# Specifier

Editor: Tracey Stawnichy

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.

#### September 2023 Edition

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# CSC JOINT EVENT EDMONTON & CALGARY CHAPTERS ALBERTA SPORTS HALL OF FAME

Date: Thursday, September 14, 2023

Time: 2:00pm - 6:30pm

2:00pm - Arrival

2:30pm – Social time, networking, games, sports displays, refreshments...

5:00pm - Dinner

6:30pm – Time to head home!

Location: Alberta Sports Hall of Fame 4200 Queen Elizabeth II Highway, #102, Red Deer, AB T4N 1E3

It's south versus north, so let us know your alliance and WEAR YOUR CITY COLOURS, whether of your favourite sports team, tourist attraction, or whatever you like!



#### 2023 / 2024 Edmonton Chapter Executive

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Director	Tracey Stawnichy	780 994 3699	Rates cover
Chairman	Andrew Brassington	587 335 8434	
Vice-Chairman	Dylan Leclair	587 335 9552	An
Secretary	Jessica Prosser	587 340 7169	\$
Treasurer	Catherine Osborne	780 705 7108	Add \$50 to h
Architectural	Kevin Osborne	780 717 1007	the C
Chapter Liaison	Position Open		(
Education	Mike Ewaskiw	780 237 7844	
Engineer	Jamie Murphy	780 983 0288	New
General Contractor	Position Open		dcc ca/Ab
Interior Design	Corry Bent	780 995 1647	+C
Manufacturer/Supplier	Mike Lafontaine	780 907 4920	
Marketing, Promotion, and Communications	Jamie Murphy	780 983 0288	
Membership	Dave Lawrence	780 901 7260	
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Website Administrator	David Watson	780 758 4147	
Trade Contractor	Kevin Kramers	587 232 0613	ľ
Program	Abby Sharpe	587 338 9194	
Owner's Rep	Cam Munro	780 231 1739	\$50 for
Sustainability	Position Open		\$2
At Large	Dave Lawrence	780 901 7260	

#### **Advertising Rates**

Business Card: April 1 to May 30 Rates cover your ad on our website 24 hours per day, 7 days per week. Business card on-line: Annual \$100 if received by May 1; \$75 if received by August 1; \$50 if received by August 1; \$25 if received by November 1; \$25 if received by February 1 Add \$50 to have a link to your company web site from the CSC Edmonton Chapter web page.

#### **Chapter Sponsor**

New Chapter Sponsor Bundles: edmonton.cscdcc.ca/About+Us/Sponsor+Opportunities+-+CSC+Edmonton+Chapter/

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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 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.

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#### **Announcements:**

# **Chair's Message**



Andrew Brassington, CSC Edmonton | Chapter Chair

Hello Chapter Members,

Welcome back!

September is the beginning of a lot of things. The beginning of fall, the beginning of school, and the beginning of our new program year.

In case you missed it, we had an awesome time with a great group of people on our urban pedal bike social in August.

Our 2023-2024 program will begin this year with a collaborative event with the Calgary chapter. The event is on September 14th in Red Deer. If you like the Amazing Race, you must check it out. More details are on our website.

It's also a good time to brush up on some courses. We have our PCD classes this fall, and should have the TR, Specifier, and other courses in the spring.

There are a lot of perks to being a member, make you take advantage of the educational and networking opportunities that are available to help move forward in your career. It could be the beginning of something special.

We are looking forward to seeing you soon!

Cheers!

# **Membership in CSC**

#### **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.

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#### 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)

Mark Sanders, Manufacturer's Rep, Eastern Canada ChemClad 10235 – 184 Street NW, Edmonton, AB T5S 2J4 P: (705) 772-6306 E: mark@chemclad.com

Sarina Tillmann

SMP Engineering 101, 10835 – 120 Street, Edmonton, AB T5H 3P9 P: (780) 394-9142 E: sarina.t@hotmail.com

Douglas Rossum, CTR

Technical Representative PO Box 1212, Onoway, AB T0E 1V0 P: (587) 839-9202 E: dougrossum@gmail.com Megan Ross, Electrical Designer SMP Engineering 101, 10835 – 120 Street, Edmonton, AB T5H 3P9 P: (780) 886-8199 E: mross@smpeng.com

Margo Carbert, Contract Administrator DIALOG 100, 10237 – 104 Street, Edmonton, AB T5J 1B1 P: (587) 712-4212 E: mcarbert@dialogdesign.ca

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

David Bruner, Specification Writer Canadian Master Construction Specification (NMS) National Research Council Canada P: (587) 357-1117 E: David.Bruner@nrc-cnrc.gc.ca

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

# **EDUCATION COURSES**

## **Upcoming Classes:**

Principals of Construction Documentation (PCD) – Classes to start January 2024 Specifier – Classes to start January 2024 Construction Contract Administration (CCA) – Classes to start January 2024 Technical Representative (TR) – Classes to start January 2024

# **Upcoming Classes Online:**

Principles of Construction Documentation (PCD) – TBD Construction Contract Administrator (CCA) – TBD Specifier – TBD Technical Representative (TR) – TBD

## **Upcoming Virtual Classes:**

Principles of Construction Documentation (PCD) – TBD Construction Contract Administration (CCA) – TBD Specifier (SP) – TBD Technical Representative (TR) – TBD

Social Media:

Check us out:







# **Articles of Interest**

# How Neighbourhoods Rely on Graffiti to Protest Gentrification

Sourced from: https://www.archdaily.com / Paul Yakubu

New York. Image: © Cem Ersozlu/Unsplash



Graffiti, as an art form, has a complex relationship with gentrification. On one hand, it has engaged the streets and urban fabric as a canvas for people to express themselves culturally and socio-politically. This expression could be a form of rebellion by ethnic minorities and disadvantaged groups in certain neighborhoods, or it can build up a sense of cultural uniqueness and social expression, giving a neighborhood a positive character and attracting newcomers. However, over the years, the latter has been an agent of gentrification, spiking up property values to accommodate richer residents and alienating the native communities of those neighborhoods.

In certain instances, artists recognize their role in this urban scheme and tweak their art form through its style, message, location, and action as direct forms of protest to fight against gentrification. From Brixton, Shoreditch, and Hackney in London, Williamsburg and Bushwick in New York, to The Canal Saint-Denis and Belleville in Paris, the use of graffiti on the streetscapes of these neighborhoods can either protest or inspire different forms of development.

The traditional purpose of graffiti was to speak out against gentrification by using neighbourhoods as a space for expression. It allowed artists to use architecture as a public canvas for expressing ideas, sparking conversations among residents, rebelling against socio-political structures, and celebrating shared ideas. However, it's been noted that graffiti, while not intentionally designed to do so, can play

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a role in gentrification. Calum Quirke, in his article 'Urban Art as a Gentrifier', argues that when communities endow their neighbourhoods with unique urban art, it attracts creative groupls and brings graffiti into the artistic mainstream, which can ultimately contribute to further socio-political inequality. Graffiti creates an art culture that quickly becomes trendy and popular as a sign of a vibrant avant-garde culture, and this creative force, against its will, tends to attract new residents with higher incomes.

Shoreditch, London. Image: ©Toa Heptiba/Unsplash



The relationship between graffiti and gentrification exists on a spectrum, depending on how it is perceived: as either an art form or vandalism, or as aesthetically edifying. However, the perception of graffiti as art or vandalism is first built by the art form itself. Calum Quirke notes that graffiti can range from "illegible messy scrawls" to "aesthetically juxtaposed sets of visual images." The former often identifies neighborhoods with high crime levels, high unemployment, and low education, while the latter is attractive for cultural development, tourism, and more street experiences. The belief is that messy graffiti, in terms of style,

message, acts of vandalism, and location in the neighborhood, can create a negative perception of the environment and ward off prospective developers, unlike aesthetically juxtaposed graffiti.

Williamsburg, New York. Image: © Chalo Gallardo/Unsplash



The perception of aesthetic graffiti defines the story of Williamsburg, Brooklyn. Originally an area where factories and manufacturing were pushed out of the eyesight of the city, it housed a diverse population seeking affordable housing in New York, including workers from nearby neighborhoods and immigrants. Artists obtained residencies in urban warehouses, creating artsy lofts, galleries, and imprinting art on the faces of buildings. Initially, the art form created tensions between the locals and new residents due to its "unfinished character". Graffiti was seen as an act of vandalism, deemed ugly, messy, and a sign of a deplorable neighborhood. However, in the 90s, developers accepted the artistic character of Williamsburg, transitioning from "cleaning up the neighborhood" to employing aesthetically pleasing graffiti as facades of buildings. This increased the appeal of properties, giving prospective residents the sense that they were not taking part in changing the local landscape, while pricing out the locals from their buildings and essentially gentrifying the neighborhood.

Shoreditch, London one example of a neighborhood

where artists recognized the role of their art culture in attracting gentrification and switched to art forms that directly protested the cause. In the 1990s, the area became popular for up-and-coming Page **6** of **18** 

street artists and is now considered the epicenter of the London street art scene. As property prices have risen in the area and developers plan to build new luxury structures, artists have utilized graffiti art forms to directly protest against them. Graffiti messages continuously pop up in the neighborhood, highlighting the plight of locals and why new developments tend to alienate them. Some artists even engage in artistic vandalism of private properties, creating tension with new residents and drawing the attention of law enforcement to the neighborhood. Street art in the UK is still technically illegal and considered a criminal activity. Although authorities attempt to cover up these art pieces as soon as they appear, the tension tends to limit the neighborhood's appeal to prospective residents.

Brixton, London. Image: © Angie Kordic



Another prime example that personifies graffiti as an agent of gentrification and now fights against it to protect its longstanding history is Brixton, London. For decades, Brixton was known for its large Afro-Caribbean population, which grew as the Windrush generation settled there from the late 1940s onwards. While its proximity to central London attracted new residents, its vibrant art culture expressed through graffiti, music, food, and various forms of street art was the main attraction. Through this, its rental

market spiked with an influx of newcomers, and the Afro-Caribbean community dwindled. According to the Office for National Statistics, in just 20 years (1991-2011), they went from making up 12.58% of the population to 8%. Graffiti in Brixton evolved as a form of protest against council policies that failed to protect locals.

Walking through the neighborhood, one would see vivid examples of caricature characters mimicking politicians, direct messages addressing gentrification, artworks with an "unfinished" and "messy" nature as building facades, and new forms of artistic vandalism in the streets. Artists use the shutters of evicted businesses in Brixton as a canvas covered in anti-gentrification murals: portraying a skeleton in a suit carrying eviction notices, a Starbucks logo with blood dripping from the figure's hollow eyes and mouth, and other powerful messages celebrating the area's historic diversity. Through these works of art, the message against gentrification is publicized, and prospective developments that alienate the locals are fought against.

These examples demonstrate that the relationship between graffiti and gentrification depends on how the art form is perceived. The manner in which the art is created and its intended message determine whether it acts as an agent of gentrification or as a form of protest against it. Using direct messages, unfinished art forms, messy styles, and vandalism are ways in which graffiti can be adapted to fight against developments that displace local residents. Some of the leading cities protesting gentrification in Europe include London, Berlin, Naples, and Marseille, among many others worldwide. The current explorations of graffiti as a tool to combat gentrification provide a blueprint for how the art form can be modified to express its traditional ideals of rebellion and help communities protect their neighborhoods.

## **US Scientists Prove That Metal Can Heal Itself**

Sourced from: https:/www.dezeen.com / Amy Frearson



Scientists from Texas A&M University and Sandia National Laboratories in New Mexico have observed metal cracking and fusing back together, in a discovery that could pave the way for self-healing machines, vehicles and bridges.

Published in science journal Nature, the research shows that metal can self-repair microscopic cracks that form when the material is repeatedly put under stress.

This is achieved in a process known as cold welding, which means no heat or

electricity is required.

The breakthrough could have major implications for engineering, the report argues, as 90% of mechanical failures are a result of fatigue in metal components, which occurs when repetitive stress causes cracks to form.

By taking advantage of the self-healing process and tweaking the microstructure of metals accordingly, the scientists predict it might be possible to prevent fatigue cracking.

"We would like to understand how metal microstructure affects healing," said Michael J Demkowicz, professor at Texas A&M and co-lead author of the study.

"Armed with that knowledge, we can envision tailoring microstructure to take advantage of selfhealing in technological applications, for example, to create materials that are more resistant to fatigue damage," he told Dezeen.

#### Self-healing possible with cold welding

Scientists have been investigating the potential of self-healing materials for some time.

Most breakthroughs have been in the development of plastics – on projects like a self-healing "e-skin" developed by University of Colorado Boulder scientists – although a recent MIT study also found it to be possible in concrete.

Before now, the property had not been observed in metals without heating them first.

The study shows it can be achieved at room temperature under vacuum conditions, in a process known as cold welding, which is primarily utilized in electronics and spacecraft technology.

This occurs when two bare pieces of metal become so close that their atoms are attracted to each other, causing their surfaces to fuse. It is only possible if the metals are completely clean.

Researchers at Sandia National Laboratories made the discovery during tests to see how cracks form in 40-nanometre-thick pieces of platinum.

They observed a crack fusing back together, leaving no trace and eventually reopening in a different location.

"This was absolutely stunning to watch first-hand," Sandia scientist Brad Boyce told Wiley Analytical Science magazine.

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"What we have confirmed is that metals have their own intrinsic, natural ability to heal themselves, at least in the case of fatigue damage at the nanoscale," said Boyce, who is also co-lead author of the study.

#### Ten years before research can be put into practice

The findings prove a thesis first proposed by Demkowicz back in 2013, when he was working as a professor at MIT, based on the results of computer simulations produced with then-graduate student Guoqiang Xu.

At the time, the pair had no way of proving their theory. Now Sandia's research has shown that selfhealing is possible in copper as well as platinum and the researchers believe it can also occur in other metals.

The report states that the discovery "challenges the most fundamental theories on how engineers design and evaluate fatigue life in structural materials".

However, Demkowicz claims it will be at least a decade before the insights can be used in practical application.

The next steps will be to explore whether metal can self-heal when exposed to air, not just in a vacuum, and whether the process is possible for metal alloys such as steel.

"The most important near-term consequences are for fundamental theories of fatigue in metals," he told Dezeen. "These will have to be revised to take crack healing into account."

# **'Like an Ikea Set': Is Prefab Construction the Solution to Canada's Housing Supply Woes?**

Sourced from: https://msn.com / Shantaé Campbell

A prefabricated housing project under construction in Edmonton / © Provided by Financial Post



"It's like putting together an Ikea set," said Craig Mitchell, principal of BlackBox Offsite Solutions Ltd., an expert in off-site construction, while explaining the simplicity of prefabricated housing construction.

"You can build the building and model it (in a factory) and then you can break it down into individual panels or components. All those panels can be sent on the back of a flatbed truck and then erected on site."

Prefabricated modular construction isn't a new idea: Its origins trace back to the Gold Rush in the United States and Winston Churchill's plan to tackle the housing shortage in the United Kingdom after the

Second World War.

But it's an option that is drawing new interest as Canada grapples with a lack of affordable housing and a skilled labour shortage that is constraining attempts to build more quickly.

Approximately 90% of construction companies report that the shortage of skilled labour or trades is adversely affecting their ability to bid on projects and meet project deadlines, according to a recent survey by KPMG Canada. They also believe incorporating digital technologies can enhance the effectiveness of their workforce in mitigating those labour shortages. Prefabricated or modular

construction has been touted as one of the technologies with the potential to reshape the industry by providing an approach that minimizes the reliance on traditional on-site labour.

"Technology can help the construction industry address Canada's housing and infrastructure challenges," Tom Rothfischer, partner, and national industry leader at KPMG Canada, said in the report. "Digital tools, if used smartly, save time and money, reduce waste, and improve worker safety and productivity. In short, they help get projects done on time or ahead of schedule and on budget."

Prefabricated construction entails the off-site manufacturing of building components in controlled factory environments, which are then transported to the construction site for assembly.

According to Mitchell's 2022 landscape study commissioned by Forestry Innovation Investment on prefabrication in Canada, wood prefabrication – which combines mass timber, panels, and volumetric modular construction – is gaining attention due to its sustainability benefits and ongoing technical and market developments.

The Canadian mass timber industry is still progressing in terms of production capacity and market penetration compared to Europe, but there is growing market awareness and acceptance fuelled by public-sector demand, government support, research, and industry project profiles.



Workers install prefabricated wall sections at a condo under construction in Montreal / © Allen McInnis/Montreal Gazette

But even with growing acceptance by consumers and government support, the construction sector is grappling with a skilled labour shortage, which hinders any swift transition to new methods.

"The problem is that there's all this new construction technology because it's sexy right now, but from an adoption standpoint, it's very difficult to get it adopted into the traditional construction process ... because the labour isn't there," Mitchell said.

Amid the country's housing supply crisis, there was a significant decline in construction employment in July, with 45,000

fewer jobs, a decrease of 2.8%. This follows a more modest reduction in June, when 14,000 jobs were lost. Employment in construction has shrunk by 71,000 since January. This downturn has offset the cumulative growth of 65,000 jobs from September 2022 to January 2023.

At the current pace of construction, Canada's housing stock will grow by about 2.3 million units by 2030, reaching a total of nearly 19 million units. But the Canadian Mortgage and Housing Corp. (CMHC) has calculated that approximately 3.5 million units on top of that will be needed to achieve housing affordability targets.

Mitchell said that a transition to alternative methods of construction could allow projects to be delivered more efficiently and expeditiously.

Earlier this year, Mitchell and his team completed construction of a four-storey wood prefabricated apartment building in the Prairies within 12 months, while the traditional construction approach would

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have typically taken 14 to 16 months.

"Four months of design. A month or two of ordering all the materials. A couple of months of building the project in the factory, and then three to four months to finish it off on site," Mitchell said. "So, the actual site work portion of it is actually less than six months from start to finish, foundations through to finishing off the building."

A prefabricated apartment is lifted onto housing under construction in Edmonton / © Greg Southam/Postmedia



Utilizing prefabricated materials appears to be a logical solution for addressing some of the challenges in the housing market, but the adoption of this technology faces an additional obstacle, said Kevin Lee, chief executive of the Canadian Home Builders' Association (CHBA): the instability of interest rates.

"With low interest rates, we got a lot of housing starts in 2021 and 2022," he said. "In 2022, interest rates went up and so in 2023, we're seeing ... fewer housing starts. When you don't have the consistency, it makes it harder to invest all the capital that is required to have more factory-built."

Housing starts in July dropped 10%, 254,966 starts from June, the year's strongest month so far, and 11% in urban areas where the need for more housing is more acute, according to CMHC. But it also said the pace of construction remained 7.4% above the five-year seasonally adjusted average.

Lee said the CHBA is exploring opportunities for collaboration with the federal government to address these challenges. The goal is to facilitate increased industry investment and strategically allocate those investments to enhance the capacity for accelerated housing construction.

This approach safeguards against economic downturns and prevents company bankruptcies resulting from idle equipment or suboptimal production levels in factories.

"It's not as simple as, 'Factory-built makes all kinds of sense, so we should just build that way," he said. "There are some very real investment challenges to doing a lot more housing this way."

According to Lee, adopting this construction method also tends to be more expensive compared to traditional methods. However, its main advantage lies in its efficiency and speed.

"Right now, you pay a little bit more, but you get the time benefits," said Marlon Bray, a cost consultant at global real estate software and advisory firm, Altus Group. "It's whether or not that time is worth the money."

However, he said the higher costs are attributed to the manufacturing process and lack of demand. A significant commitment to manufacturing is necessary for modular construction to gain more market share and become more cost-effective.

"Just like optimizing car production requires a high volume of units, the same principle applies here," Bray said. "Take the example of Ford's F150 truck: since they produce a large quantity, the price per unit is around \$65,000 to \$75,000. If they produced half as many trucks, the price would likely increase to \$100,000, and with only 10 trucks, it could reach \$150,000."

Bray said that if a provincial government, for instance, decided tomorrow to address affordable

housing and provided a contract to build 10,000 affordable modular units across 10 sites in Toronto, the manufacturer would scale up production, resulting in reduced costs per unit and faster construction.

In the meantime, he's firmly advocating for prefabricated construction as the definitive long-term solution to the nation's housing challenges.

"It will be the long-term solution," he said. "It's just a matter of getting the endgame commitment from the different levels of government and large-scale orders that prioritize repetition."

# **'They Said it was Impossible': How Medieval Carpenters are Rebuilding Notredame**

Sourced from: https://www.theguardian.com / Kim Willsher

Guédelon Castle is being built using the old 13th-century methods / Photograph: Guédelon



At Guédelon Castle the year is 1253 and the minor nobleman, Gilbert Courtenay, has ridden off to fight in the Crusades, leaving his wife in charge of workers building the family's new home: a modest chateau that befits his social position as a humble knight in the service of King Louis IX.

Here, in a forest clearing in northern Burgundy, history is being remade to the sound of chisel against stone and axe against wood, as 21stcentury artisans re-learn and perfect long-forgotten medieval skills.

The Guédelon project was dreamed up as an exercise in "experimental archaeology" 25 years ago. Instead of digging down it has been built upward, using only the tools and methods available in the Middle Ages and, wherever possible, locally sourced materials. Now, in an unforeseen twist of fate, Guédelon is playing a vital role in restoring the structure and soul of Notre Dame cathedral.

Paris's imposing 13th-century cathedral, a world heritage site, was consumed by fire in April 2019, destroying its complex roof structure, known as La Forêt because of the large number of trees used in its construction. The widespread view was that it would be impossible to rebuild it as it was.

"The roof frame was extremely sophisticated, using techniques that were advanced for the 12th and 13th centuries," Frédéric Épaud, a medieval wood specialist, tells the Observer.

"After the fire, there were a lot of people saying it would take thousands of trees, and we didn't have enough of the right ones, and the wood would have to be dried for years, and nobody even knew anything about how to produce beams like they did in the Middle Ages. They said it was impossible.

"But we knew it could be done because Guédelon has been doing it for years."

A number of the companies bidding for the Notre Dame work have already engaged carpenters trained at Guédelon, and more are expected to beat a path to the Burgundy clearing 200km down the autoroute du Soleil from Paris.

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It might be quicker and cheaper to turn wooden beams out of a sawmill – especially with French president Emmanuel Macron's pledge to reopen the ravaged cathedral in 2024 – but you will not find anyone at Guédelon who believes it should be done that way.

"We have 25 years' experience of cutting, squaring and hewing wood by hand," he says. "It's what we [have done] every day for 25 years. There are people outside of here who can do it now, but I tell you they all came here to learn how. If this place didn't exist, perhaps the experts would have said: no it's not possible to reproduce the roof of Notre Dame. We [have shown that] it is.

Notre Dame ablaze in 2019. Hopes are pinned on Guédelon know-how to restore it's famous La Fôret roof. Photograph: Alexis Lopez/ZEPPELIN/SIP/REX/Shutterstock



"This isn't just nostalgia. If Notre Dame's roof lasted 800 years, it is because of this. There's no heart in sawmill wood," he says.

Maryline Martin is co-founder of the Guédelon project that attracts around 300,000 paying visitors every year and was featured in a 2014 BBC documentary series, Secrets of the Castle. She says the chateau's blacksmith has been commissioned to make the axes that will cut the wood for Notre Dame, and its carpenters are expected to train others to work on the cathedral.

Stéphane Boudy is one of a small team of carpenters at the

medieval site, where he has worked since 1999. Boudy, 51, trained as a baker, then an electrician, until discovering his vocation at Guédelon. He explains how hand-hewing each beam – a single piece from a single tree – respects the "heart" of the green wood that gives it its strength and resistance.

"It's prestigious for us that Notre Dame will be restored by many who learned their trade at Guédelon. We are a private enterprise lost in our forest that receives no public money. We work with many state research bodies, but some people wrote us off as a theme park," she says.



Guédelon's woodworking experts will be invaluable in restoring Notre Dame's roof. Photograph: Guédelon



"Now, after 25 years, we are the only ones who can understand and are able to do what has to be done, and they discover we have not sold our soul to the devil. Our people will be working on Notre Dame one way or another, but why would we want to go to Paris? We will continue our 13th-century work here."

Florian Renucci, the Guédelon site manager and a philosopher turned master mason, has already been asked to oversee training of artisans expected to work on Notre Dame.

"All we heard over and again after Notre Dame burned was that it was

not possible to reconstruct the roof as before. There was no wood, no savoir faire – it was an argument used by those who wanted to modernise. We showed that it can be done and we know how to do it," he says.

Épaud is on the scientific committee at Guédelon and the committee overseeing the reconstruction of Notre Dame, as well as a member of the Centre National de la Recherche Scientifique (CNRS), France's national research body. He says that going back to build the future is not just nostalgia.

"I have studied the 13th-century technique for many years and, if we respect the internal form of the tree, the beams will last for 800 years. Guédelon is the only place in France, and I believe in Europe, where they build this kind of roof structure in wood. All those who didn't think it was possible didn't know about Guédelon."

He adds: "But it shouldn't be rushed. Macron's insistence that the cathedral be open by 2024 is idiotic. We are talking about a cathedral, we're not in a hurry and we have the money to do it the right way. If we rush it, there's a risk it [will] be done badly and something is missed. Sadly, I fear Macron doesn't understand that."

# **ASSOCIATION LINKS**

- Alberta Construction Safety Association (ACSA)
  - www.acsa-safety.org
- Alberta Building Envelope Council (ABEC) www.abecnorth.org
- Building Information Modeling (BIM) Forum www.insightinfo.com/bimforum
- Biomimicry Guild
   www.biomimicryguild.com
- Canadian Green Building Council

- Architecture 2030 www.architecture2030.org
- BuildingSMART Alliance (North American Chapter of BuildingSMART): www.buildingsmartalliance.com BuildingSMART International (formerly IAI) www.buildingsmart.com
- Biomimicry Institute
   www.biomimicryinstitute.org
- Canada BIM Council

(CaGBC) www.cagbc.org

- CCDC Documents
   www.ccdc.org/home.html
- Construction Specifications Institute (CSI) www.csinet.org
- International Construction Information Society (ICIS) www.icis.org
- OmniClass
   www.omniclass.ca
   www.omniclass.org
- Uniformat
   www.csinet.org/uniformat
- Institute for BIM in Canada (IBM)
   www.ibc-bim.ca

www.canbim.com

- Canadian Green Building Council (CaGBC)

   Alberta Chapter: www.cagbc/chapters/alberta
- Construction Specifications Canada (CSC)
   www.csc-dcc.ca
- buildingSMART Data Dictionary
   bsdd.buildingsmart.org
- **MasterFormat** (https://secure.spex.ca/siteadmin/freedocuments/images/1.pdf)
- buildingSMART Canada
   www.buildingsmartcanada.ca
- Ace BIM
  - www.acebim.ca

#### **ASSOCIATION LIAISONS**

Alberta Association of Architects (AAA) <u>http://www.aaa.ab.ca/</u> Alberta Painting Contractors Association (APCA) www.apca.ca Alberta Wall & Ceiling Association (AWCA) http://awca.ca Alberta Roofing Contractors Association (ARCA) http://www.arcaonline.ca info@arcaonline.ca

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) <u>http://www.ashrae.org/ / ashrae@ashrae.org</u>

The Canadian Wood Council (CWC) http://www.cwc.ca info@cwc.ca Portland Cement Association ConcreteTechnology@cement.org

Interior Designers of Alberta www.interiordesignalberta.com Alberta Painting Contractors Association (APCA) www.apca.ca

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

http://www.apegga.org/ dward@apegga.org

Association of Science and Engineering Technology Professionals of Alberta (ASET) <u>http://www.aset.ab.ca/</u> Russ Medvedev, russm@aset.ab.ca

Building Owners and Managers Association (BOMA) <u>http://www.bomaedmonton.org/</u> / <u>edmonton@boma.ca</u> Consulting Engineers of Alberta (CEA) <u>http://www.cea.ca/\_\_info@cea.ca</u>

Edmonton Construction Association www.edmca/.com contact@edmca.com

Terrazzo, Tile & Marble Association of Canada (TTMAC) http://www.ttmac.com/ association@ttmac.com



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# **The Executive**

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