



**STAFF REPORT  
INFORMATION ONLY**

**Emergency repair work and permanent remedial work  
resulting from a storm sewer failure and road collapse  
on Finch Avenue West**

<b>Date:</b>	April 1, 2010
<b>To:</b>	Public Works and Infrastructure Committee
<b>From:</b>	Executive Director, Technical Services
<b>Wards:</b>	<b>Ward 10 – (York Centre)</b>
<b>Reference Number:</b>	P:\2010\ClusterB\TEC\PW10005 (AFS # 11052)

**SUMMARY**

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The purpose of this report is:

- a. To explain the reasons why the City incurred additional repair costs at the location of a storm sewer failure and road collapse that happened in July 2009 on Finch Avenue West between Dufferin Street and Wilmington Avenue after incurring repair costs on permanent remedial measures following a previous road collapse in the same vicinity in 1980.
- b. To present the feasibility of sharing the costs of the remedial work with the Toronto and Region Conservation Authority.

**Financial Impact**

There are no financial impacts arising from this report.

## **DECISION HISTORY**

At its meeting of October 26 and 27, 2009, City Council, in consideration of a report (GM25.13) dated September 21, 2009, entitled Emergency Repair Work and Permanent Remedial Work Resulting from a Storm Sewer Failure and Road Collapse on Finch Avenue West, requested the Executive Director, Technical Services to report to the Public Works and Infrastructure Committee on:

- a. why the City is incurring additional repair costs at this location, such report to include a review of the work done by the Former Municipality of Metropolitan Toronto to effect “permanent remedial measures” following the previous collapse; and
- b. the feasibility of sharing the costs of the remedial work with the Toronto and Region Conservation Authority.

## **ISSUE BACKGROUND**

On Friday, July 24, 2009, the road pavement on eastbound Finch Avenue West, about 150 metres east of Dufferin Street, caved in causing a deep sink hole. On the following morning, the adjoining area also caved in causing a second sinkhole. Finch Avenue West was closed to vehicular traffic between Dufferin Street and Wilmington Avenue and emergency repairs were commenced immediately. The emergency repair and permanent remedial works were managed by Technical Services Division with the assistance of the consulting engineering firm of McCormick Rankin Corporation and the construction was carried out by Clearway Construction Inc. All permanent and remedial works were completed by October 4, 2009 and the roadway was subsequently re-opened to traffic. The total cost of the repair work was approximately \$1.8 million. A staff report was submitted to the Government Management Committee at its meeting on October 14, 2009 advising on the details of the procurement process for the engineering consultant and the construction contractor and providing a status date with respect to the emergency and permanent remedial work at this location. The report also requested authority for Toronto Water to amend its 2009 Capital Budget by an amount equivalent to the total cost of the work. The City Council considered the report at its meeting on October 26 and 27, 2009 and authorized Toronto Water’s 2009 Capital Budget and 2010-2013 Capital Plan to be increased by the above-mentioned value. City Council also requested the Executive Director, Technical Services, to report to the Public Works and Infrastructure Committee on the two points indicated above.

## **COMMENTS**

- a. In 1980, there was a previous road collapse on Finch Avenue West, in the vicinity of the recent sinkhole. Records from this previous incident, specifically the “as built” drawings prepared by the former Municipality of Metropolitan Toronto, Department of Works, clearly reveal the cause of the earlier collapse. The primary cause of the

earlier failure was significant settlement of the Dufferin Creek sanitary trunk sewer crossing Finch Avenue West. The settlement of the sanitary trunk sewer resulted in failure of the sanitary sewer pipe which in turn triggered a road collapse. This warranted road closure over an extended period for the repair works to be completed. The repairs included reconstruction of a maintenance hole together with the settled sections of the sanitary trunk sewer as well as rebuilding of the roadway. There were no further incidents in this area from the time of the repair in 1980 until the recent sinkhole incident in 2009.

The recent sinkhole which occurred on July 24, 2009 occurred due to a combination of factors affecting the storm water drainage system at this location. These factors progressively affected the storm sewers underneath the roadway resulting in corrosion and deterioration of the metal sewers. The existing storm water collection system in this area was comprised of corrugated iron collection pipe under the roadway which discharged through a submerged outlet, to a concrete culvert beneath Finch Avenue. The concrete culvert connects the north and south portions of the TRCA reservoir located on either side of Finch Avenue. The corrugated iron pipe under the roadway had corroded allowing leakage of storm water from the pipe which over time created voids and cavities in the soil surrounding the pipe. Ultimately, the soil surrounding these voids collapsed resulting in a sinkhole.

The recent remedial measures have effectively eliminated the root cause of the storm water drainage problem at this location and the new storm sewer system with outfalls discharging directly to the G. Ross Lord reservoir will keep this area safe from future potential road collapses.

The 1980 and the 2009 incidents are completely unrelated. As indicated above, the 2009 sinkhole incident was due to road collapse resulting from a storm sewer failure, and the 1980 road collapse was due to settlement and failure of a sanitary trunk sewer. The underground infrastructures that caused the two road collapses are completely different and the two incidents are unrelated. The 2009 storm sewer failure could not have been predicted or anticipated at the time of the 1980 sanitary trunk sewer failure and accordingly could not have been prevented or mitigated by any means when the 1980 repair work was carried out.

- b. Toronto and Region Conservation Authority (TRCA) worked closely with the City in the remediation of the 2009 incident. The contributing factors for the storm sewer failure were analysed by City staff and our consultant and shared with TRCA. City staff are satisfied that TRCA is not in any way responsible for the failure of City-owned storm sewer infrastructure at this location.

The recent storm sewer failure occurred due to extensive corrosion and deterioration of the City's corrugated metal pipe sewers coupled with localized bottlenecks in the hydraulic configuration of the City storm water drainage system at this location. The former corrugated iron pipe sections were replaced with concrete pipe and the City's storm sewer alignment at this location had to be changed in order to effectively repair the damages and avoid potential failures in the future. It is appropriate that the cost

of the repair work and permanent remedial work on City owned infrastructure be borne entirely by the City as the TRCA is not responsible for any of the damages caused.

The new storm sewer arrangement installed at this location is in operation as designed and planned. The roadway on Finch Avenue West has been restored and resurfaced between Dufferin Street and Wilmington Avenue and has been in use by the public since October 4, 2009. City funds have been effectively and efficiently utilized on the repair works at this location.

## **CONTACT**

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## **SIGNATURE**

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