

# The Digital Pipe Digest



Canadian Concrete Pipe Association  
Association canadienne des fabricants de tuyaux de béton

Editor: A. Grant Lee, MCIP, RPP, MCInst.M., FCInst.M June 2005

## ***Built to last through natural and man-made disasters***

The Onophrian fountain was built beneath the City Guards' Headquarters to celebrate the end of the works on the building of the Dubrovnik, Croatia water-works. The fountain and reservoir is a masterpiece of sculpture in the walled city of Dubrovnik. It was designed by engineer, Onofrio de la Cava of Naples in 1438 in collaboration with the Italian sculptor Pietro di Martino.



The reservoir is the end of the line of an aqueduct that funnels water from a source 12 miles away. Its architectural treatment includes an ornamental mask on each of its 16 sides, serving as spigots. Water flows from the masks into a collection trough for public access.

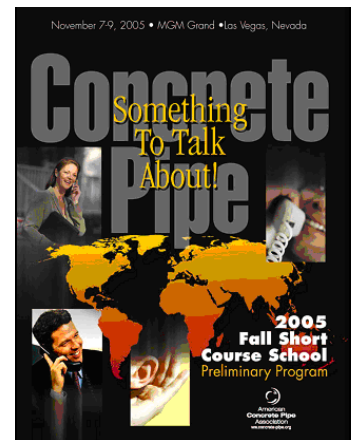
The structure was built at a time when wealthy families, religious leaders and politicians knew that their language, art and public works were the signature of their culture and society that would endure for centuries, if protected well from invaders.

The fountain was once two stories tall but has been partially destroyed a couple of times over the centuries. The reservoir was heavily damaged in the earthquake of 1667, and some of its ornamentation was never repaired. It was again damaged during the Yugoslavia, Serbia Croatia war of 1991. However, it remains standing and functioning today.

The walled city of Dubrovnik is now a United Nations World Heritage Site. Chances are very good that the works designed by Onofrio de la Cava could well last another five centuries.

## ***Planning for ACPA Fall Short Course School is well underway***

Plan to attend this year's Fall Short Course School hosted by the American Concrete Pipe Association. Mark November 7 to 9 on your calendar now and look forward to three days packed with education opportunities, networking with concrete pipe industry leaders and enjoying the sparkle of Las Vegas.



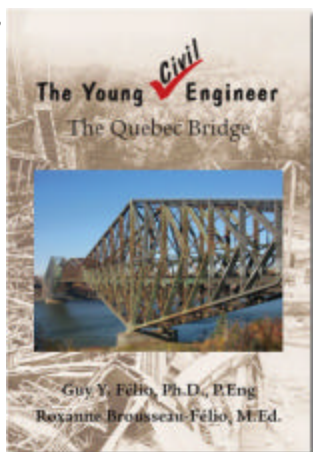
Increase your knowledge about the technology and marketing of concrete pipe and learn about various aspects of alternative products. Contact the ACPA at [info@concrete-pipe.org](mailto:info@concrete-pipe.org), visit [www.concrete-pipe.org](http://www.concrete-pipe.org) or call 972-506-7216 for information.

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## ***New book published to attract children to a career in civil engineering***

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Guy Felio, Ph.D., P.Eng., has authored a new book with Roxanne Brousseau-Félio, M.Ed. Guy is a well-known personality in the concrete pipe industry who has assisted with research and development projects, and played a large role in establishing the InfraGuide and its Best Practices.



### About the book

In June 1915, on her 11th birthday, Gabrielle is looking forward to a day of adventures! Little did she know that her adventure would last more than two years!

Her father works at the construction site for a bridge over the St. Lawrence River at Québec. The first attempt to build it resulted in a major engineering failure and more than 70 workers lost their lives.

Gabrielle meets the Chief Engineer of the bridge company who, seeing her interest in the project, invites her to learn about bridge building. Her journey begins.

The book presents accurate engineering and historical facts and from an 11 year old's perspective. Visual material (historical photos, drawings and graphics) supplements the text and add to the educational value of the book.

See [www.ykm.ca](http://www.ykm.ca) or <http://www.trafford.com/4dcgi/view-item?item=8114> for details about the book and how to order.

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## ***COMRIF First Phase invests over \$249 million in municipal rural infrastructure***

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The governments of Canada and Ontario have announced investments of up to \$249,178,024 in 120 communities through Intake One of the Canada-Ontario Municipal Rural Infrastructure Fund (COMRIF).

The announcement was made in North Bay on April 25, 2005.

Together with municipal contributions, the total investment in local infrastructure improvements will be over \$370 million. The investments will provide municipalities with the support they need to renew essential infrastructure in their communities.

See [www.comrif.ca](http://www.comrif.ca) for details

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## ***Places to Grow Act passes second reading***

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The Ontario Ministry of Public Infrastructure Renewal's Places to Grow Act 2004 or Bill 136 passed Second Reading in the Legislature by a vote of 53 to 24 on April 6, 2005. The act was then referred to the Legislature's Standing Committee on General Government.

During April, the Standing Committee held public hearings on the Act. Interested Ontarians could then make an oral presentation on the Act or send a written submission to the Committee.

On May 3, the Standing Committee reported Bill 136 as amended to the Legislature. The Legislature is expected to debate it under third reading before the end of June.

Bill 136 is an act respecting the establishment of growth plan areas and growth plans.

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## **McGuinty government planning documents intended to protect the environment and ensure economic growth**

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The McGuinty government says its Greenbelt Plan and Draft Growth Plan will contain urban sprawl, protect the environment and maintain economic growth and prosperity.

How? Through a relatively minor change in settlement patterns and densities, combined with better planning and closer regulation of land use over a wide region.

One element is the recently passed Greenbelt legislation, which will protect 1.8 million acres of environmentally sensitive and agricultural land from being developed. A second is a plan the Ministry of Public Infrastructure Renewal is developing, which will outline where and how the Greater Golden Horseshoe should grow.

See [www.pir.gov.on.ca](http://www.pir.gov.on.ca) for details

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## **Ministry of Public Infrastructure Renewal releases five year plan**

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On May 25, Minister David Caplan announced a plan for the government's investment of over \$30 billion over the next five years.

The Ministry's five-year plan, called ReNew Ontario, shows how the government will correct the current infrastructure deficit and prepare for future growth. It is concentrating investments in health care, education and economic prosperity.

Following are some examples of ReNew Ontario's expected impact over the next five years:

- Approximately \$5 billion for health care projects (including community-share contributions) means that equipment upgrades will improve cancer treatment, there will be more MRI machines, wait times will be

shortened and many older hospitals will be modernized.

- Schools, universities and colleges will be renewed and expanded with the help of a \$10 billion investment from the provincial government and its partners.
- Public transit will improve and grow, through a \$4.5 billion investment — and a further \$6.9 billion will be invested in highways, borders and other transportation projects.

See ReNew Ontario at <http://www.pir.gov.on.ca/.for> details

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## **Concrete pipe and box applications**

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Concrete pipe in North America has a long history of dependability and performance. Quality of product and performance standards have taken a giant leap forward, making concrete a preferred material for many traditional sanitary and storm sewer applications. Precast reinforced concrete pipe and boxes are finding niche markets where never before envisioned such as ventilation tubing (Earth Rangers Centre and Niagara Falls Butterfly Conservatory), buried utility galleries, groynes for current control and fish habitat in harbours, animal and pedestrian crossings of rail lines and highways, stormwater storage and retention chambers, small bridge structures, jacking and tunneling applications, and marine outfalls. New applications are limited only by the imagination of infrastructure designers.



The concrete pipe industry and its associations regularly publish applications of interest in many trade and professional publications throughout Canada and the United States. Many published articles become archived on various Web sites for access via the Internet.

Following is a compendium and summary of some of the articles published over the past five months.

### Concrete Pipe News

#### ***Hospital Board Goes With Precast Concrete Boxes To Manage Stormwater***

Precast concrete box sections were used for an underground stormwater detention system to accommodate onsite stormwater management. The project called for 650 lineal feet of 12-foot x eight-foot precast concrete box sections placed in five parallel lines.

#### ***Reinforced Concrete Pipe Seen As End-of-Life Solution***

A run of 60-inch diameter CMP collapsed and caused the closure of West Hackley Avenue in Muskegon, Michigan. The culvert was replaced with a twin 60-inch diameter concrete pipe culvert. Projects originally designed for 50 years are often expected to perform much longer. Concrete pipe installations allow designers and owners of infrastructure to err on the conservative side when planning projects.

#### ***Exploring the Meaning of Durability of Reinforced Precast Concrete Pipe***

The capability of pipe to perform as expected for the design life of a project is a fundamental engineering consideration, especially in today's economic environment where life cycle cost analysis and asset management requirements have been set in place to ensure sustainable buried infrastructure. When specifiers and design engineers understand the properties of concrete and all factors affecting the performance of reinforced concrete structures, durability of reinforced concrete pipe becomes meaningful

#### ***Would You Be Willing To Pay \$46,496 Per Year For A Single Culvert Pipe?***

A concrete pipe producer laments decisions taken over three decades ago to overlook life cycle cost when specifying products and materials for state highway drainage. As funds for infrastructure

maintenance and the unplanned replacement of failed culverts become increasingly inadequate, municipal and highway officials must now look to life cycle cost analysis of products and materials to determine what solution is best for supporting our roadways. The cost of raw materials, the cost of fuel, and the value of time are spiraling. Future failures will be much more expensive. Can we really afford to replace our culverts after only 32 years?

#### ***Salt Lake City Goes Beyond Gold with Precast Concrete Box Culvert Storm Drain***

At a cost of \$13 million at completion, the 900 South Storm Drain project is the largest storm water project in the City's 1993 Storm Drainage Master Plan. The project will relieve overloading of several east-west storm drains, alleviate upper mid-city capacity overloading, street flooding and backwater effect at the Jordan River, and improve storm water quality.

#### ***Precious Water of South Texas Conserved With Reinforced Concrete Pipe***

The Rio Grande Valley of South Texas is officially classified as semitropical and technically, it is a desert with the Rio Grande River as the only source of water. The area is irrigated with hundreds of miles of canals. The Curry Main Canal was one such canal that was open and lost water in double-digit percentages to evaporation. A precast concrete pipeline, extending for almost a mile, replaced the Curry Main Canal to reduce water loss.

#### ***Precast Culverts Branch Across The Woodlands of Texas***

Precast reinforced concrete box culverts saved substantial construction time and added value to the most recent development for The Woodlands, Texas, - the 27,000-acre master planned community located 27 miles north of Houston. Known as the Branch Crossing West extension project, construction included the water distribution system, drainage facilities, paving, and appurtenances.

### Concrete Pipe Journal

#### ***Lined Reinforced Concrete Pipe a First for London***

A 675 mm (27-inch) diameter concrete sanitary sewer commissioned in the late 1960s was replaced with a specially designed 590 meter (1,935 foot) precast concrete system to improve the environment of a London Ontario

neighborhood and solve major structural problems caused by sulfuric acid (H<sub>2</sub>SO<sub>4</sub>).

### **Pre welded Reinforcing Assembly Contributes to Efficiency of Quick Span**

Reinforcement assemblies were fabricated on a specially designed at StelCrete's Fort Erie plant so that all assemblies were consistent including 30M rebar spaced at 150 mm on centre around the exterior corner of the bridge sections.



### **York-Peel Feedermain Expands Product Line for Munro**

The new 8,550 square metre plant in Barrie is capable of producing precast concrete pressure pipe sizes from 400 mm to 3000 mm inside diameter with a standard length of 6,096 mm.

### **Drainage Systems of controversial Expressway Constructed with Precast Concrete Drainage Products**

Construction of the eight-kilometer long, six-lane controlled Redhill Creek Expressway in Hamilton, Ontario made extensive use of precast concrete pipe maintenance holes and boxes.

### **Environmental Science & Engineering Magazine**

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### **Ontario Construction News**

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### **Public Works**

**Good culverts gone bad: The high cost of culvert failures**, developed from a report called, "The Economic Costs of Culvert Failures" by Joseph Perin Jr. and Chintan S. Jhaveri published in Concrete Pipe News, Summer 2004.



### **First Canadian Conference on Effective Design of Structures (CCEDS) takes place July 10 to 13 in Hamilton, Ontario**

McMaster University's Centre for Effective Design of Structures was created in 2002 through funding by the Ontario Research and Development



Challenge Fund (ORDCF), Private Industry, and McMaster University. Effective design requires a thorough knowledge of material behaviour, including durability. Important features of effective design include use of modern analytical techniques and better identification and response to design requirements including clients' needs which may relate to timeliness, full life cycle costing, sustainability and maintenance.

Building envelope design, integration of services, and understanding of construction

processes including management must be accounted for in effective design. Within this overall philosophy, the specialized areas of focus are masonry, remediation of structures, earthquake engineering and enhanced use of new and under-utilized materials.

Goals:

- To provide a Canadian and international forum for communicating recent and projected advances in the field of structural engineering as it pertains to the focus areas, and
- To provide a forum for information exchange among delegates from the design profession, the construction industry, research organizations, and academia.

The Ontario Concrete Pipe Association is a sponsor of the conference and will be participating in the program. Paul Smeltzer, P.Eng., Executive Director of the OCPA, is assisting with the conference organization.

To see profiles of the keynote speakers and a preliminary conference program, visit [www.cceds2005.mcmaster.ca](http://www.cceds2005.mcmaster.ca).

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## ***New York blocks St. Lawrence Cement plant along Hudson***

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The Canadian-based and Swiss-owned St. Lawrence Cement (SLC) company officially announced that it is abandoning its six-and-a-half-year quest to build a new coal-fired cement plant in Hudson and Greenport, N.Y. along the Hudson River and writing off the \$37 million of accrued costs.

At the time the project was proposed in September 1998, SLC's parent company, Holcim (then called Holderbank) was the largest cement producer in the world. Plans called for a 40-story stack, 1,200-acre mine, 500 million pounds of coal for fuel annually, and a barge facility on the river.

Following the negative decision by the New York State Department of State (DOS), the

board of directors decided not to pursue the project to build the plant. The company will continue to produce and distribute cement for the market region from Catskill, located only a few miles from the planned cement plant.

*This article appears in the [June 2005 issue](#) of *Concrete Monthly*.*

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## ***Concrete Pipe Industry Billboard***

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### **2005**

#### **AWWA Conference & Exposition**

San Francisco, California  
June 12 to 16

#### **STORMCON**

Orlando, Florida  
July 18 to 21

#### **1st Canadian conference on Effective Design of Structures**

McMaster University,  
Hamilton, Ontario  
July 10 to 13

#### **ASCE Pipelines 2004 Conference**

Houston, Texas  
August 21 to 24

#### **ACPA Committee Week & CPU 301**

Santa Fe, New Mexico  
August 7 to 10

#### **Concrete Pipe University – Understanding Thermoplastic Pipe Materials**

Santa Fe, New Mexico  
August 10

#### **APWA Congress & Exposition**

Minneapolis, Minnesota  
September 11 to 14

#### **Transportation Association of Canada (TAC) Annual Conference**

Calgary, Alberta  
September 18 to 21

**WEFTEC 2005**

Washington, D.C.  
October 29 to November 2

**ACPA Fall Short Course School**

Las Vegas, Nevada  
November 7 to 9

**International NO-DIG 2005**

Rotterdam, Netherlands  
September 19 to 21

**Construct Canada 2005**

Toronto, Ontario  
December 4 to 6

**Canadian Public Works Expo**

Mississauga, Ontario  
November 30 to December 1

**2006**

**World of Concrete 2006**

Las Vegas, Nevada  
January 17 to 20

**TRB 85th Annual Meeting**

Washington, DC  
January 22 to 26

**CCPA/OCPA Annual General Meetings**

TBA

**Ontario Good Roads Association Conference**

Toronto, Ontario  
February 19 to 22

**ACPA Production Short Course School/MCPX**

Anaheim, California  
February 22 to 26

**MCPX 2006**

Anaheim, California  
February 23 to 25

**NUCA 2006**

New Orleans, Louisiana  
March 1 to 5

**ACPA 98th Annual Meeting**

Scottsdale, Arizona  
March 5 to 9

**Water Environment Association of Ontario**

Toronto, Ontario  
April 9 to 11

**Ontario Water Works Association Conference and Trade Show**

Toronto, Ontario  
TBA

**Ontario Environmental Tradeshow**

Toronto, Ontario  
May TBA

**Canadian Society for Civil Engineering Annual Conference**

TBA

**Federation of Canadian Municipalities 66th AGM and Municipal Expo**

Montreal, Québec  
June 2 to 5

**2007**

**BAUMA**

Munich, Germany  
2007 (every 3 years)

**2008**

**CONEXPO-CON/AGG**

Las Vegas, Nevada  
March 11 to 15

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