

Public Works and Infrastructure Committee

(City Council on November 29, 30 and December 1, 2011, deferred consideration of Item PW9.5 to the next regular City Council meeting on February 6 and 7, 2012.)

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| PW9.5 | Action | | | Ward:All |
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Implementation of Findings from Comparative Analysis of Pipe Materials Study for Large Diameter Transmission Watermains

Committee Recommendations

The Public Works and Infrastructure Committee recommends that:

1. City Council approve the use of alternative pipe materials for large diameter transmission watermains including (i) pre-stressed concrete cylinder pipe (PCCP); (ii) polyvinyl chloride (PVC); (iii) high density polyethylene (HDPE); (iv) steel; and (v) continuously welded steel pipe with a mortar lining, all designed in accordance with American Water Works Association (AWWA) standards.
2. Should recommendation 1 be adopted, City Council direct staff to:
 - a. develop and implement a design standard requiring an additional level of protection to the above noted alternative pipe material in locations and areas of the City that are deemed high risk and where failure or damage is unacceptable; and
 - b. identify these high risk locations or areas requiring additional protection during the Environmental Assessment phase and/or the pre-design phase of any specific large diameter transmission watermain project.
3. City Council direct staff to fully implement the above recommendations, if approved, within 90 days of the passing of this report by Council and that this process be applied to all future large diameter transmission watermain projects within the City of Toronto.

Origin

(October 19, 2011) Report from the General Manager, Toronto Water, and the Executive Director, Technical Services

Summary

This report recommends City Council approve the use of alternative pipe materials for large diameter transmission watermains. Presently, the standard used by the City of Toronto for large diameter transmission watermains (typically 750mm or larger) is cement mortar lined

steel pipe with continuously welded joints, fully encased in poured concrete. This has been the standard pipe material used for large diameter transmission watermains since the 1950s.

The findings of a recent study completed by Cole Engineering Group Ltd. and titled "2011 Comparative Analysis of Pipe Materials Study for Large Diameter Transmission Mains" concludes that although the present City of Toronto standard is very durable, no one pipe material is conclusively better than another. The study recommends that future construction tenders allow multiple pipe materials which meet performance specifications, such as pre-stressed concrete cylinder pipe (PCCP), steel welded pipe, polyvinyl chloride (PVC) pipe, and high density polyethylene (HDPE) pipe.

In addition, it is recognized that critical or high risk locations, require additional protection from external forces. Specifically, all pipe materials may require the additional protection provided by welded or restrained joints and be encased in material (i.e. concrete or special liners) to protect the pipe in geographic locations where failure or damage to the pipe is unacceptable. Examples of these types of areas include, but are not limited to, locations close to critical infrastructure and other major utilities; significant institutional and commercial neighbourhoods; poor local ground conditions; watercourse and protected areas; and areas without redundancy in the water supply network.

In summary, this report proposes a broader group of pipe materials to be allowed for large diameter transmission watermains, provided they can meet the designed performance standard required in that specific situation, and in locations that are considered high risk or operationally critical, that a standard be developed to provide a higher level of protection to the pipe in those locations thus ensuring safe operations and security of water supply. This approach promotes competition and realizes potential capital cost and construction time savings while ensuring the system performance needs are met.

Background Information (Committee)

(October 19, 2011) Report from the General Manager, Toronto Water, and the Executive Director, Technical Services, on Implementation of Findings from Comparative Analysis of Pipe Materials Study

(<http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-41849.pdf>)

(November 3, 2011) Large Diameter Transmission Watermains - Pipe Materials Study - Presentation

(<http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-42171.pdf>)

Communications (Committee)

(November 3, 2011) Submission from Silvio De Gasperis, President, TACC Construction (PW.New.PW9.5.1)

Communications (City Council)

(November 23, 2011) E-mail from Bruce Hollands, Executive Director, PVC Pipe Association (CC.Supp.PW9.5.2)

(<http://www.toronto.ca/legdocs/mmis/2012/cc/comm/communicationfile-27637.pdf>)

(November 25, 2011) Letter from Dr. Patrick Moore, Chairman and Chief Scientist, Greenspirit Strategies Ltd. (CC.Supp.PW9.5.3)

(<http://www.toronto.ca/legdocs/mmis/2012/cc/comm/communicationfile-27638.pdf>)

(November 24, 2011) E-mail from Marion E. Axmith, Director General, Canadian Plastics Industry Association (CC.Supp.PW9.5.4)

(<http://www.toronto.ca/legdocs/mmis/2012/cc/comm/communicationfile-27639.pdf>)

Speakers (Committee)

Bruce Hollands, Executive Director, Uni-Bell PVC Pipe Association

Silvio De Gasperis, President, TACC Construction Ltd. (Submission Filed)

Benoit Tanguay, Engineering Director, Munro Ltd.

Councillor Giorgio Mammoliti