

Construction Specifications Canada is an organization representing diverse interests in the construction industry and related professions. It is dedicated to improving the quality and flow of information between these interests, whether in the form of specifications, contract administration or marketing.

January 2024 Edition

Editor: Tracey Stawnichy

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## THE FUTURE OF SUSTAINABILITY IN CONSTRUCTION

**Date:** Thursday, January 18, 2024

**Time:** 4:00pm – 7:00pm

**Place:** NAIT PIC Building, Room 120/122

10210 Princess Elizabeth Ave NW, Edmonton, AB T5G 0Y2

**Registration Begins:** 4:00pm

**Food & Mingling:** 5:15pm – 7:00pm (*dinner included with ticket; wine and beer available for purchase at the bar*)

**Presentation By:** Audrina Lim (Chandos) and  
Stephanie Fargas (Dialog)

This one-hour presentation will discuss the future of sustainability from the perspective of a contractor and a consultant.

One of the youngest female Registered Specification Writer (RSW) in Canada, Stephanie is recognized by her peers as an emerging leader in specifications. She has a wealth of experience and leadership in specifications for material product research and preparing project manuals for various project sectors across Canada and the United States. As part of our Calgary specifications group, Stephanie brings a refreshingly creative approach to research and writing and can capture and transform design intent into clear, precise specifications. Stephanie obtained her RSW designation in 2019 with her research focus on embodied carbon building materials. Passionate about sustainability, Stephanie is committed to guiding material transparency and embodied carbon. She proudly led the research and development of specifications for our (and Canada's) first Living Building Challenge: The Bill Fisch Forest Stewardship and Education Centre.

Audrina Lim is an architect with 20 years of professional experience, practising in Australia and Canada. Her interest in ethical, sustainable development has empowered her to shift careers into the sustainability realm within an innovative General Contractor, Chandos Construction. Audrina's role as the Director of Carbon Transition holds a mandate to help shape internal policy, practise, measurement, and research to bring Chandos' goal of Net Zero 2040 into action. Through her experience as an architect and management professional, Audrina brings a multidisciplinary aspect into her role and is excited to be collaborating with industry partners to build a resilient, low-carbon construction sector. Audrina volunteers on the board of directors with the Calgary Construction Association and is a member of the RAIC as an International Associate and mentors newcomer professionals with the Calgary Immigrant Women's Association.

Please join us as we listen and learn from these two fantastic industry leaders!

<b>2024 Edmonton Chapter Executive</b>		
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<b>Vice-Chairman</b>	Dylan Leclair	587 335 9552
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**FOR FURTHER INFORMATION**

Contact any member of the Executive, attend one of our Chapter Meetings, send your name and address to CSC Edmonton Chapter, PO Box 35093 Mid Town PO. Edmonton, AB T5J 0B7, or go to [edmonton.csc-dcc.ca](http://edmonton.csc-dcc.ca) for additional contact information.

**GOALS OF CSC**

Construction Specifications Canada is a multi-disciplinary non-profit association dedicated to the improvement of communication, contract documentation, and technical information in the Construction Industry. CSC is a national Association with Chapters in most major Canadian Cities.

To this end, CSC pursues the study of systems and procedures that will improve the coordination and dissemination of information relevant to the construction process.

We seek to enhance the quality of the design and management aspects of the construction activity through programs of publication, education, and professional development, believing that by so doing, we can contribute best to the efficiency and effectiveness of the construction industry as a whole.

**OBJECTIVES OF CSC**

To foster the interest of those who are engaged in or who are affected by the compilation or use any forms of specifications for the construction industry.

To publish literature pertaining to the construction industry.

To engage in activities to improve procedures and techniques related to the construction industry.

**The opinions and comments expressed by the authors do not necessarily reflect the official views of Construction Specifications Canada. Also, appearance of advertisements and new product or service information does not constitute an endorsement of those featured products or services.**

## Announcements:

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## Chair's Message

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**Andrew Brassington, CSC Edmonton | Chapter Chair**

Hello Chapter Members,

Happy New Year! Here's to the start of something great. I have always been a big believer in "next year is going to be better than this year..." and here we are!

Ramping up again after the holidays can be tricky, but here's a way to start – we have a great event this month on the Future of Sustainability in Construction, and we'd love to see you there!

Your membership is important to us. If you have not renewed, please do so. Your support helps us execute all the amazing events we are going to have this year.

Want to take it up a notch? It's a great time to look at joining the Executive. Please reach out to me or any one of the Executive members and we'll see where you can fit in!

All the best this year from myself and the Executive.

Cheers!"

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## Membership in CSC

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**Dave Lawrence**



In the construction industry's fast-paced environment, the need for and value of Construction Specifications Canada is greater than ever. CSC brings together individuals from all segments of the construction industry. All who have a vested interest in Canada's largest industry are invited to join CSC. When you join CSC, you become part of the only association that brings together professionals from all aspects of the construction industry.

### DESIGN TEAM

CSC offers members of the Design Team the opportunity to meet with other members and exchange information. It also affords you the chance to help improve technology and its management, and the means to improve ways in which your ideals are translated into clear, concise, and complete documentation.

### BUILDING TEAM

If you are a member of the Building Team, CSC offers you the opportunity to become involved in formulating specifications. Your valuable input into the programs can help generate time and cost savings, as well as improve performance.

## SUPPLY TEAM

The multi-disciplinary composition of CSC allows members of the Supply Team to meet with other members of the construction team. CSC programs in data filing and information retrieval are geared to present convenient and concise information on your products for proper evaluation and specification.

## THE STUDENT

If you are a student of architecture, engineering, or construction technology, CSC will provide you with a greater exposure to, and a better understanding of, the construction industry, giving you an excellent opportunity if you plan a career in the construction field.

## People and Places – Welcome to new and past CSC Edmonton Chapter Members! Fresh Faces (New Members)

None this month.

## Yes, We've Moved (Contact / Mailing Address Update) - new

### Douglas Rossum, CTR

Technical Representative, Enercorp

P: (587) 839-9202

E: [dougr@enercorp.ca](mailto:dougr@enercorp.ca)

### Darren Bertrand, CSP

Specification Writer, Ghafari Associates

P: (780) 904-9593

E: [dbertrand99@hotmail.com](mailto:dbertrand99@hotmail.com)

## Previous Members Re-Joining / Re-Activated

None this month.

## CSC Education:

**Mike Ewaskiw, CTR, Manager, Architectural & Engineering Services, Stonhard**



### Principles of Construction Documentation

The PCD course is an introductory course that will enable the student to have a better understanding of construction documentation (specifications, drawings, and schedules), products, bidding procedures, and contracts. **It is also a prerequisite to all the other CSC education courses.**

### Specifier 1

Specifier 1 is an intermediate level course that will take the individual beyond the concepts previously introduced in the PCD Course. Although some of the same topics are included, the depth of comprehension and explanation exceed that of the PCD course. The Specifier 1 is a prerequisite for the **Certified Specification Practitioner (CSP)** designation from CSC. Successful completion of the course may be credited toward the experience component requirements for the Registered Specification Writer (RSW) designation.

### Technical Representative

The TR course provides a better understanding of contract documents and bidding procedures, product representation, professionalism, and ethics, and will provide a new depth of understanding and explanation of concepts beyond what was previously introduced in the PCD course. The course is designed for the individual involved in the supply section of the construction industry, such as manufacturer representatives, agents, or distributors of products. The student will have successfully completed the PCD course. Contact Mike for all your education needs.  
P: 780-237-7844 E: [mewaskiw@stonhard.com](mailto:mewaskiw@stonhard.com)

## EDUCATION COURSES

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### Upcoming Classes:

Principals of Construction Documentation (PCD) – January 8, 2024

Specifier – January 8, 2024

Construction Contract Administration (CCA) – January 8, 2024

Technical Representative (TR) – TBD

### Upcoming Classes Online:

Principles of Construction Documentation (PCD) – January 8, 2024

Construction Contract Administrator (CCA) – TBD

Specifier – TBD

Technical Representative (TR) – TBD

### Upcoming Virtual Classes:

Principles of Construction Documentation (PCD) – January 12, 2024

Construction Contract Administration (CCA) – November 3, 2023 and February 23, 2024

Specifier (SP) – November 3, 2023 and February 23, 2024

Technical Representative (TR) – November 3, 2023 and February 23, 2024

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### Social Media:

Check us out:



## Articles of Interest

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### The Role of Biomimicry in Disaster-Resilient Architecture

Sourced from: <https://www.archdaily.com> / Ankitha Gattupalli

The terms resiliency and sustainability, although similar in meaning, refer to different design approaches in the context of architecture and cities. Sustainability involves the preservation of natural resources to uphold ecological equilibrium, while resiliency entails the ability to rebound, adapt, and persist in moments of adversity. These concepts greatly influence and complement each other, especially in cases of designing disaster-resilient buildings. Conventional design processes relating to resilient infrastructure have been based on principles of structural robustness and integrity as a measure against anticipated natural disasters. However, sustainable resiliency points at the opportunity of reinforcing buildings by embedding them in biological and ecological systems.

In present day scenarios of changing climates and fast-paced technological disruptions, architects seek solutions that enable buildings to withstand known and unknown disasters. Resilience, a critical concept in disaster preparedness, is defined differently across various fields, from engineering to ecology. Theory and practice around disaster-resilient architecture has often focused on resistance to natural hazards and recovery after them. As we face a future of unprecedented change and uncertainty, a new approach is required to ensure that buildings and infrastructure can not only withstand shocks but also adapt to constantly evolving circumstances.

In wake of recent global natural disasters, particularly those of geological origin such as tsunamis and earthquakes, architects have turned to biomimicry as an ecological strategy to enhance the disaster resilience in construction. Biomimicry, the practice of imitating nature's designs and strategies, holds the potential to revolutionize disaster-resilience in a sustainable manner. The need for flexible and agile infrastructure is met by many principles found in biomimicry, ensuring resiliency. While the field has been primarily associated with form and process-level imitation in architecture, its application at a system level envisions buildings that adapt and thrive in changing environments.

The definition of resilience varies across different disciplines. In the context of architecture, it can be explained in four key concepts: rebound, robustness, extension, and adaptability. These concepts describe a building's response to natural disasters, including its ability to recover, withstand shocks, and maintain functionality. Natural forms and systems have long demonstrated resilience to disturbances by adapting to changing conditions and maintaining their structure, function, and identity along similar notions. Studying these key concepts in nature can inform structural form and behavior in building design.

Natural elements have the ability to maximize their strength with the use of minimal materials and energy. Mimicking the structural form of natural elements such as trees, bones, or shells can provide clues to designing natural, resilient, and adaptive buildings. The geometrical proportions and structural properties of Bamboo inspired the design of SOM's China World Trade Center. Located in a seismic-prone area, Beijing's second-tallest building needed a structural system that would efficiently withstand earthquakes. Bamboo stems, marked by nodes and internodes, change in diameter where internodes are hollow, and the maximum bending resistance is found at a specific point from the stem's neutral axis. These characteristics in bamboo's load-bearing process provided a blueprint for enhancing structural resilience of the skyscraper against lateral loads.

In addition to mimicking natural forms, enhancing the resilience of building structures through biomimicry involves a combination of systemic approaches. Like nature, resilient architecture requires the ability to adapt and the capacity to respond to changing environmental conditions. Buildings must align with its surroundings, fostering cooperative relationships and mimicking nature's feedback loops,

optimizing efficiency and minimizing waste. A modular approach to design, as an imitation of nature's building blocks, boosts flexibility and agility in buildings. To foster adaptation, modularity may enable incremental adjustments to ensure resilience and resource efficiency. This inherent ability to restructure and adapt is a key attribute that can be borrowed for designing resilient infrastructure.

Natural systems continually evolve through prototyping, eliminating unsuccessful strategies through mechanisms such as mutation and natural selection. In contrast, building design leans heavily on past practices, potentially impeding innovation. To bolster structural resilience, recognizing system limitations through testing and prototyping is crucial in the design process. Embracing an evolutionary approach and accounting for past failures during design can better prepare infrastructure for unexpected disasters.

As the world faces unprecedented challenges due to rapidly changing conditions, the role of architects in designing resilient systems becomes increasingly vital. Biomimicry, at various scales of the built environment, offers a promising avenue to enhance infrastructure resilience. While the concept has been primarily applied at the level of individual organisms or specific processes, the focus must shift to ecosystem-level mimicry through implementing modularity and prototyping in the design process. The success of resilient architecture lies in the harmony between human innovation and the wisdom of nature.

## **How to Think Faster, Talk Smarter, and Shine When the Pressure is On**

Sourced from: <https://www.fastcompany.com> / NEXT BIG IDEA CLUB

Matt Abrahams teaches strategic communication at Stanford Graduate School of Business. He also hosts the award-winning podcast Think Fast, Talk Smart. Because of his expertise, many presenters have turned to him for guidance in preparing for high-stakes speeches, such as Nobel Prize award presentations, TED Talks, or speaking before the World Economic Forum.

Below, Abrahams shares five key insights from his new book, Think Faster, Talk Smarter: How to Speak Successfully When You're Put on the Spot.

### **SPEAKING UP WITHOUT FREAKING OUT**

I'd like you to try something. Cross your arms in front of you, as you normally would. Now, uncross them and cross them again, this time folding the other arm on top. Notice how weird this feels. For a split second, you're not quite sure what to do with your arms. Your mind becomes detached from your body and you feel confused, uncertain, and maybe a tiny bit panicked.

Being put on the spot and asked to communicate can feel like this. You often know what you think, just as you know how to cross your arms. But when the setting changes and the pressure is on—you can feel confused, overwhelmed, or threatened. Your fight-or-flight response kicks in—your heart pounds, your limbs shake, and your brain gets foggy. Most of us respond this way when unprepared, but you are not alone if you get nervous speaking in a planned or spontaneous situation.

The good news is that we can adopt techniques to become more comfortable communicating ideas in any situation without our anxiety kicking into high gear. We can also become more compelling.

The best way to tame the speaking anxiety beast is to take a two-pronged approach. We must address both the symptoms and sources. Symptoms are what happen to us physiologically and mentally and sources are the things that initiate and exacerbate anxiety. Breathing is an amazing way to reduce anxiety symptoms. Taking a slow inhale deep into your lower abdomen and holding before

releasing can reduce anxiety symptoms.

A major blockade is concern about not achieving our goal. When we speak, we have an imagined goal, and we can be nervous if we think we might not achieve it. Becoming present-oriented takes us away from a perceived negative future outcome. We can do something physical to become present-oriented. Walk around the block, have a conversation with somebody, or listen to a song or playlist. You can even start at 100 and count backward by 17.

By leveraging anxiety management techniques, you can create your own anxiety management plan so you can feel calmer and more confident when asked to speak spontaneously.

## **CONNECTION OVER PERFECTION**

One of the most persistent and unhelpful myths we hold about spontaneous communication is the notion that the best, most compelling communicators express themselves perfectly. Just look at how polished those successful TED Talk presenters are, even though they're speaking casually, without notes. Or look at leaders like Apple's Steve Jobs or former first lady Michelle Obama who are famously charismatic and compelling when they appear before large audiences.

In truth, TED Talks are heavily scripted and sometimes even edited. Leaders like Jobs and Obama spend months practicing and refining their presentations. We often confuse these planned, perfected communications with what we encounter more frequently in our lives: spontaneous, off-the-cuff remarks. We evaluate how we do in these everyday situations using the standards we apply to rehearsed talks. That's a mistake. Rather than aiming for perfection, as we might do in presentations, we should instead embrace connection and focus on how we might best engage in the moment. By training ourselves to quiet our critical evaluation, we can lower stress levels and better accomplish our communication goals.

Once we've granted ourselves permission to engage without obsessing over performance, we can dial down reflexive judging and evaluation by accepting mistakes when they happen. Stressing over little mistakes is mentally taxing. Think of how much more present and connected we could be without obsessing over screwing up.

To embrace mistakes, we can think of them not as the opposite of success, but as the means to it. I find it helpful to envision mistakes as "missed takes" in the making of a film. When a crew films a scene, they will often do several versions, or "takes." They do this not because any one take is right or wrong, but because the director and crew want to broaden their options. They seek variety so they can choose takes that are more creative, unique, or imaginative.

Communication situations can be seen as opportunities to try possible approaches. In this way, what we experience as a mistake just becomes another "take" among many, one that helps illuminate what better communication might look like. Mistakes in this vein can focus our efforts. Rather than diminishing us, they can empower us and put us on a path to become better communicators. Reframing errors as missed takes allows us to focus on connection over perfection.

## **OPPORTUNITIES OVER THREATS AND CHALLENGES**

Many of us see spontaneous speaking situations as scary and threatening. We feel as if we're being judged and evaluated. Q&A is about getting the right answer. Small talk is about being delightful and engaging. Toasts are about honoring people enough.

When we see situations as threats and challenges, it affects our demeanor and tone. We speak quickly and abruptly. We hold our bodies tightly. What if we saw these situations as opportunities to connect and engage? Our entire demeanor and tone would change.

Once we reframe spontaneous speaking as an opportunity to extend, expand, and collaborate, we



must also turn the volume down on our ruminations. Duke University's legendary basketball coach Mike Krzyzewski, or Coach K, famously came up with the advice of "next play." If you miss a shot in basketball, swing and miss in baseball, or throw an interception in American football, you should quickly reset your mind and keep going. Focus on the task at hand rather than on what just happened.

By the same token, if you sink a three-pointer, hit a grand slam, or throw a touchdown pass, you also should keep going. Athletic competition is fluid. To perform at your best, you should try to stay focused on what's happening now and not allow what just happened to distract you, regardless of how devastating or wonderful it was. As Coach K once put it, "Whatever you have just done is not nearly as important as what you are doing right now."

Shifting to a "next play" mindset might seem daunting—we're used to attaching emotionally to past outcomes and struggle to break that pattern. We can practice staying in the moment and moving on to the next play. Budding improvisers often learn a game called New Choice. They start performing a scene and at various points, the organizer of the game shouts, "New choice!" The performers drop the current scene or choice and begin a new one, uttering whatever snippets of dialogue come to them. You can play this game yourself using a timer or by enlisting a friend to shout "New choice" at odd intervals. Doing this for even a few minutes can help habituate you to simply leave what you were doing and move on.

The next time you find yourself in a spontaneous speaking situation where things aren't going as planned, don't dwell on it. Allow yourself a brief moment to feel emotion—then refocus and move on to the next play.

### **PACE, SPACE, GRACE**

We are bad listeners. We often listen just enough to get the gist of what people are saying so we can prepare our response, judge what was said, or transition to what we think is more important.

Imagine you come out of a meeting with a colleague and your colleague asks for feedback. Upon hearing that request, you immediately go into all the things that didn't go well or could have gone better. But if you had listened more closely, you might have noticed that your colleague had exited through the back door, not the front door like you. You might notice that they were looking down and speaking softly. What they really wanted was not feedback but support, and the fact that you gave feedback made things worse.

To truly connect with audiences and increase the likelihood of responding appropriately, we must fight distraction and orient ourselves toward them. We must listen to what they're saying and how they are saying it, paying attention not just to the words but to nonverbal and situational signs that evoke their deeper emotions, desires, and needs.

Drawing on his experiences playing college basketball, Stanford lecturer and consultant Collins Dobbs has created a useful three-step framework for handling difficult encounters with others called Pace, Space, and Grace. With his permission, I have adopted his framework to help us all become better listeners. In essence, this framework prompts us to slow down, reflect on what might be going on in the minds of others, and cue into our intuitive sense of what's happening. The result is more empathic listening and more informed communication.

First, we need to focus on pace by slowing things down. Life comes at us fast, and we need to slow down to listen better. We also have to give ourselves space, both physical space (be in an environment where you can truly listen) and mental space. We must focus on what's happening in the moment. And finally, we have to give ourselves grace, meaning permission to stop what's going on and really listen not just to what's being said and how it's being said, but to listen internally to how

we're responding and feeling.

By slowing down, making space, and giving ourselves permission to listen to what we hear from others and ourselves, we not only respond better, but we connect more.

## STRUCTURE SETS YOU FREE

There are several counterintuitive ideas in Think Faster, Talk Smarter, but the two biggest are: First, we must prepare to be spontaneous. Second, leveraging structure makes it easier to be creative, concise, and clear when speaking spontaneously.

Many of us might think that a structure would prevent agility in the moment. Quite to the contrary, structure enables spontaneous communication. When the best jazz artists improvise, they're not just playing random notes. They're improvising within the bounds of informal, preset musical structures. The melodies and chord progressions they have practiced serve as structures for improvisation. A preordained structure makes it easier for jazz musicians to compose spontaneously. Song structure also helps orient listeners, giving them a logic to follow.

When communicating, structure helps you focus your thoughts and share them with your audience in a clear, concise way. Structure is nothing more than a logical connection of ideas that have a beginning, middle, and end.

Let's get specific. My favorite structure is What—So What—Now What. This structure is simple and versatile. You start by discussing an idea, opinion, product, service, or argument (What). Then you explain why it's important, helpful, or useful (So What). You end with what your audience should do with this knowledge (Now What).

For example, assume your colleague asks for feedback, and after confirming they really do want feedback, you might say: "That meeting went well except when you talked about the implementation plan. You spoke quickly and didn't give a lot of detail." That's the What. "When you speak quickly without giving a lot of detail, your audience might think you're not prepared and you're a bit uncomfortable." That's the So What. "The next time you speak on the implementation plan, talk more slowly and I want you to add these two specific examples." That's the Now What.

Leveraging a structure sets you free from worrying about how you are going to package your message so that you can focus on what you are going to say and how you are going to connect it to your audience.

The ability to speak successfully in spontaneous situations can impact our personal and professional lives: Deals are won, relationships initiated, questions answered, and much more. Whether we like it or not, the need to speak spontaneously is part of our everyday lives. With repetition, reflection, and feedback, you can get better at in-the-moment communication. Think faster and talk smarter so as to shine when put on the spot.

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## How are Ancient Roman and Mayan Buildings Still Standing? Scientists are Unlocking Their Secrets

Sourced from: <https://www.msn.com> / The Canadian Press

In the quest to build better for the future, some are looking for answers in the long-ago past.

Ancient builders across the world created structures that are still standing today, thousands of years later – from Roman engineers who poured thick concrete sea barriers, to Maya masons who crafted plaster sculptures to their gods, to Chinese builders who raised walls against invaders.

Yet scores of more recent structures are already staring down their expiration dates: The concrete that makes up much of our modern world has a lifespan of around 50 to 100 years.

A growing number of scientists have been studying materials from long-ago eras – chipping off chunks of buildings, poring over historical texts, mixing up copycat recipes – hoping to uncover how they've held up for millennia.

This reverse engineering has turned up a surprising list of ingredients that were mixed into old buildings – materials such as tree bark, volcanic ash, rice, beer and even urine. These unexpected add-ins could be key to some pretty impressive properties, like the ability to get stronger over time and “heal” cracks when they form.

Figuring out how to copy those features could have real impacts today: While our modern concrete has the strength to hold up massive skyscrapers and heavy infrastructure, it can't compete with the endurance of these ancient materials.

And with the rising threats of climate change, there's a growing call to make construction more sustainable. A recent UN report estimates that the built environment is responsible for more than a third of global CO2 emissions — and cement production alone makes up more than 7% of those emissions.

“If you improve the properties of the material by using ... traditional recipes from Maya people or the ancient Chinese, you can produce material that can be used in modern construction in a much more sustainable way,” said Carlos Rodriguez-Navarro, a cultural heritage researcher at Spain's University of Granada.

Is ancient Roman concrete better than today's?

Many researchers have turned to the Romans for inspiration. Starting around 200 BCE, the architects of the Roman Empire were building impressive concrete structures that have stood the test of time – from the soaring dome of the Pantheon to the sturdy aqueducts that still carry water today.

Even in harbors, where seawater has been battering structures for ages, you'll find concrete “basically the way it was when it was poured 2,000 years ago,” said John Oleson, an archaeologist at the University of Victoria in Canada.

Most modern concrete starts with Portland cement, a powder made by heating limestone and clay to super-high temperatures and grinding them up. That cement is mixed with water to create a chemically reactive paste. Then, chunks of material like rock and gravel are added, and the cement paste binds them into a concrete mass.

According to records from ancient architects like Vitruvius, the Roman process was similar. The ancient builders mixed materials like burnt limestone and volcanic sand with water and gravel, creating chemical reactions to bind everything together.

Now, scientists think they've found a key reason why some Roman concrete has held up structures for thousands of years: The ancient material has an unusual power to repair itself. Exactly how is not yet clear, but scientists are starting to find clues.

In a study published earlier this year, Admir Masic, a civil and environmental engineer at the Massachusetts Institute of Technology, proposed that this power comes from chunks of lime that are studded throughout the Roman material instead of being mixed in evenly. Researchers used to think these chunks were a sign that the Romans weren't mixing up their materials well enough.

Instead, after analyzing concrete samples from Privernum – an ancient city outside of Rome – the scientists found that the chunks could fuel the material's “self-healing” abilities. When cracks form,

water is able to seep into the concrete, Masic explained. That water activates the leftover pockets of lime, sparking up new chemical reactions that can fill in the damaged sections.

© Provided by The Canadian Press



Marie Jackson, a geologist at the University of Utah, has a different take. Her research has found that the key could be in the specific volcanic materials used by the Romans.

The builders would gather volcanic rocks left behind after eruptions to mix into their concrete. This naturally reactive material changes over time as it interacts with the elements, Jackson said, allowing it to seal cracks that develop.

The ability to keep adapting over time “is truly the genius of the material,” Jackson said. “The

concrete was so well designed that it sustains itself.”

Using tree juice to make sculptures as strong as seashells.

At Copan, a Maya site in Honduras, intricate lime sculptures and temples remain intact even after more than 1,000 years exposed to a hot, humid environment. And according to a study published earlier this year, the secret to these structures' longevity might lie in the trees that sprout among them.

Researchers here had a living link to the structures' creators: They met with local masons in Honduras who traced their lineage all the way back to the Mayan builders, explained Rodriguez-Navarro, who worked on the study.

The masons suggested using extracts from local chukum and jote trees in the lime mix. When researchers tested out the recipe – collecting bark, putting the chunks in water and adding the resulting tree “juice” into the material – they found the resulting plaster was especially durable against physical and chemical damage.

When scientists zoomed in, they saw that bits of organic material from the tree juice got incorporated into the plaster's molecular structure. In this way, the Mayan plaster was able to mimic sturdy natural structures like seashells and sea urchin spines – and borrow some of their toughness, Rodriguez-Navarro said.

Studies have found all kinds of natural materials mixed into structures from long ago: fruit extracts, milk, cheese curd, beer, even dung and urine. The mortar that holds together some of China's most famous structures – including the Great Wall and the Forbidden City – includes traces of starch from sticky rice.

Luck or skill?

Some of these ancient builders might have just gotten lucky, said Cecilia Pesce, a materials scientist at the University of Sheffield in England. They'd toss just about anything into their mixes, as long as it

was cheap and available – and the ones that didn't work out have long since collapsed.

“They would put all sorts of things in construction,” Pesce said. “And now, we only have the buildings that survived. So it's like a natural selection process.”

But some materials seem to show more intention – like in India, where builders crafted blends of local materials to produce different properties, said Thirumalini Selvaraj, a civil engineer and professor at India's Vellore Institute of Technology.

According to Selvaraj's research, in humid areas of India, builders used local herbs that help structures deal with moisture. Along the coast, they added jaggery, an unrefined sugar, which can help protect from salt damage. And in areas with higher earthquake risks, they used super-light “floating bricks” made with rice husks.

“They know the region, they know the soil condition, they know the climate,” Selvaraj said. “So they engineer a material according to this.”

Ancient Roman ... skyscrapers?

Today's builders can't just copy the ancient recipes. Even though Roman concrete lasted a long time, it couldn't hold up heavy loads: “You couldn't build a modern skyscraper with Roman concrete,” Oleson said. “It would collapse when you got to the third story.”

Instead, researchers are trying to take some of the ancient material's specialties and add them into modern mixes. Masic is part of a startup that is trying to build new projects using Roman-inspired, “self-healing” concrete. And Jackson is working with the Army Corps of Engineers to design concrete structures that can hold up well in seawater – like the ones in Roman ports – to help protect coastlines from sea level rise.

We don't need to make things last quite as long as the Romans did to have an impact, Masic said. If we add 50 or 100 years to concrete's lifespan, “we will require less demolition, less maintenance and less material in the long run.”

## Alberta Bridge Wins International Award for Structural Engineering

Sourced from: <https://www.constructioncanada.net>

Nancy Pauw Bridge in Banff, Alberta



The 2023 Supreme Award for Structural Engineering Excellence by the U.K.-based Institution of Structural Engineers (IStructE) was awarded to Canada-based structural engineering and timber construction firm, StructureCraft, for its work on The Nancy Pauw Bridge in Banff, Alberta.

The 80-m (262-ft) bridge spans the Bow River, connecting the town's Central Park to its Recreation Grounds, and pays tribute to Nancy Pauw, a well-known Banff resident, philanthropist, and keen cyclist.

Judged on four core attributes: Planet, people, process, and profession, this year's

overall winner encapsulated IStructE's increasing focus on the societal and environmental role of structural engineers.

The prestigious award not only recognizes a commitment to sustainable construction but also showcases StructureCraft's skill and ingenuity. The talented team designed the bridge to have no impact on the river's varied yet delicate ecosystem. This was achieved with a clear and low-profile span, which blends seamlessly with the natural surroundings.

Going further, StructureCraft directly answered the project's sustainability brief—using natural and engineered timber throughout the entirety of the bridge. This employed a clever combination of a shallow arch, using a natural alternative to steel (glulam) for the girders, and weathering steel haunches to ensure structural stability. The team also ensured optimal vibration performance with a central-tuned mass damper. This unique feature tunes the bridge to walking and jogging frequencies, reducing vibrations, and resulting in an impressive, slender, long-span timber structure.

The judges called the project an inspiring example of structural engineering, which “truly embodied all four judging attributes.”

## ASSOCIATION LINKS

- **Alberta Construction Safety Association (ACSA)**  
[www.acsa-safety.org](http://www.acsa-safety.org)
- **Alberta Building Envelope Council (ABEC)**  
[www.abecnorth.org](http://www.abecnorth.org)
- **Building Information Modeling (BIM) Forum**  
[www.insightinfo.com/bimforum](http://www.insightinfo.com/bimforum)
- **Biomimicry Guild**  
[www.biomimicryguild.com](http://www.biomimicryguild.com)
- **Canadian Green Building Council (CaGBC)** [www.cagbc.org](http://www.cagbc.org)
- **CCDC Documents**  
[www.ccdc.org/home.html](http://www.ccdc.org/home.html)
- **Construction Specifications Institute (CSI)** [www.csinet.org](http://www.csinet.org)
- **International Construction Information Society (ICIS)** [www.icis.org](http://www.icis.org)
- **OmniClass**  
[www.omniclass.ca](http://www.omniclass.ca)  
[www.omniclass.org](http://www.omniclass.org)
- **Uniformat**  
[www.csinet.org/uniformat](http://www.csinet.org/uniformat)
- **Institute for BIM in Canada (IBM)**  
[www.ibt-bim.ca](http://www.ibt-bim.ca)
- **Architecture 2030**  
[www.architecture2030.org](http://www.architecture2030.org)
- **BuildingSMART Alliance** (North American Chapter of BuildingSMART):  
[www.buildingsmartalliance.com](http://www.buildingsmartalliance.com)  
**BuildingSMART International (formerly IAI)**  
[www.buildingsmart.com](http://www.buildingsmart.com)
- **Biomimicry Institute**  
[www.biomimicryinstitute.org](http://www.biomimicryinstitute.org)
- **Canada BIM Council**  
[www.canbim.com](http://www.canbim.com)
- **Canadian Green Building Council (CaGBC) – Alberta Chapter:**  
[www.cagbc/chapters/alberta](http://www.cagbc/chapters/alberta)
- **Construction Specifications Canada (CSC)**  
[www.csc-dcc.ca](http://www.csc-dcc.ca)
- **buildingSMART Data Dictionary**  
[bsdd.buildingsmart.org](http://bsdd.buildingsmart.org)
- **MasterFormat**  
(<https://secure.spex.ca/siteadmin/freedocuments/images/1.pdf>)
- **buildingSMART Canada**  
[www.buildingsmartcanada.ca](http://www.buildingsmartcanada.ca)
- **Ace BIM**  
[www.acebim.ca](http://www.acebim.ca)

## ASSOCIATION LIAISONS

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Alberta Association of Architects (AAA)

<http://www.aaa.ab.ca/>

Alberta Painting Contractors Association (APCA)

[www.apca.ca](http://www.apca.ca)

Alberta Wall & Ceiling Association (AWCA)

<http://awca.ca>

Alberta Roofing Contractors Association (ARCA)

<http://www.arcaonline.ca>

[info@arcaonline.ca](mailto:info@arcaonline.ca)

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

<http://www.ashrae.org/> / [ashrae@ashrae.org](mailto:ashrae@ashrae.org)

The Canadian Wood Council (CWC)

<http://www.cwc.ca>

[info@cwc.ca](mailto:info@cwc.ca)

Portland Cement Association

[ConcreteTechnology@cement.org](mailto:ConcreteTechnology@cement.org)

Interior Designers of Alberta

[www.interiordesignalberta.com](http://www.interiordesignalberta.com)

Alberta Painting Contractors Association (APCA)

[www.apca.ca](http://www.apca.ca)

Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA)

<http://www.apegga.org/> [dward@apegga.org](mailto:dward@apegga.org)

Association of Science and Engineering Technology Professionals of Alberta (ASET)

<http://www.aset.ab.ca/>

Russ Medvedev, [russm@aset.ab.ca](mailto:russm@aset.ab.ca)

Building Owners and Managers Association (BOMA)

<http://www.bomaedmonton.org/> /

[edmonton@boma.ca](mailto:edmonton@boma.ca)

Consulting Engineers of Alberta (CEA)

<http://www.cea.ca/> [info@cea.ca](mailto:info@cea.ca)

Edmonton Construction Association

[www.edmca.com](http://www.edmca.com)

[contact@edmca.com](mailto:contact@edmca.com)

Terrazzo, Tile & Marble Association of Canada (TTMAC)

<http://www.ttmac.com/>

[association@ttmac.com](mailto:association@ttmac.com)

## Bulletin Board

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### Message from the Executive:

We in the Executive are looking for creative-minded individuals who can take on a position and follow through with ideas...if this is YOU, send a message to [information@cscedmonton.ca](mailto:information@cscedmonton.ca) and we will be quick to get back to you!




















### Open Positions Include:

Chapter Liaison  
Sustainability  
Contractor's Rep

You don't need to be a member of the Committee to come and participate in our monthly Chapter meetings but watch out if you do! You may find yourself holding a position...maybe even as Chapter Chair...



The Executive

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