Ontario

FACT SHEET

Ministry of Transportation

Nipigon River Bridge – Bolt Testing

September 22, 2016

On January 10, 2016, the Nipigon River Bridge was unexpectedly closed to traffic due to an issue with the tie-down connection on the northwest corner of the bridge. Temporary measures were put in place and the bridge was re-opened to traffic the following day.

Two research and testing facilities – Surface Science Western and National Research Council Canada – were selected to conduct testing of the bolts from the bridge. Each lab worked independent of the other and the results were shared with the ministry over the summer. Each lab received 14 broken bolts and 10 intact bolts to test.

Work included:

- Confirmation of the mechanical properties of the bolts (e.g. strength)
- Analysis of their chemical composition
- Comparison of the bolts to the design specifications
- Microscopic inspection of the broken surfaces of the bolts

Testing Results

Both labs concluded that the bolts:

- Met all requirements of the required standard (ASTM A490)
- exhibited good performance under cold temperatures
- broke due to overloading
  - this occurred progressively over several weeks based on the appearance of corrosion on the broken surfaces of some of the bolts

The findings were shared with the ministry and Associated Engineering (Ont.) and were considered as part of the investigation of the tie-down connection at the northwest corner of the bridge.