F. G. Gardiner Expressway

Public Works & Infrastructure Committee
May 16, 2012

Peter Crockett, P. Eng., Executive Director, Technical Services
F. G. Gardiner Expressway

• Outline:
  – Background
  – Recent Events on Gardiner Expressway
  – Cause of Falling Concrete
  – Condition of the Gardiner
  – Monitoring and Repairs
  – Asset Management of Elevated Portion
  – 2012 Capital Project & Traffic Management
  – Needs Going Forward
F. G. Gardiner Expressway

• Background:
  – Expressway constructed in late 1950’s and early 1960’s
    – Elevated portion: 7.0 km
    – At Grade portion: 11.6 km
Recent Events on the Gardiner

- Monday, May 7, 2012
  - A piece of concrete, approximately 16” x 12” x 2” (LxWxH) in size, fell on to Lakeshore Boulevard West just east of Lower Jarvis Street
Recent Events on the Gardiner
Recent Events on the Gardiner
Recent Events on the Gardiner

• Thursday, May 10, 2012
  – A piece of concrete approximately 6” x 6” x 1” in size fell on to Parkside Drive near Lake Shore Boulevard West
Recent Events on the Gardiner
Recent Events on the Gardiner
Recent Events on the Gardiner
Recent Events on the Gardiner
Cause of Falling Concrete

- Salt and water penetrate concrete and corrodes steel reinforcing
- Corrosion causes steel to expand fracturing surrounding concrete
- Ongoing freeze/thaw widens fracture until concrete separates
Condition of the Gardiner

• FGG is **structurally sound**.

• Incidents of falling concrete have occurred.

• Falling pieces of concrete consist of “concrete cover”, and does not affect the overall structural integrity.

• City needs to remain vigilant in monitoring and pro-actively addressing the issue.
Monitoring and Repair

- Day-to-day routine inspections performed by Transportation Services – Road Operations.

- General visual inspection of underside of the deck and ramps on a continuous basis.

- Performed by District Patrolmen at ground level.
• Thorough visual inspection of the underside of the deck and bents for the entire length of the FGG, on an annual basis.
• Inspection is performed by Technical Services Professional Engineer at ground level.
  - controlled chipping program
  - install mesh protection
  - identify needs for future capital program.
• Technical Services is currently issuing a RFP for the **detailed inspection** of the entire FGG, for input into a Bridge Management System.

• Perform detailed inspection of the structure during the pre-design phase prior to major capital work.
2012 Capital Project & Traffic Management

Structure Repair from York Street to Jarvis Street, Contract No. 12SE-01S.

- Repair/replacement of the concrete box beams.
- Install 6 Permanent Changeable Message Signs.
- Estimated contract budget is $10 Million.
- Traffic impacts:
  - Long term ramp closures (6 weeks)
  - Bay Street on-ramp
  - FGG off-ramp to Jarvis Street
  - lane restrictions of Lake Shore Blvd/Bay/Yonge
  - Peak rush hour closures not permitted
Needs Going Forward

- Major capital work over the next 10 years
- Will have significant traffic impacts.
- 2013: 1st stage of multi-year program to rehabilitate the deck, starting from east end.
- Rehabilitation of the at grade portion in 2014.
- Multiple contracts over several years.
- Preparing a RFP - Rehabilitation Strategy
  - Construction Staging Plan