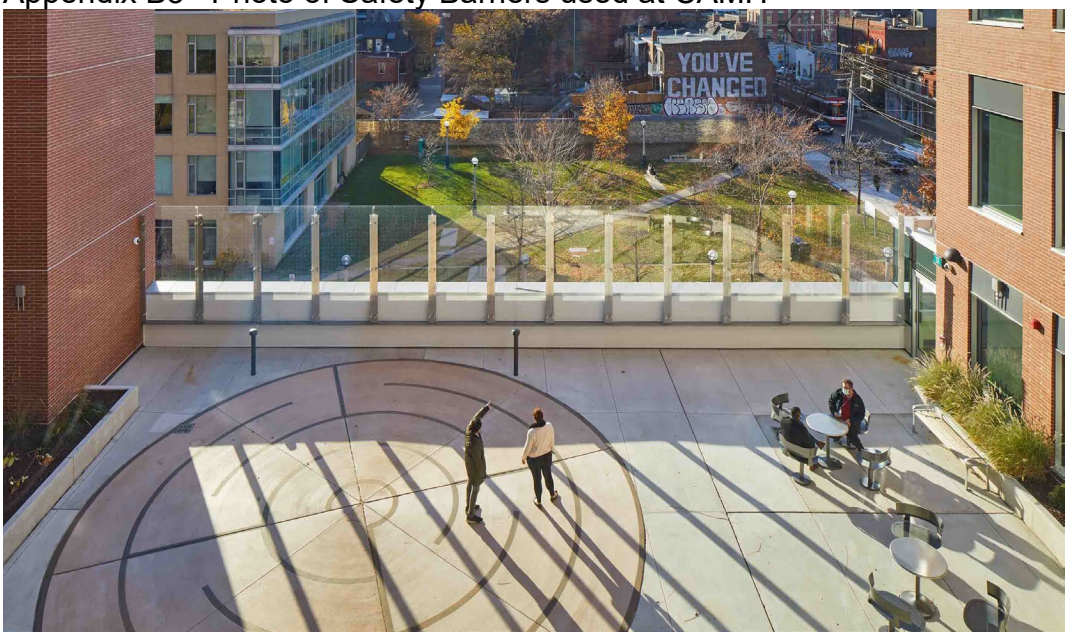


Appendix A2 – Leaside Bridge Photo

Appendix B1 – Photo of Signage on South-East Sidewalk approach to Leaside Bridge

Appendix B2 – Example of National Suicide Crisis Line 988 Signage (used in Norfolk County, Ontario)

Appendix B3 –Photo of Safety Barriers used at CAMH



Source: https://www.stantec.com/en/projects/canada-projects/c/camh-phase-1c

Appendix B4 – Example of Rampart 358 Welded Wire Fence

Source: https://www.wallaceperimetersecurity.com/welded-wire/rampart-358?product-gallery

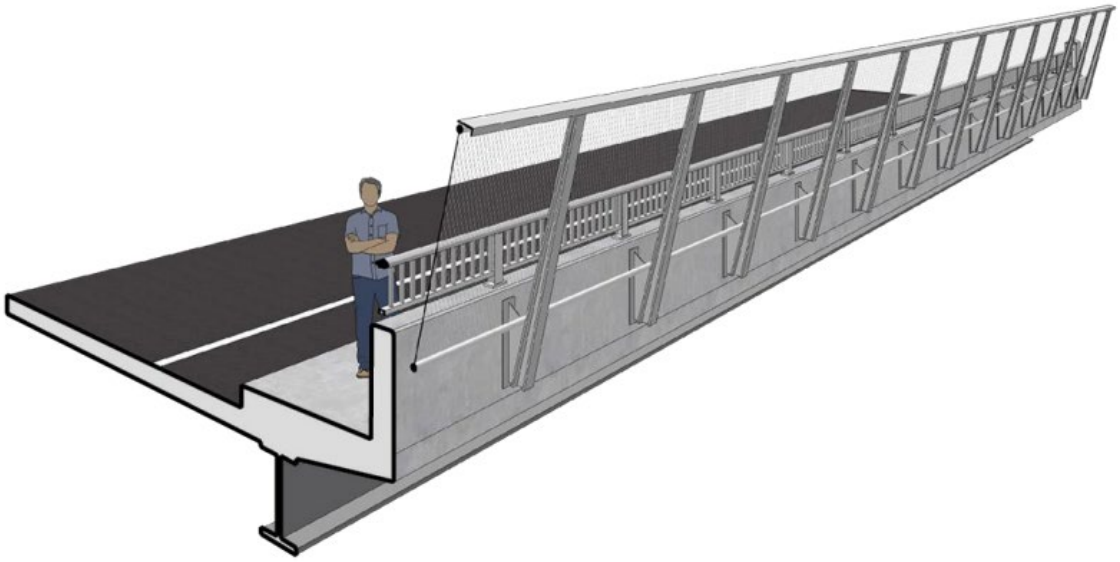
Appendix B5 – Example of Mesh Panel on Puente de Luz / Bridge of Light (Structure ID 941)

Source: City OSIM Inspection images, 2018

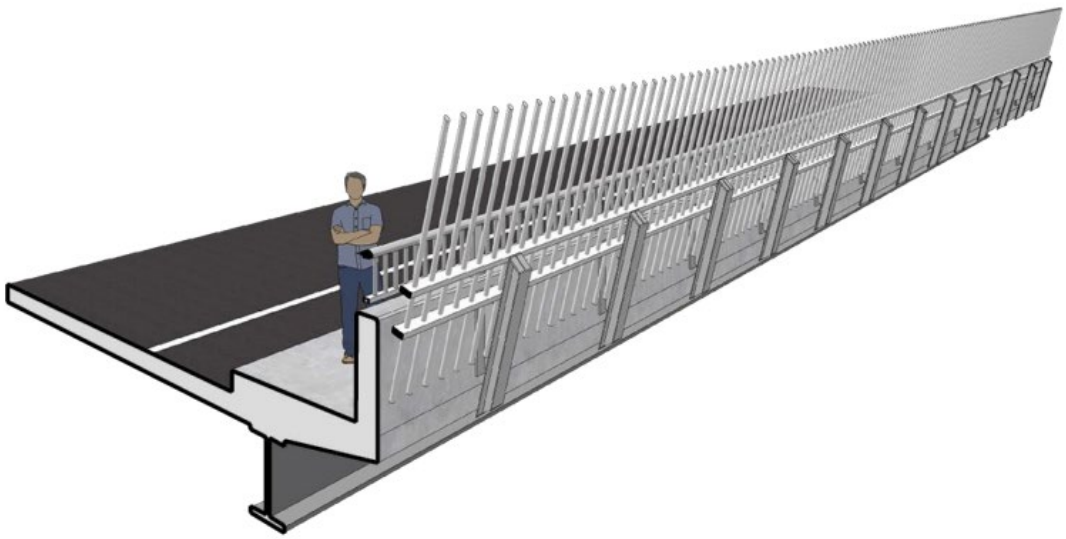
Appendix B6 – Sketch Option 3B – Curved Welded Wire Mesh Fence

https://www.cochraneglobal.com/clearvu-curve/

Appendix C1 – Permanent Barrier, Alternative 6 - Angled Mesh-Link Frame



Appendix C2 – Permanent Barrier, Alternative 7 - Angled Vertical Tubes



Appendix C3 – Example of Alternative 6, Angled Mesh-Link Frame on the Glen Road Pedestrian Bridge over Rosedale Valley Road (Structure ID 249)

Appendix C4 – Example of Alternative 7, Angled Vertical Tubes Barrier on the Burgoyne Bridge in St. Catherines, Ontario

https://commons.wikimedia.org/wiki/File:Burgoyne_Bridge_guardrails.jpg#/media/File:Burgoyne_Bridge_guardrails.jpg