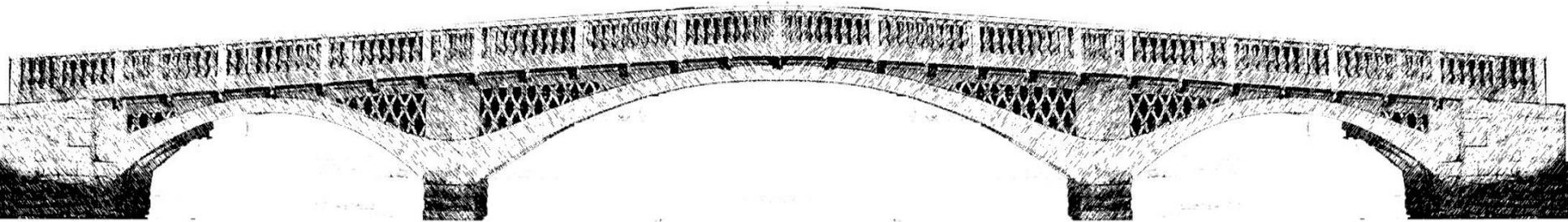


BRIDGE IMPROVEMENT PRESENTATION

CENTRE ISLAND BRIDGE



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University of Toronto

Recap

- ▣ A triple **arch** deck bridge
- ▣ Purposes/Uses
 - Pedestrians to have access to Amusement Park and rest of the Island
 - Only bridge that allows Island Vehicles on
 - Passageway for boats to cross underneath
- ▣ Design for...
 - Safety
 - Accessibility

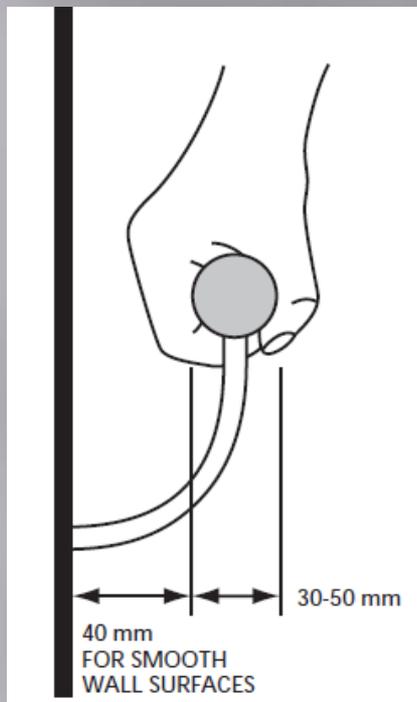
Improvements in Accessibility

- ▣ Handrails
- ▣ Lighting for pedestrians

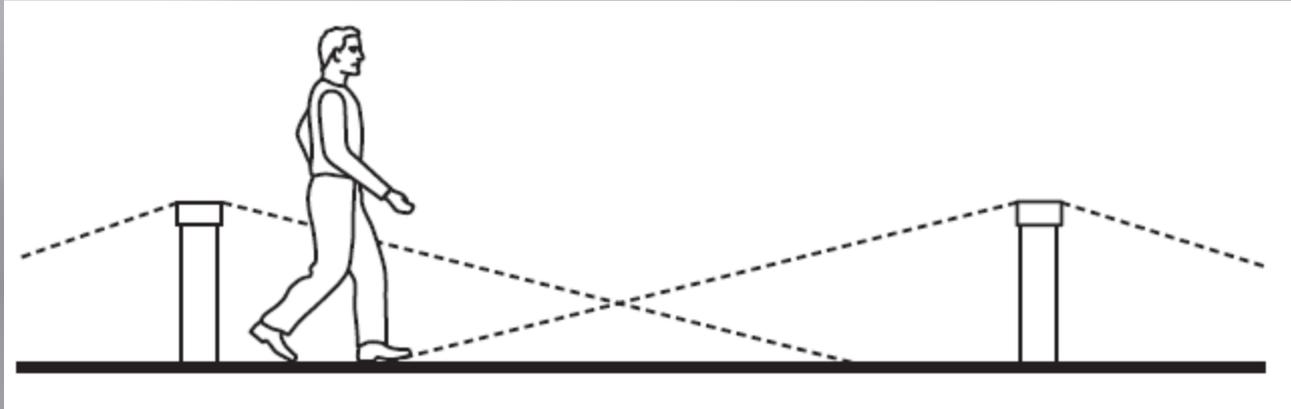
Handrails

- Install handrails on both sides
 - 50mm in diameter, along the barrier
 - Smooth surface, easy to grasp
 - Terminate by going into the barrier

(C.T.A.D.G. 1.1.5)



Lighting for pedestrian



Improvements in Safety

- ▣ From before: ratio of slope is 4.7% vs. 5% in CTADG
- ▣ But...Cars pass by this bridge
 - Difficult to see incoming traffic – a safety issue where pedestrians are concerned with nature



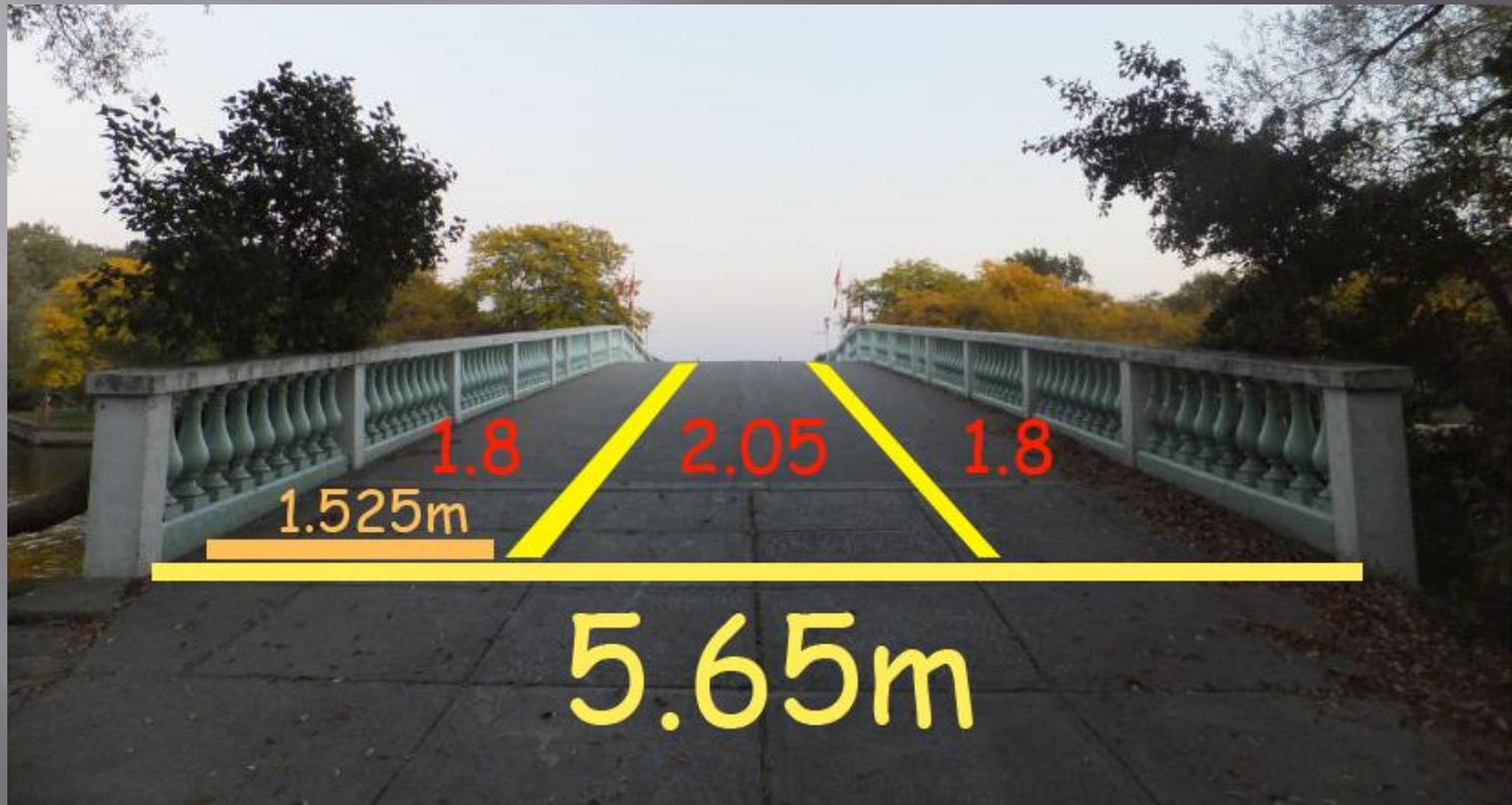
Solutions

- ▣ Ban vehicles
- ▣ Excavate Bridge
- ▣ Mirrors
- ▣ A Speed Bump



Sidewalks

- Width of a van is 1.8m



Lighting for Boats



- ▣ The Issue:
 - Not enough lighting for boats
- ▣ Improvements:
 - Add little lamps underneath the bridge
- ▣ Implications
 - Increase in accessible electrical wiring

Exposed Electrical Boxes



Condition of Concrete



“Spalling is a continuation of the delamination process whereby the actions of external loads, pressure exerted by the corrosion of reinforcement or by the formation of ice in the delaminated area results in the breaking off of the delaminated concrete.”



- OSIM recommends repairing a bridge that has between 5-10% or more of its girders in poor condition on a 1-5 year timeline (OSIM Field Guide Part 2, Section 7)

Recommended Maintenance on Concrete



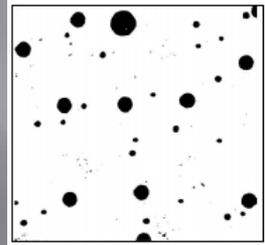
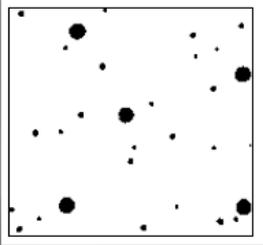
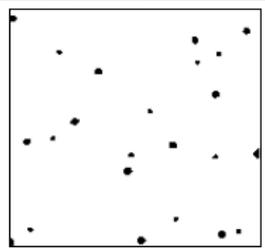
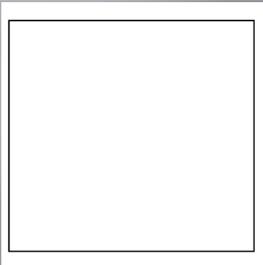
- ✓ Arches and Deck
- Horizontal Concrete Members
- Reinforcements
- Supporting concrete under deck



Condition of Steel / Coating



- Steel has rust in places, but no section loss
- No fractures except for one along a welded joint
- No loose connections
- Coating is not peeling, and there are few places where the bare steel is exposed
- Frequent spots of rust on coating ("Fair" by OSIM standards)



Excellent, Good, Fair,
and Poor conditions for
coating rust on
structural steel (OSIM
Table 4.4)

Recommended Maintenance of Steel / Coating

- Structural steel is overall in good condition
- The welded joints in the steel structure between the outer arches and the deck should be inspected and repaired periodically
- Should be recoated so the surface rust on the coating doesn't develop into more deep rusting of the steel

