Insight report: Innovation & R&D in construction
Canadian Construction Association

Canadian Construction Association (CCA) is the national advocate for the industry, ensuring fair and transparent procurement, consistent and sufficient investment in infrastructure and attracting a skilled workforce.

Our mission is to “inspire a progressive, innovative and sustainable construction industry that consistently acts with integrity”. Our 20,000 members take great pride in the work they do to build strong, resilient and caring communities across Canada.

We look to lead the construction industry in adopting best practices that will help you in your success, we strive to be an information hub to quickly and effectively connect you, our members, to valued resources, emphasizing technology and innovative adoption, and we want to better support your adoption of tools and best practices.

As part of CCA’s strategic plan A Roadmap for Change, one of CCA’s four values is:

Innovative

We are open to new building and business practices and share this passion for innovation with our members.
Construction research at your fingertips

CCA and Cognit.ca launched the first ever Construction R&D Portal to help you navigate through the vast amount of research on construction within our university network.

$14 billion of research performed by universities annually

100,000+ experts and research documents

225,000 research grants

Data provided is from the cognit.ca tool, and is for illustrative purposes. The searches may yield different results depending on the key words and time the search was effected.
Why it matters to your business:

As the country prepares for economic recovery, a climate lens is an important criteria for the federal government in funding projects. In 2020, the Federal government announced an additional investment of $15 billion for Canada's strengthened climate plan, along with nearly $15 billion for public transit in February 2021. Building on recent investments, Budget 2021 proposes to provide $17.6 billion towards a green recovery to create jobs, build a clean economy, and fight and protect against climate change.

Federal budget 2021

$5 billion over seven years to increase funding for the Strategic Innovation Fund’s Net Zero Accelerator, as detailed in Chapter 5. Through the Net Zero Accelerator the fund would scale up its support for projects that will help decarbonize heavy industry, support clean technologies and help meaningfully accelerate domestic greenhouse gas emissions reductions by 2030.

- Watch: Construction R&D webinar recording on: Long-term performance of the building envelope in the context of climate change

- Read: CCA research paper - Strength, resilience, sustainability: Canada’s construction sector recommendations on adapting to climate change

Number of research projects underway in Canada:

400+
Examples of projects on:

Sustainability in construction

High performance engineered concrete materials and structural systems for innovative and sustainable construction

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:**
Discovery Grants Program - Individual

**Years:**
2014/15 to 2018/19

**Total funding:**
$100,000

**Principle investigator(s)**
Hossain, Khandaker
Ryerson University

Durability of rammed earth blocks

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:**
Engage Grants Program

**Years:**
2019/20

**Total funding:**
$25,000

**Principle investigator(s)**
Siddiqua, Sumi
University of British Columbia
Cost savings in construction

**Why it matters to your business:**

Low-cost bid is often a key component to winning business. And it goes without saying that becoming more profitable is a goal for every business.

With the recent rise of cost of materials and supply chain disruptions causing unprecedented price escalation and shortages of materials, protecting your profitability and increasing your productivity has never been so important.

- Watch: CONnected webinar recording - Protecting your profits: how to manage soaring construction material prices

**Number of research projects underway in Canada:**

40+
Examples of projects on:

Cost savings in construction

**Development of innovative polymer nanocomposite foams**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:**
Collaborative Research and Development Grants

**Years:**
2014/15 to 2016/17

**Total funding:**
$189,494

**Principle investigator(s)**
Park, Chul
University of Toronto

**Improving mobile crane operational cost for the heavy construction industry**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:**
Collaborative Research and Development Grants

**Years:**
2016/17 to 2018/19

**Total funding:**
$200,000

**Principle investigator(s)**
Bouferguene, Ahmed
University of Alberta

**Location-Aware Construction**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:**
Discovery Grants Program - Individual

**Years:**
2012/13 to 2017/18

**Total funding:**
$174,000

**Principle investigator(s)**
Razavi, Saiedeh
McMaster University
Safety in construction

**Why it matters to your business:**

The industry is an essential service and must remain vigilant in protecting workers, their families and communities.

**Webinars:**

- Watch: CONnected webinar recording - Navigating COVID-19 - Construction worksite protocols for health and safety
- Watch: CONnected webinar recording - Keeping health and safety standards high
- Register: Construction R&D webinar: Using AI to improve safety and productivity of construction projects

**Number of research projects underway in Canada:**

475+
Examples of projects on:

**Safety in construction**

**Fire safety of subway cars and underground subway stations**

**Funding details**

Natural Sciences and Engineering Research Council of Canada

**Grant type:**
Discovery Grants
Program - Individual

**Years:**
2019/20

**Total funding:**
$32,000

**Principle investigator(s)**

Hadjisophocleous, George
Carleton University

**Rebuilding lives post-disaster innovative community practices for sustainable development**

**Funding details**

Social Sciences and Humanities Research Council

**Grant type:**
Partnership Development Grants

**Years:**
2011/12 to 2013/14

**Total funding:**
$199,938

**Principle investigator(s)**

Drolet, Julie L
Thompson Rivers University
Why it matters to your business:

Artificial intelligence can impact multiple areas of construction – from safety, to productivity, to workforce attraction. Its many varied applications offer the construction industry multiple opportunities to choose the solutions that best fit their business.

- Read: Artificial intelligence and its impact on construction
- Watch: Construction R&D webinar recording – Automating visual inspection using AI

Number of research projects underway in Canada:

50+
Examples of projects on:

**Artificial intelligence**

- **Development of the next generation of smart salt trucks for sustainable winter road maintenance**

  **Funding details**
  - Natural Sciences and Engineering Research Council of Canada
  - **Grant type:** Collaborative Research and Development Grants
  - **Years:** 2019/20
  - **Total funding:** $49,703

  **Principle investigator(s)**
  - Gharabaghi, Bahram
  - University of Guelph

- **Haul truck production and maintenance data modelling of traditional, autonomous and operator assist scenarios**

  **Funding details**
  - Natural Sciences and Engineering Research Council of Canada
  - **Grant type:** Discovery Grants Program - Individual
  - **Years:** 2018/19 to 2019/20
  - **Total funding:** $52,000

  **Principle investigator(s)**
  - Hall, Robert
  - University of Alberta
**Why it matters to your business:**

Providing an environment that supports creative thinking, and removes fear of failure allows businesses to generate new products, services and processes – leading to growth and increased productivity. In a world where 70% of digital transformations fail, a culture of innovation can help you be in the successful 30%.

- **Self assess your digital maturity**
- **Read: CCA and KPMG report - Construction in a digital world - A deep dive into technological adoption in Canada’s construction industry**
- **CONnected webinar recording - Leading change through innovation**
- **Watch: CCA and BDO Power of Innovation webinar recording - Tactical advice for capturing value of innovation in construction**

**Number of research projects underway in Canada:**

10
Examples of projects on:

Innovation culture

Instilling a new culture for innovation in Canada

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:** Strategic Workshops Program

**Years:** 2015/16

**Total funding:** $25,000

**Principle investigator(s)**
Robinson Fayek, Aminah
University of Alberta

Thinking while doing: connecting insight to innovations in the construction sector

**Funding details**
Social Sciences and Humanities Research Council

**Grant type:** Partnership Grants

**Years:** 2012/13

**Total funding:** $20,000
Modular construction

Why it matters to your business:

Technological improvements, economic demands, and changing mind-sets are attracting an extraordinary wave of interest and investments in Modular Construction in North America. With advantages from cost savings to productivity boost, Modular Construction could significantly reshape the way we build.

Watch: Construction R&D webinar recording - Digitization for pre fabrication

Number of research projects underway in Canada:

116
Examples of projects on: Modular construction

**Design, selection, and management of modular crane rigging for heavy industrial projects**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:** Collaborative Research and Development Grants

**Years:** 2018/19 to 2019/20

**Total funding:** $199,825

**Principle investigator(s)**
Bouferguene, Ahmed
University of Alberta

**Production efficiency improvement and lean application for modular manufacturing**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:** Engage Grants Program

**Years:** 2014/15

**Total funding:** $25,000

**Principle investigator(s)**
AlHussein, Mohamed
University of Alberta
Remote construction

**Why it matters to your business:**

The COVID-19 crisis has shown that projects in construction can be adapted to remote work and will continue in the future. As many construction projects increase in size and complexity, remote construction can improve work efficiency and productivity.

- Register: Construction R&D webinar: Robots for Architectural Design and Construction

**Number of research projects underway in Canada:**

160+
Examples of projects on: Remote construction

**Energy system design and risk mitigation for off-grid communities**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:** Engage Plus Grants Program

**Years:** 2016/17

**Total funding:** $12,500

**Principle investigator(s)**
Buckham, Brad
University of Victoria

**Autonomous drive-by monitoring technologies for developing smart transportation infrastructure systems**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:** Discovery Grants Program - Individual

**Years:** 2019/20

**Total funding:** $26,000

**Principle investigator(s)**
Gul, Mustafa
University of Alberta

**Remote health condition monitoring of water pump systems**

**Funding details**
Natural Sciences and Engineering Research Council of Canada

**Grant type:** Collaborative Research and Development Grants

**Years:** 2019/20

**Total funding:** $50,000

**Principle investigator(s)**
Wang, Wilson
Lakehead University
Financing innovation

**Why it matters to your business:**

Innovation costs resources and Scientific Research and Experimental Development (SR&ED) Investment Tax Credits (ITCs) provide tax relief to offset the cost of innovation.

Although construction contributes to 7% of GDP only 0.7% is claimed by construction companies as SR&ED tax credit.

Whether you’re overcoming specific ground conditions, adapting equipment, creating new processes or developing better, safer, or greener methods of construction, you are almost certainly undertaking SR&ED.

- **Read:** Find out if your company is eligible for SR&ED tax credit through CCA’s exclusive credit writing service

- **Watch:** CONnected webinar recording - How to Finance Innovation during a crisis
Interested in learning more about innovation in construction?

Contact:

Kenny Leon
Director, Innovation & Event Experience
kleon@cca-acc.com

Or attend one of our webinars:

https://www.cca-acc.com/events/connected-webinars

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