



**The P3 fund**  
How P3s deliver value to Canadians



**Areas of focus**  
What sectors P3s are transforming



June 2013

# PUBLIC-PRIVATE PARTNERSHIPS

3  
FACTS ON THE CURRENT STATE OF CANADIAN INFRASTRUCTURE

## AN INVESTMENT IN CANADA'S INFRASTRUCTURE

Discover how the **P3 model** is helping mould Canada's communities and cities.



**The Honourable Jim Flaherty, Minister of Finance** lends his expertise and insight into infrastructure funding and what it means for our future.

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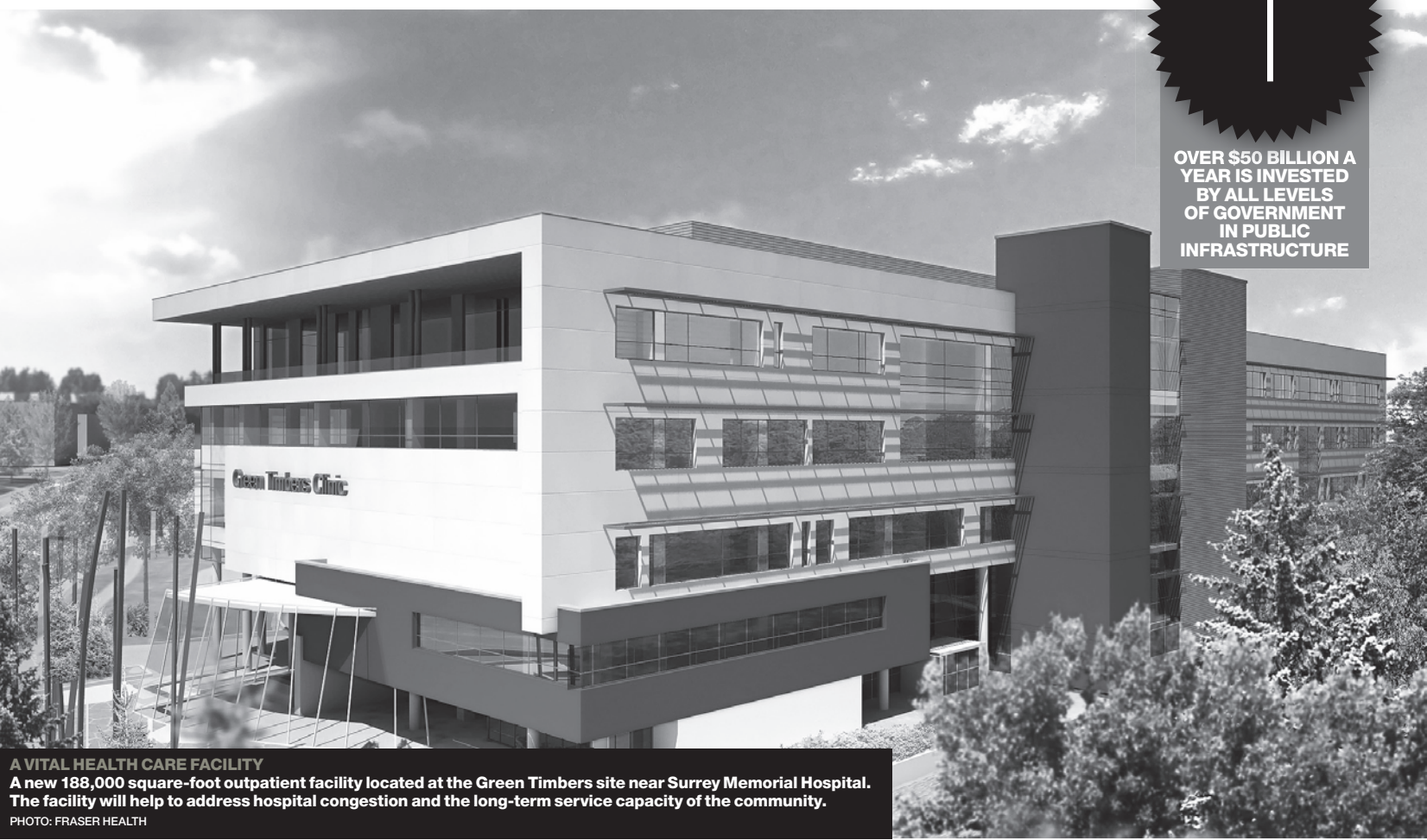
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# CHALLENGES



**A VITAL HEALTH CARE FACILITY**  
A new 188,000 square-foot outpatient facility located at the Green Timbers site near Surrey Memorial Hospital. The facility will help to address hospital congestion and the long-term service capacity of the community.  
PHOTO: FRASER HEALTH

**Mark Romoff**, President of The Canadian Council for Public-Private Partnerships, weighs in on the current state of Canadian infrastructure and the growing need for innovative solutions.

## Public-private partnerships: an innovative solution

An estimated global infrastructure gap of \$57 trillion against a backdrop of serious fiscal restraint presents unprecedented challenges for countries around the world. Canada is facing similar realities which have placed a premium on identifying innovative approaches to infrastructure development and service delivery while ensuring long term value for money for taxpayers. Public-Private Partnerships (P3s) is one such approach with a proven track record as an alternative to traditional procurement, consistently completing projects on-time, on-budget and with significant savings for governments at all levels across Canada.

### P3s in Canada

Canada's first P3 projects date back more than 20 years and today there are 198 projects in operation, under construction or in procurement, worth more than \$60 billion. Engaging the federal, provincial, territorial and municipal governments, this portfolio of projects cuts across a diverse range of sectors, including roads, bridges, hospitals, schools, nuclear power and courthouses, to name a few. A robust pipeline of projects and a commitment to competitive, transparent, fair and efficient processes

has attracted an increasingly diverse pool of Canadian and international companies, resulting in lower project costs and more innovative solutions.

### A unique approach

Other features that make Canada's P3 approach uniquely effective include strong national leadership (with the creation of the federal crown corporation, PPP Canada) and the establishment of provincial procurement offices in Ontario, British Columbia, Alberta, Quebec, New Brunswick and most recently, Saskatchewan which ensure better coordinated, more efficient infrastructure procurement. At the same time, it is important to recognize that P3s are not the appropriate solution for every project. A thorough business case must be developed to demonstrate that the P3 model will deliver better value for money than the traditional design-build or design-bid-build approach. In fact, P3s only represent 10 to 15 percent of overall infrastructure development across the country.

Moving forward, the recent 10-year, \$53 billion infrastructure commitment by the federal government aims to spur the building of important public infrastructure in cooperation with provinces, territories, municipalities and First Nations. Provincial budgets have also targeted the infrastructure deficit as a high priority and have identified P3s as an important element in



**Mark Romoff**  
President and CEO, The Canadian Council for Public-Private Partnerships

“Engaging the federal, provincial, territorial and municipal governments, this portfolio of projects cuts across a diverse range of sectors, including roads, bridges, hospitals, schools, nuclear power and courthouses, to name a few”

the mix. New public sector players, including Saskatchewan, Nunavut, the Northwest Territories and an increasing number of municipalities, along with new sectors of P3 interest such as social housing, urban transit, water/wastewater, energy, and super Broadband are a clear signal that P3s are increasingly moving to the fore. It's estimated in the municipal water/wastewater sector alone, the need for infrastructure will require a national investment of \$88 billion.

### An engine of economic growth

As governments across Canada wrestle with the ongoing realities of spending constraints, while recognizing infrastructure as an engine of economic growth, job creation and global competitiveness, P3s will continue to benefit Canadians by providing state-of-the-art solutions to complex public needs.

In addition, Canada's P3 model is recognized worldwide as “Best in Class” and countries planning to establish a P3 program consistently look to emulate Canada's success. At the same time, Canadian companies have now developed a base of experience and expertise that positions them well to compete successfully in the growing global P3 marketplace.

**MARK ROMOFF**

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## Alternative approaches to infrastructure development

**Public infrastructure is critical to the economic prosperity and well-being of Canadians. It is estimated that over \$50 billion a year is invested by all levels of government in public infrastructure. Ensuring that Canadians get the best value for their infrastructure dollar is a key priority for all governments.**

Public-private partnerships (P3s) have demonstrated their ability to deliver value. They engage the expertise of the private sector and the discipline of capital at risk to deliver on-time, on-budget, integrated, whole life-cycle solutions. P3s can be a powerful tool when executed effectively in the proper circumstances.

### PPP Canada

PPP Canada, a federal Crown corporation, was established by the government to deliver value to Canadians through the effective use of P3s. P3s

require new skills and capacities in both the public and private sectors. Building and sharing P3 expertise underpins everything PPP Canada does. We work with all levels of government to identify, develop and execute effective P3 projects. Value for Canadians is our over-riding focus; we recommend a P3 approach based on a systematic and rigorous assessment of value for money.

The federal government has significant direct responsibility for the provision of public infrastructure. Consistent with its commitment to value for tax-payers, all large federal projects must be assessed for P3 suitability. We provide the expert advice our federal clients need to achieve results.

We also work with other levels of government. There is significant expertise already in many provinces. We have learned from their experience and work closely with them to share expertise with provinces, municipalities and First Nations.

### The P3 Canada fund

As part of the Building Canada Plan announced in 2007, the federal government created the \$1.2 billion P3 Canada Fund. This Fund administered by PPP Canada provides support to other levels of government in the implementation of effective P3 projects. Launched in 2009, the P3 Canada Fund has committed almost \$800 million in funding to over \$3 billion in P3 projects across Canada. We expect to fully commit the \$1.2 billion by mid-2014. The P3 Canada Fund focuses on projects that enable economic and job growth, deliver value to Canadians and maximize learning.

In the 2013 Economic Action Plan, the federal government committed \$53.5 billion in funding over the next 10 years for provincial, territorial and municipal infrastructure. When combined with planned investments in First Nations and in federal infrastructure assets, overall federal infrastructure funding will total \$70 billion over 10 years. As part of this commitment, the federal government has renewed



**John McBride**  
CEO, Public-Private Partnerships Canada

the P3 Canada Fund with \$1.25 billion over the next 5 years. Moreover, it will require all projects over \$100 million submitted for federal funding to be assessed for P3 suitability. These announcements underscore the federal government's commitment to ensuring maximum value through the effective use of P3s.

Many people in the public and private sector have contributed their expertise and energy to making P3s a success in Canada. Their work is helping to deliver best value solutions for the public infrastructure Canadians need to ensure their prosperity and well-being.

**JOHN MCBRIDE**

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WE RECOMMEND

**Canada leading the way in public-private partnerships**  
Find out how Canada has become a leader in funding major infrastructure projects  
PAGE 7

“Today we have companies from all over the world looking to Canada as the sterling example of what P3s can achieve. For them, anything is possible.”

**Top construction CEO's give thumbs up to public-private partnerships** p. 4  
Get the industry scoop from Canada's construction leaders

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Sectoral insight into the P3 model

## MEDIA PLANET

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### TIPS

**A new take on Canada's oldest building material; building with engineered wood**

### Fire resistance

Large structural wood elements have long been recognized for their ability to maintain their structural integrity while exposed to fire. As wood elements are exposed to fire, an insulating char layer is formed on the surface of the wood that protects the core of the cross-section.

### Sustainability

Each cubic meter of black spruce wood contains more than 750 kg of CO2 equivalent. So if you take a multi-storey building (i.e.: approximately 24 units on 4 storeys, using 1,200 m3 of black spruce wood), you would be sequestering more than 900 metric tons of CO2 equivalent. This amount is equal to CO2 emissions from over 12 tanker trucks full of gasoline!

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**ADAM ROBERTSON**

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York University, The Accolade Project

zeidler

## Strong Relationships Lead to Innovations

At the time of its completion, the \$90 million York University Accolade Project was the largest and most complex facility to be delivered under a design-build contract at an Ontario university. The buildings had to be erected while the campus was in full operation. Additionally the project's budget and timeline were extremely aggressive for the complex programmatic requirements. The strong relationship between PCL Constructors, Zeidler Partnership Architects and B+H Architects facilitated the successful delivery of this project.

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INSIGHT

### Upgrading wastewater infrastructure

**Evan-Thomas Water and Wastewater Treatment Facility,** Kananaskis Country, Alberta. The project will include upgrades that will address the treatment plant's current capacity constraints; bring the treatment plant back to environmental compliance; replace the aging infrastructure; and deliver public health benefits through the introduction of leadership standards for the area's potable water.

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\$21.7 BILLION WAS  
INVESTED IN 39 P3S  
FROM 2009-2011

# Top construction CEOs give thumbs up to public-private partnerships

**Faced with the challenge of funding billions of dollars in critical infrastructure projects—new highways, bridges, and hospitals, governments across Canada are turning to public-private partnerships, or P3s as they are commonly referred.**

We talked to three of this country’s top construction bosses for their assessment on this increasingly popular method for building large infrastructure projects. While formidable competitors in the boardroom, they all agree that P3s are good for government—and by extension the public—and also for the industries involved in the financing, design, construction, and operation of these projects.

**An evolution**  
While there have been a proliferation of P3 projects in recent years, they aren’t really new. In fact, crude forms of public-private partnerships existed more than a century ago when private companies ensured a

water supply to citizens in France, and many of the first highways in the US were private toll roads. “It’s been an evolution for sure,” says Paul Douglas, CEO of PCL, one of Canada’s largest construction companies, commenting on more than 20 years of P3 development in Canada. “There have been successes and failures with this model in other parts of the world and enough successes in Canada that they’ve deemed to be effective.” He adds that they offer the best value for money, and are a sure way of delivering infrastructure that gets paid over time.

**Mitigating risk**  
P3s transfer a major share of the risk in the construction and operation of large projects from government to the private sector. Not unlike the mortgage on your house, the government enters into a lease back agreement, covering 25-30 years. The public is guaranteed cost and operational certainty, because the private sector assumes the risk for delays and cost overruns, along with the operation and maintenance of the facility, bridge or highway.

**“P3s are the right solution because without being critical of government, getting things done isn’t necessarily their strength. The private sector in contrast is more performance and results driven and can’t afford cost overruns and delays. This adds discipline to the execution of the project and final cost”**

“It’s okay for us to take on the risk,” says Geoff Smith, CEO, EllisDon. “We’ve learned that we need to pay a lot of attention to the details. P3s have taken our company to a different level, and we can be successful if we don’t screw up.”  
EllisDon has been involved in P3s for about nine years, and keeps raising the bar and broadening

their capabilities because competition in this business is intense. Smith’s credo is that the company has to be better than it was the previous year. EllisDon has pursued 64 P3 projects and won 25. “Our goal is to win 1 in 3,” says Smith. “Because the bid process can cost up to \$2 million in out of pocket expenses, you have to start winning or you’ll be out of the game.”  
Aecon’s top executive, John Beck, says P3s are the right solution because without being critical of government, getting things done isn’t necessarily their strength. The private sector in contrast is more performance and results driven and can’t afford cost overruns and delays. This adds discipline to the execution of the project and final cost.  
“There is a cost to government to build this way, but that’s easily mitigated by the performance you get not only from the design and construction but also in the operation,” says Beck. “It’s one less headache for government if they manage the process properly. They can even reduce staff in transportation and health departments.” He adds that Canada is a

leader and admired globally for its P3 model. Lots of countries are looking at what’s been done here.

**Unanimous conclusion**  
All three executives were unanimous in their conclusion that Canada suffers from a huge infrastructure deficit. We haven’t been investing in new roads, bridges, and hospitals. How can P3s help? They allow us to build more now because the cost is amortized over 25 or 30 years. Governments wouldn’t be able to afford all of the projects needed if they were expensed all at once. The public benefits by having new facilities built and operated with the discipline of the private sector.  
Not unlike easy access to capital for individuals to make large purchases, such as homes and cars, P3s can make it too easy for government to take on lots of debt. “You still need to count on good fiscal leadership and discipline from the public sector,” says Douglas. “You can’t mortgage the future so the future can’t afford to pay.”

KEN DONOHUE  
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STATE-OF-THE-ART CENTRE  
The B.C Cancer Agency provides a clinically efficient solution PHOTO: CEI ARCHITECTURE

## Innovative solutions across 4 crucial sectors

**Public-private partnerships have been able to penetrate 4 different and unique sectors, resulting in various high profile infrastructure projects vital to the Canadian economy.**

**Hospitals and healthcare**  
Hospitals currently represent the largest area of P3 activity across Canada, with 75 projects in procurement, under construction or operational. This sector totals \$20.4 billion worth of contracts to date. There has been a steady pipeline of projects since Ontario and British Columbia began procuring new P3 health care centres and acute care hospitals in 2002. Since then, Quebec has procured two large hospital projects as P3s (CHUM and MUHC in Montreal) as well as several long term care centres. Saskatchewan and Alberta are actively investigating the potential for P3s to replace existing aging hospitals. These healthcare projects involve extensive consultations with stakeholders to ensure the design and plans meet local needs and can adapt to advancements in healthcare for years to come.

**Schools**  
Canada’s first foray into P3 schools began in Nova Scotia and New Brunswick in 1997. While other countries such as the UK and Australia used the P3 model in this sector beginning in the early 2000’s, Canada experienced a decade of inactivity until Alberta started its ASAP (Alberta Schools Alternative Procurement) program in 2007. There have since been 41 elementary and secondary schools designed, built, financed and maintained as P3s and Alberta recently announced 50 more new schools, many of which are expected to continue the success of the provinces P3 schools program. Alberta continually bundles several projects under one contract to improve effi-

ciencies and transfer sufficient risk to the private sector partners.

**Transportation**  
Canada’s first major P3 transportation project was the iconic Confederation Bridge that links New Brunswick and PEI. Completed in 1997, it involves a 35-year agreement with Strait Crossing Development Inc., which provides on-going maintenance and toll collection. There are now 42 roads, bridges and transit projects utilizing the P3 approach evident across the country, from the Trans Canada Highway in New Brunswick to the Disraeli Bridges in Winnipeg to the Sea-to-Sky Highway in British Columbia. Public transit is a recent area of P3 growth, with the Vancouver region, Edmonton, Waterloo, Toronto and Ottawa all pursuing significant initiatives that will bring the private sector into the financing, maintenance and in some cases, operation of new light rail lines.

**Water and wastewater**  
Water and wastewater also represents a recent P3 growth area. With new federal drinking water guidelines, aging infrastructure and limited fiscal tools, municipalities are exploring the potential for public-private partnerships to fill the gap. There are many examples of smaller projects (e.g. Britannia Mine, BC; Canmore, Alberta; Goderich, Ontario; Moncton, New Brunswick) across the country that have turned to the private sector for operational expertise and efficiencies. Given the estimated \$88 billion investment required to replace water/wastewater infrastructure in Canada, many other communities are considering the potential for on-time, on-budget delivery available from P3s.

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**The use of public-private partnerships (P3s) to deliver infrastructure in Canada is not new. Various forms of P3s have been employed in Canada for many years, and it is reported that over 150 infrastructure projects have been procured using P3s since the early 1990s. Most industry analysts acknowledge that a ‘second wave’ of P3s has occurred in Canada since 2004.**

P3s are a valid form of project delivery when used in the appropriate situations. In ideal circumstances, they can allow public sector entities to access capital, offer integrated project delivery (one stop shopping in the eyes of the owner), promise some degree of cost and schedule certainty and incentivize some degree of lifecycle discipline. P3s are not a panacea, however. Owners must carefully assess each project to determine whether a conventional delivery model like “design bid build” or a P3 will deliver greatest value for money.

**Importance of credibility**  
Use of P3s on a project where it is not the most appropriate delivery model or where it will not deliver best value for money, or executing a P3 poorly, risks the credibility of P3 as a process. It can also have serious negative consequences for the public owner and its project, end-users and the public, as well as the private sector P3 partner and its team, including the consulting engineer. This could have a negative effect on the entire design and construction industry.  
It is also worth noting that conventional delivery models, when properly and competently executed, can offer many of the benefits of P3s. For example, the use by public owners of Qualification Based Selection (QBS) to procure consulting engineering services will result in innovation and high quality engineering, delivering optimum value for money in infrastructure projects.



John Gamble  
President, Association of Consulting Engineering Companies, Canada

**“The public owner can benefit from efficiencies and innovations brought to the project by the private sector partner as well as cost certainty over the term of the contract”**

**A long term investment**  
Experience in Canada shows that the greatest benefit for both the public owner and the private sector P3 partner generally occurs when the private sector is contracted to maintain and operate the asset for 25 or more years in addition to designing, building and providing the financing for the asset. The public owner can benefit from efficiencies and innovations brought to the project by the private sector partner as well as cost certainty over the term of the contract. Meanwhile, the private sector partner can rely on a long-term source of revenue that is reasonably secure.  
In any form of project delivery, including P3s, the best results are achieved when there is a fair sharing of risk and reward among the parties—including the consulting

engineer — and when risk is allocated to the party best able to manage that risk.  
Consulting engineers and other design professionals must understand that there are risks specific to P3 projects that are very different from those encountered in conventional delivery models. Principal among those risks are very high pursuit costs which are typically not compensated at the engineer’s usual rates, and a strategy on the part of the public owner to transfer its risks to the private sector P3 partner. The private sector partner will in turn seek to transfer those risks to its team, including the consulting engineer.  
Design professionals must be prepared to negotiate reasonable limits on the risk they assume and ensure appropriate compensation for those risks they choose to accept.

**Careful consideration**  
Ultimately, the success of a P3 is highly dependent upon the team that the private sector P3 partners assemble to fulfill their obligations to the public owner. All parties must carefully consider the qualifications and expertise of all others on the team before deciding to participate. Underperformance by one member of the team will have serious negative consequences for others on the project team, for the public owner and for the end-users.  
The owner relies heavily on the team to design and deliver an asset that best meets its needs based on the requirements in the project agreement. Owners must be very diligent in assessing the qualifications of the private sector team, and must recognize that they are making a ‘leap of faith’ in the selection of their private sector partner on a P3 project.

JOHN GAMBLE  
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# INSIGHT



## PROFILE

### Montreal University Research Centre

- **Project name:** The University of Montreal Hospital Research Centre (CRCHUM) is the research arm of the CHUM. Its research activities directly contribute to the hospital's mission: health care, teaching, research, health promotion and technology evaluation. It will be one of the most prominent Research Centres in North America.
- **Project location:** Situated at the heart of the Health Quarter and close to the Montreal Conference Center (Montreal, Quebec)
- **Project description:** The project involves the design, construction, financing and operation of a ~68,800m<sup>2</sup> state-of-the-art clinical research centre facility focused on innovation, non-invasive human exploration and knowledge transfer for health care services and teaching. The CRCHUM, scheduled to open its doors in September 2013, will be home to more than 1600 people, including researchers, students, postdoctoral fellows, technicians and personnel.
- **Project delivery type:** Design-Build-Finance-Maintain (DBFM)
- **Financial close:** achieved in May 2010
- **Project cost:** \$470 million
- **Current status:** Under construction (Substantial completion in September 2013)
- **Concession term:** 30 years following construction completion.
- **Consortium:** Project Developers and Equity Sponsors: Fiera Axium Infrastructure, Meridiam Infrastructure
- **Construction contractors:** Consortium Pomerleau Verreault
- **Operations and Maintenance Provider:** Honeywell
- **Senior debt:** Fixed-rate, fully amortizing project finance bonds having a credit rating of "A-"
- **Website:** <http://crchum.com/crchum.en.html>

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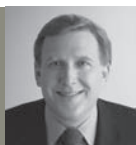


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# PANEL OF EXPERTS

	<b>Sal Bianco</b> Partner, National Engineering, Construction Leader, Audit and Assurance Group, PwC 	<b>Tarek El-Khatib</b> Senior Partner, Zeidler Partnership Architects 	<b>Thomas Barlow</b> Partner, Infrastructure & PPP Group, Fasken Martineau 
<b>Question 1:</b> Can you explain how P3s have affected work in your sector?	<b>The P3 model</b> has impacted the accounting and advisory profession in many ways. Firstly, it has led to a need to create an accounting model for these complex P3 transactions. These accounting rules were designed to capture the substance of the P3 model, and were developed 6 years ago when the International Accounting rules were first published to provide a framework for all to use. From an advisory prospective, the profession has created specialists in P3 model development, economics and tax structures. There are now also advisory personnel responsible for developing operations to administer, assess and develop these projects to assist both private and public sector users.	<b>Managing cost</b> is a tremendous force that shapes those projects. The trap becomes somehow that it is okay for everything to be the same in order to meet these stringent requirements. The task, however, is to manage successfully these forces in order to produce a project that provides meaningful cultural value for the community it serves and become financially sustainable in the long run.	<b>Since we began</b> working on P3 projects and alternative financing, we have seen increased numbers of experienced lawyers contributing to the renewal of Canada's infrastructure by structuring, financing and completing transactions to balance public/private interests and risks. As Canadian legal expertise and experience in P3 projects is recognized internationally, expansion into new jurisdictions, municipalities and markets is growing.
<b>Question 2:</b> Why are P3s an important solution to updating the state of Canada's infrastructure?	<b>The P3 model</b> has allowed the use of private funds and knowledge to build public infrastructure where governments lacked the funding or experience to undertake these projects themselves. We now see the revitalization of urban centres subsequently driving economic growth. New toll roads have been built to handle expanding traffic, hospitals have been renovated to provide better care, transit systems have been renewed to reduce the reliance on vehicles and energy projects have been developed to mitigate the growing demand on power. The P3 model has played a role in international events coming to Canada, including the 2010 Winter Olympics and the upcoming Pan Am games.	<b>There are two</b> major reasons for the P3 model to be used to update and expand Canada's infrastructure. First is the fact that this model of development allows the replacement of full, up-front, capital cost payments with monthly payments for capital and operating costs amortized over 25 or 30 years. This allows more development to occur, overall. The second reason is that the process allows for the transfer of risk from the public sector to the private team to complete the project on-time and on-budget.	<b>The P3 formula</b> allows for optimal risk allocation, best performance and predictable cost over the long term—key concerns for public administrations. The development of procurement best practices and standard project documentation has helped to promote the industry's growth and attracted participants. Canada's strong banking sector and bond market are also providing attractive and reliable alternative financing options.
<b>Question 3:</b> What barriers currently limit the amount of P3 work being performed on a national scale?	<b>Every province in Canada</b> is in a different stage of P3 maturity, with Ontario and BC leading the way. The challenge is that some projects are not well suited for the P3 model and as a result, governments with insufficient funds may put projects on hold. At this time the P3 market is still strong, but how long it will continue, is based on the supply of viable projects that can currently fit the traditional P3 model. Innovation on the P3 model will be required to ensure the future potential of the Canadian Infrastructure market is supported for its future needs	<b>Developing</b> an excellent team of constructors, investors and designers requires exceptional talent and there are not many groups of such quality that can be formed in Canada. One of the major challenges is the very high cost (to all team members) of competing. A company cannot afford to lose many such ventures because the financial repercussions can be severe.	<b>From a legal perspective</b> , there are no barriers limiting the amount of P3 work that can be performed nationally. Integrated national and international law firms can assist clients, public or private, in any Canadian jurisdiction. However, given the maturity of the market, a deep knowledge of precedents and awareness of the local environment are key assets that firms with diverse Canadian experience possess.



**A REVITALIZED TRANSPORTATION CORRIDOR**  
Kicking Horse Canyon highway is a critical link in connecting Canada to global commercial markets.



## PROFILE

### Kicking Horse Canyon

#### Project overview

The area known as the Kicking Horse Canyon — Highway 1 between Golden and Yoho National Park — is among the most breathtaking, scenic stretches on the Trans-Canada Highway. While this mountain route is the major east-west connection between B.C. and Alberta, it has seen little improvement over the past few decades

Revitalizing this portion of the national highway system is critical to strengthening the province as Canada's gateway to the world. Commercial carriers make up a large proportion of traffic along this section of the Trans-Canada Highway, and it is also the favoured route for tourists. A significant transportation corridor historically, this part of Highway 1 is also a critical link to ports and southern routes

#### Project objectives

The Ministry of Transportation's overall goal is to improve safety and operating efficiency for the travelling public along the corridor. The corridor is a strategic link connecting communities, and serves as a major trade corridor providing access to Canadian gateways ports and terminals. In the longer term, it is anticipated that highway improvements will serve multiple needs: population growth, economic development in the surrounding region, and the increased demand for goods movement, tourism traffic and access for residents

The project involved upgrading approximately 26 kilometres of the Trans-Canada Highway from the junction of Highway 95 in Golden to the western boundary of Yoho National Park to a modern four-lane standard, including bridge replacements.

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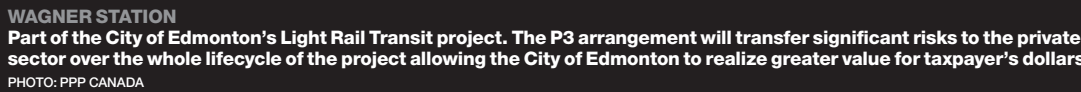
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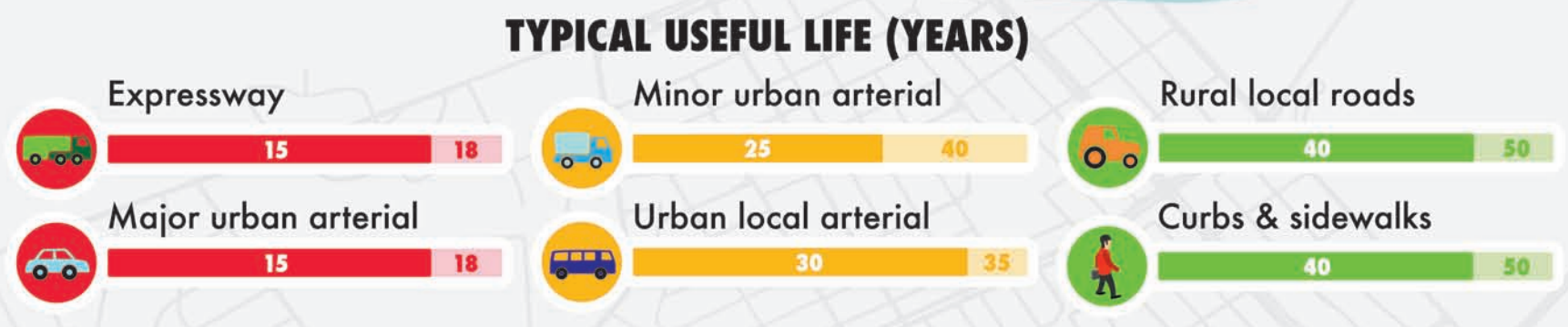
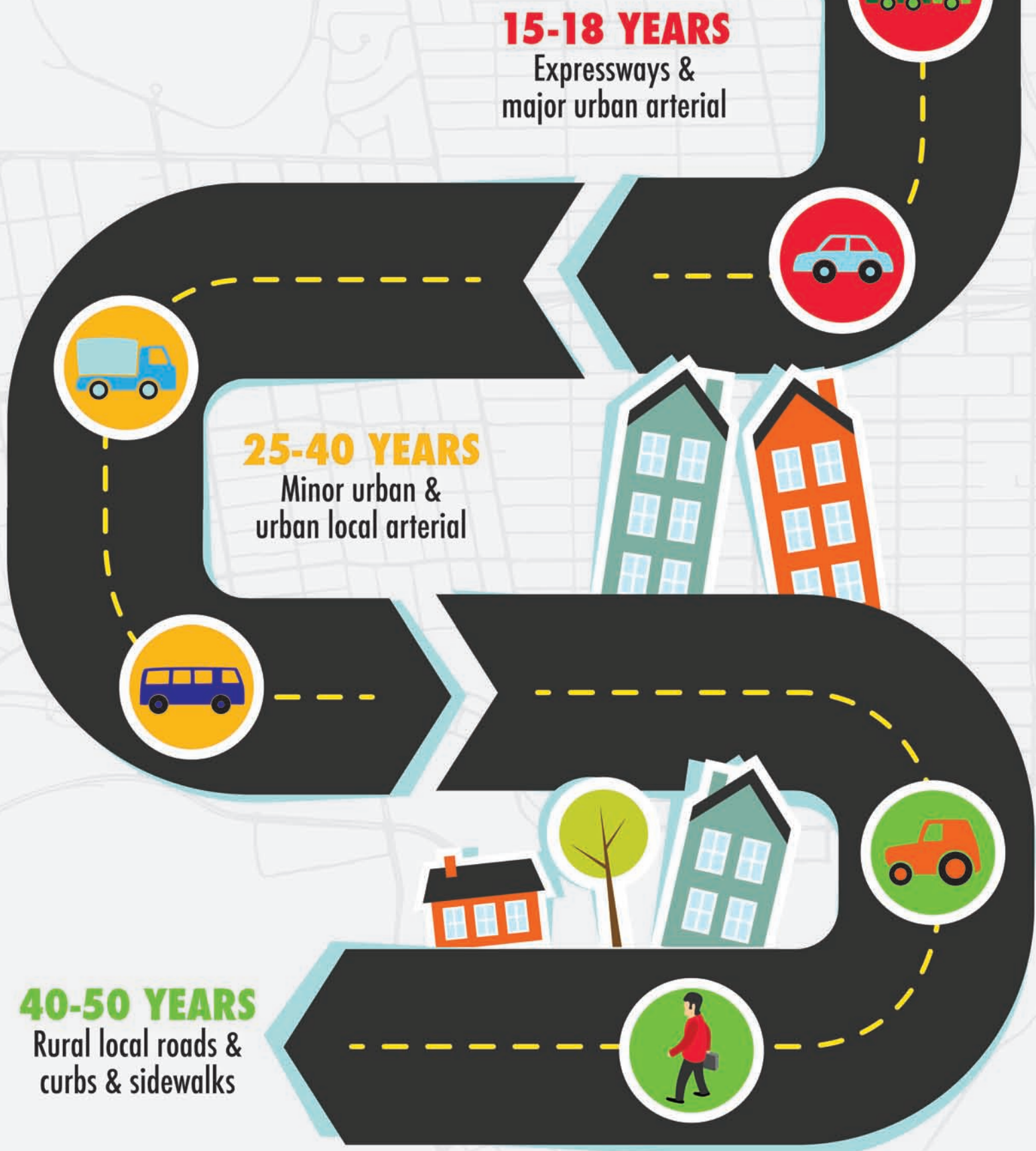


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INSIGHT

TYPICAL LIFESPAN OF  
ROADS



Created by the Canada Foundation for Innovation as part of a special report on Canada's infrastructure gap at [innovation.ca](http://innovation.ca)

# The growing need to update Canada's infrastructure

## Extreme weather events highlight the need for modern and well-maintained infrastructure assets.

Katrina and Sandy are no longer just names; they are now synonymous with devastating natural disasters. The images of downtown New Orleans under metres of water or a rollercoaster sitting upright in the Atlantic Ocean off the New Jersey shore have left indelible images of the force and power of extreme weather events. As the recent Alberta floods demonstrated once again, the frequency and severity of these once-in-a-lifetime storms seem to be increasing, and how societies respond will govern prosperity for years to come.

## The life blood of society

As has been well documented, modern and well-maintained infrastructure is the lifeblood of any society. Unfortunately, many of the infrastructure assets upon which cities now depend were not designed with extreme storms in mind. The result, perhaps unsurprisingly, is the overwhelming of these assets and their potential failure when extreme weather strikes. Residents, businesses and governments are then left with the tremendous human and financial costs to manage.

Over the past 20 years, property damage related to flooding has been increasing. The Insurance Bureau of Canada last fall stated that "the Canadian insurance industry has seen substantial increases in property claims costs, partly as a result of infrastructure that was never designed to cope with the weather trends we

are seeing today." A report by the National Roundtable on the Environment and the Economy reached the same conclusions suggesting that the economic impact of climate change could cost Canadians nearly \$5 billion annually by 2020, and between \$21 to \$43 billion per year by 2050.

**Moving forward**

So, what can governments do to minimize these costs and reduce the impact of these storms on society? As a first step, governments need to get smarter about where and under what conditions development is permitted in floodplains, or areas vulnerable to natural disasters. The risks severe weather present to human health and property are too high to justify ongoing development in these areas.

Secondly, governments must implement new infrastructure



**Frank Rizzardo**  
Chair, Canadian Construction Association

design specifications to account for the changing climate, and, importantly, ensure money is available for preventative measures and to retrofit existing assets to these new standards. Adopting these practices will ensure that the assets continue to function as designed during those times when we need them most.

Finally, we need a change in political attitudes toward capital asset maintenance, which always seem to be the first items cut in difficult financial circumstances. Well-maintained assets, such as a road or bridge, are far less prone to failure than those under stress due to improper or inadequate maintenance.

**A needed investment**

Although these ideas may require a shift in approach, the old adage continues to hold true: an ounce of prevention is worth a pound of cure. While some of these measures may be expensive, any increase will be minimal and pale in comparison to the actual costs of managing the consequences of extreme storms after the fact.