June 2021

Insight report: Innovation & R&D in construction

Canadian Construction Association

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.

Sustainability in construction

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

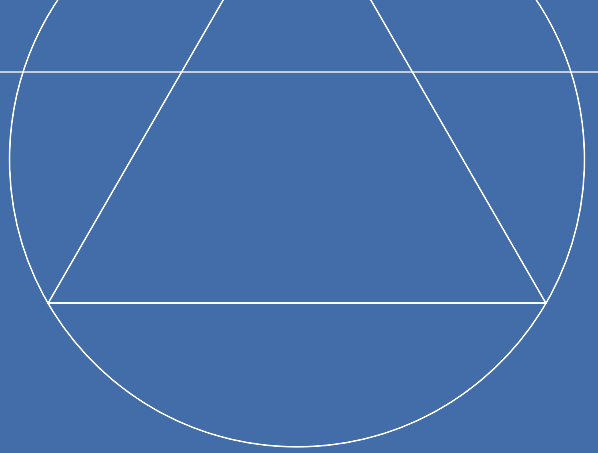
Years:
2012/13 to 2017/18

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

Artificial intelligence

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

Innovation culture

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
- Register: CCA and BDO Power of Innovation webinar - How to Foster "Everyday Innovation" in Your Organization Using Design Thinking

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
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Or attend one of our webinars:

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

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