DESIGNING FOR THE FUTURE

By Nicole Axworthy

ENGINEERING DIMENSIONS

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Everyone wants to be able to travel without delay and have the light turn on when you flip the switch, but Mother Nature's affect on our community's infrastructure can suddenly prevent these everyday actions from happening. The numerous storms that have hit our area of the world reveal much about the resilience of our infrastructure—especially aging systems in densely populated urban centres—and brings up the question of how we can adapt these systems to accommodate future needs.

In this issue, we delve into the topic of infrastructure from two different perspectives. In "Submerged" (p. 40), Associate Editor Marika Bigongiari explores how extreme weather events highlight the vulnerability of critical infrastructure in large cities such as Toronto. Stormwater systems, in particular, carry the burden of dealing with the overabundance of rainfall that comes with severe storms. As we struggle with the impact of unpredictable weather patterns, engineering experts agree that it's necessary to identify and plan for ways we can ensure our infrastructure is resilient, adaptive and flexible so we are prepared for the future. "As Ontario becomes more urbanized and development more extensive and intense, we need to rethink the strategies and safety factors used for stormwater design based on our changing climate," says David Lapp, P.Eng., FEC, manager of globalization and sustainable development at Engineers Canada.

At its core, a resilient community is one that is evolving rather than simply surviving. The city that thinks about tomorrow's risks and vulnerabilities and acts on that future in a collaborative fashion will ultimately be more resilient. (Of course, cities must also be able to find the funds necessary to implement the critical solutions to their infrastructure challenges, but let's save that for another discussion.) When future planning and collaboration does occur, communities reap the benefits of a stable and safe network. In "Hamilton: A community exemplifying Ontario's road safety" (p. 34), Associate Editor Adam Sidsworth provides an excellent example of engineering success: The continuous improvement to Ontario's road design and engineering have allowed the number of fatalities to drop significantly over the last few decades, despite the exponential growth in vehicular traffic and population. Hamilton, Ontario, is one city that has embraced its various road and traffic challenges—including accommodating gravel roads, one-way streets and highways within its amalgamated urban and rural communities—proving that Ontario has one of the safest road networks in North America.

Speaking of collaborative efforts, engineering communities are gearing up for this year's National Engineering Month, which includes numerous events across the province throughout the month of March. Don't miss the event highlights (p. 21) happening in a city near you.

On a final note, don't forget to check out who's running for available positions on PEO Council. Candidate statements can be found in this issue's insert. Voting opens on January 18, so don't delay getting yours in. Happy 2019! e

THIS ISSUE Despite a $100 billion infrastructure deficit, Ontario's municipalities face the burden of modernizing outdated infrastructure, most of which is over a century old. In this issue, we explore the challenges that Ontario's large cities face in developing new and innovative stormwater solutions in an era of extreme weather, and feature one municipality's approach to road safety and traffic-engineering solutions as a barometer of Ontario's roads—which is considered the second-safest road network in North America.