

Elm Drive

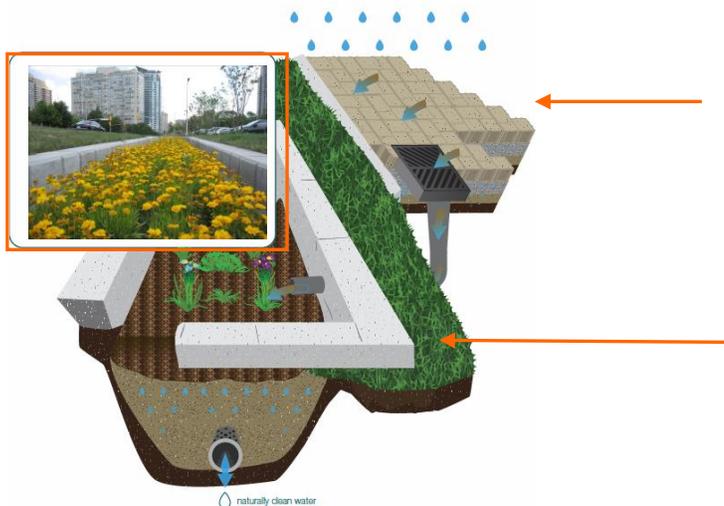
Location: Mississauga
Constructed: May 2011

Version 2.1, Released May 2016



Project Overview

The Elm Drive low impact development (LID) road retrofit is located on Elm Drive West, just south of the Square One Shopping Centre in Mississauga, Ontario. The Elm Drive project incorporates both permeable paver lay-bys within the road right of way (on City of Mississauga property) and bioretention planters on the adjoining property owned by the Peel District School Board. Runoff flows from Elm Drive West onto the permeable paver lay-by and into the bioretention planters.



Permeable Pavers

An alternative to traditional pavement, permeable pavers allow rainfall and road runoff to pass between joints in the pavers into an underground gravel storage layer. Stored water can infiltrate into the surrounding native soils.

Bioretention Planters

Runoff that is not infiltrated by the pavers is then transferred to bioretention planters, which provide additional infiltration and filter the runoff. The landscaped planters utilize specialized bioretention soil media to treat the stormwater before it is returned to Cooksville Creek.

Successes

The successes achieved with this project include:

Innovative project – The Elm Drive project is one of the first green street retrofits to take place in Ontario. The LID retrofit improves stormwater quality and reduces runoff at the site.

Joint partnership – A partnership was formed between three stakeholders: the City of Mississauga, the Peel District School Board (PDSB) and CVC. This partnership allowed the City to maintain the LID infrastructure, part of which is located on PDSB property. CVC provided design, construction assistance and is conducting performance monitoring and maintenance inspections.

Demonstration showcase – The LID features at Elm Drive have been showcased through numerous presentations, events and site tours. These efforts have helped educate numerous stakeholders on the benefits of LID.

Design criteria – This site is designed to provide an enhanced level of water quality treatment (80% TSS removal), and to reduce stormwater flows to Cooksville Creek to the extent possible.

Infrastructure Assessment

CVC is working with an expert advisory committee consisting of municipalities, regional government, the MOECC, consultants, universities and industry to assess the performance of the LID features at Elm Drive. Objectives include:

- Evaluate how a site with multiple LID practices treats stormwater runoff and manages stormwater quantity as a whole.
- Evaluate long-term maintenance needs and maintenance programs, and the impact of maintenance on performance.
- Determine the life-cycle costs for LID practices.
- Assess the water quality and quantity performance of LID designs in clay or low infiltration soils.
- Evaluate whether LID stormwater management systems are providing flood control, erosion control, water quality, recharge, and natural heritage protection per the design standard.

Performance Findings (2011-2015)

LID practices are exceeding all design expectations, providing significant benefits:

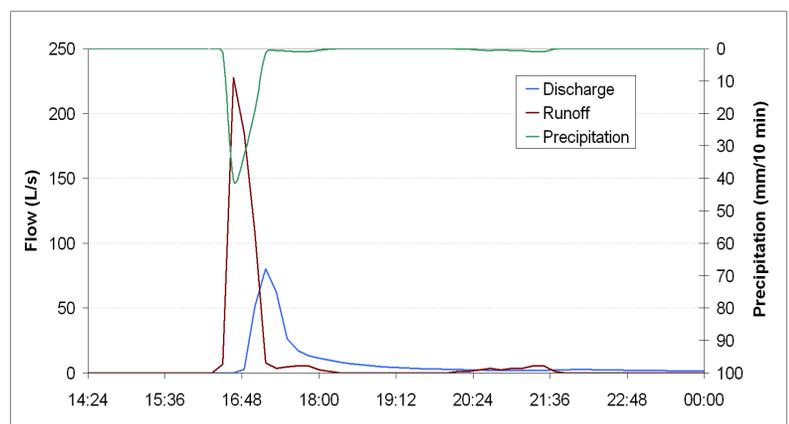
- Rainfall events up to 25 mm (~90% of all events) have little to no stormwater runoff
- 80% average total runoff volume reduction
- 66 to 95% peak flow reduction for events larger than the 2-year (33 mm) equivalent storm
- 88% total suspended solids removal

100-Year Event - July 8, 2013

On July 8, 2013 an extreme event occurred over Elm Drive - 105 mm over 5 hours, with a peak intensity of 242 mm/hr. Analysis indicates that this storm event exceeded the 100-year design storm.

As the figure shows, even for this extreme event, the LIDs at Elm Drive helped to provide much needed relief to the local stormwater infrastructure:

- ~65% of runoff was captured and treated by the facility
- ~30% volume reduction
- ~60% peak flow reduction
- ~20 minute lag time



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