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the future of stormwater
management in Mississauga

— By David J. Penny

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1700 mm diameter CSP stormwater detention tank below One Park Tower.

When I was a young lad I lived in a new subdivision not far from the Etobicoke Creek. Today the creek forms the border between two of Canada's largest cities, Toronto and Mississauga. My friends and I would spend hours playing in Silverthorne's Bush and would often drink from a natural creek side spring. One year we were lucky enough to see the creek at spring breakup. This was before the flood control structures were built upstream and we could stand on the old bridge and watch blocks of ice, the size of trucks, race past just inches below our feet.

In 1972 I moved to Cooksville, my first home as a married man. Nearby Streetsville, with its young Mayor Hazel McCallion, helped us maintain our competitive spirit in Cooksville as the amalgamated City of Mississauga was being contemplated.

Amalgamation and record growth did happen. The deserted farms of my youth were becoming new subdivisions. I joined a local group known as "Save Our Trees and Streams" to lobby for sustainable growth. The group included consulting engineers, drainage specialists, environmentalists, politicians and citi-

zens both new and old to the area. I remember taking photographs of Cooksville Creek for a group presentation. The valley was forested and deserted farms were littered with old farm implements and overgrown with grass and scrub.

I left Cooksville in 1973. When I came back thirty-four years later I saw a different Mississauga. At first glance it is a city of sprawling growth with vast areas of development. Cooksville Creek is now at the City Centre. The once deserted farms are now residential subdivisions, shopping centres and industrial complexes. There is an amazing downtown core of modern skyscrapers.

A closer look reveals that this growth is not random. It has been carefully planned and executed to preserve the aspects of community that have always been valued here. Cooksville Creek is



One Park Tower under construction, and the Clock Tower Mississauga City Hall.

still forested and flows much as it did in the past. I find myself standing in a children's playground just west of the City Centre, overlooking a natural wetland area. In the near distance the city's tallest residential landmark tower is under construction at One Park Tower. A short walk beyond is the clock tower of City Hall and all of the amenities of a modern and vibrant community.

Since 1978, Mississauga has had the same Mayor. Hazel McCallion's long-term vision has allowed the city to grow without some of the pains seen in other cities of this size. There is an urban legend amongst sewer contractors that claims Hazel instructed her designers to estimate the diameter needed for sewers and then double it to satisfy future growth. Just as the 1954 storm Hurricane Hazel changed the way stormwater is managed in Canada, Mississauga's "Hur-

ricane Hazel” took it to the next level. Mississauga continues to have some of the most stringent stormwater management requirements in Canada. All new construction must detain runoff in order to maintain predevelopment flow levels and thus minimize flooding, erosion, pollution and other issues. This has called for creative designs involving on-site temporary storage of stormwater.

One Park Tower is a superb example of creative design in stormwater management from top to bottom. As is the case with many of the world’s most spectacular landmark structures, Gargoyles stand on guard near the top of this 38 storey architectural masterpiece. Traditionally these waterspouts direct water away from the building they are designed to protect but here the water is caught in rooftop gardens where it is detained for periods of its descent. Eventually the water reaches ground level where it is directed with surface runoff into underground stormwater detention tanks, made of large diameter corrugated steel pipe. Water control devices on these tanks slowly release the stormwater into the city’s storm sewer system at the pre-development rate.

By managing stormwater at all levels a relatively small footprint for development can be maintained while maintaining the stringent drainage requirements of the city. A smaller development footprint allows the residents of the tower to enjoy the closeness to the amenities of the community and the controlled drainage system helps to protect the trees and streams that bring nature to an urban environment.

The Stormwater Management Plan for One Park Tower was developed by Earth Tech Canada Inc. for the project’s developer, Daniels Corporation. The challenge was to create a high-density residential development on 1.57 hectares of land within the Cooksville Creek watershed. In accordance with a City Council resolution, stormwater management was required for the site and proposed development to the northeast of the site to limit post-development stormwater discharge for the two-year event to pre-development levels with storage up to, and including, the five-year storm event.

Stormwater quantity control was provided for the development through the implementation of on-site storage on rooftops and in underground corrugated steel storage pipes. The two-year pre-development peak flow from the entire 1.57 ha drainage area is approximately 65 L/s. The uncontrolled five-year post-

development peak flow is approximately 264 L/s. The rooftops and elevated gardens of the Tower and other buildings on the site represent .32 ha of the total site area. All are designed to provide rooftop storage. Oversized pipe will be used to provide peak flow storage for the remaining 1.25 ha.

The pipes were installed at two locations on the site. The first is a 1700 mm diameter CSP tank 24 metres in length. It discharges through a control device and a 300 mm pipe to the storm drain system at less than the pre-development rate.

The second is a 1200 mm diameter CSP tank, 84 metres in length that discharges to the storm sewer system by gravity through an inlet control device.

If I were to return in another 34 years’ time, perhaps I would once again marvel at the foresight of those who determined that the future of Mississauga should be firmly linked to the past.

*David Penny is with the
Corrugated Steel Pipe Institute.
Contact: djpenny@cspi.ca*



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CORRUGATED STEEL PIPE INSTITUTE

652 Bishop St., Unit 2A
Cambridge, Ontario N3H 4V6
Toll Free: (866) 295-2416
Fax: (519) 650-8081
Email us at: info@cspi.ca

Visit our web site at www.cspi.ca



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