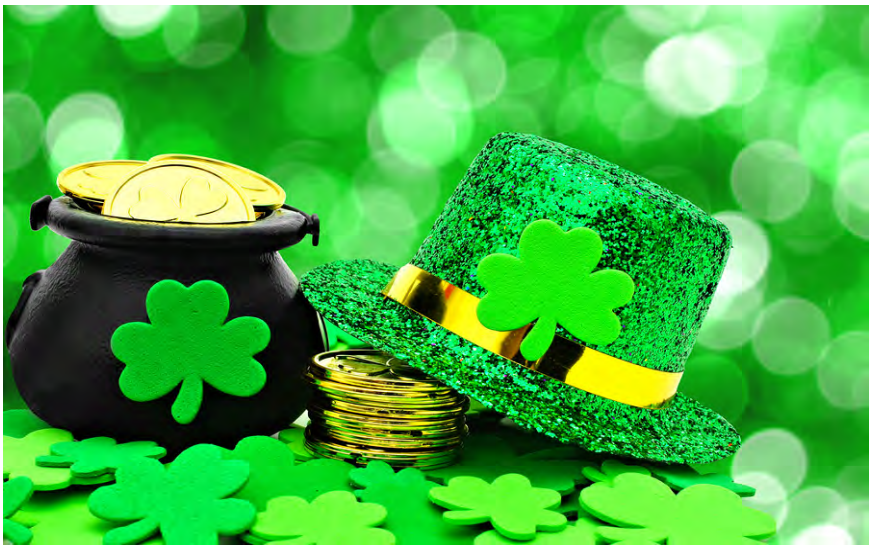
edmonton
the Specifier

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.

March 2021 Edition

Editor: Tracey Stawnichy

In This Edition...



Tuesday, March 16, 2021; Noon

Designing for Hot Dip Galvanizing

Presented By: Darcy Pretula, P.Eng., DAAM Galvanizing

Hot-dip galvanizing provides a high quality, long term corrosion protection to steel in two ways. First, as a physical barrier to corrosion and second by means of cathodic or sacrificial protection that is unique to zinc. Though corrosion resistance is inherent any time galvanizing is used, more specifiers select hot-dip galvanizing for other reasons, including lowest initial life-cycle cost, durability, longevity, versatility, sustainability, and aesthetics. In addition to learning the benefits of utilizing hot-dip galvanized steel, we will also examine ASTM specifications, design best practices, inspection, and preparing the galvanized surface for painting or powder coating.

Visit our website for more information!
http://edmonton-csc.dcc.ca

2020 / 2021 Edmonton Chapter Executive

Director	Tracey Stawnichy	780 994 3699
Chairman	Andrew Brassington	587 341 5268
Vice-Chairman	Dylan Leclair	587 335 9552
Secretary	Jessica Prosser	587 340 7169
Treasurer	Catherine Osborne	780 486 6400
Architect	Kevin Osborne	780 717 1007
Chapter Liaison	Position Open	
Education	Mike Ewaskiw	780 237 7844
Engineer	Position Open	780 669 0504
General Contractor	Renee McKenzie	780 717 7798
Interior Design	Corry Bent	780 995 1647
Manufacturer/Supplier	Mike Lafontaine	780 907 4920
Marketing, Promotion, and Communications	Position Open	
Membership	Joseph Trivellin	587 785 6484
Newsletter	Tracey Stawnichy	780 994 3699
Specifications	David Watson	780 758 4147
Website Administrator	David Watson	780 758 4147
Trade Contractor	Position Open	
Program	Kyla Keller Jessica Prosser	780 643 3233 587 340 7169
Owner's Rep	Cam Munro	780 231 1739
Sustainability	Position Open	
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 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.csc-dcc.ca/About+Us/Sponsor+Opportunities+-+CSC+Edmonton+Chapter/

Student Sponsor

Meeting Sponsor

$50 for Individual (personal) Sponsor
$250 for Corporate Sponsor

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.

Announcements:

SAVE THE DATE: Annual Chapter Meeting (ACM) Tuesday, May 4, 2021; Noon – 1:00pm

Chair's Message

Andrew Brassington, CSC Edmonton | Chapter Chair

Hello Chapter Members,

With Spring on the horizon, it is important to look forward. We could dwell on the last 12 months, but it is also important to think about what will be coming up.

Thank you all who continue to support the Chapter. If you have not renewed your membership, please do so. Your support is greatly appreciated and with opportunities for in person events coming up, you don't want to miss a thing!

If you are interest in joining the Executive, we would love to hear from you. There are a couple open positions, so please reach out if you are interested. There is not a huge time commitment and you will be helping shape the Chapter direction for an increased benefit to all members!

Stay safe and we will all see each other in person soon.

Membership in CSC

Joseph Trivellin, CTR

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 our new CSC Edmonton Chapter Members!

Fresh Faces (New Members)

None this month.

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

Mr. Norm Villeneuve, RSW, CCCA
Associated Engineering
#500, 9888 Jasper Avenue, Edmonton, AB T5J 5C6

Ms. Heather Ziober, CCCA
Email: heatherziober@edmonton.ca

Previous Members Re-Joining / Re-Activated

Mr. Neil Chatten
Architectural Technologist
The Workun Garrick Partnership
1300, 10117 Jasper Ave NW, Edmonton, AB T5J 1W8
Tel: (780) 428-1575 Fax: (780) 448-0102
Email: nchatten@workungarrick.com
Website: www.workungarrick.com

CSC Education:

Mike Ewaskiw, CTR

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.

Mike Ewaskiw, CTR, Manager
Architectural & Engineering Services
P: 780-237-7844 E: mewaskiw@stonhard.com

EDUCATION COURSES

Upcoming Classes:

- Principals of Construction Documentation (PCD) – TBD
- Specifier – TBD
- Construction Contract Administration (CCA) – TBD
- Technical Representative (TR) – TBD

Upcoming Classes Online:

Principles of Construction Documentation (PCD) – TBD
Technical Representative (TR) – TBD

Upcoming Workshops:

Principles of Construction Documentation (PCD) 5 Day Workshop – January 15, 2021 (5 weeks)
Construction Contract Administration (CCA) 5 Day Workshop – January 15, 2021 (5 weeks) / March 5, 2021 (5 weeks)
Specifier (SP) 7 Day Workshop – February 22, 2021 (7 weeks)
Technical Representative (TR) 5 Day Workshop – February 26, 2021 (5 weeks)

Social Media:

Check us out:

csc EDMONTON

UPCOMING EVENTS

10 FEB 12 Noon

Introduction to Area Separation Firewall

Introduction to Area Separation Firewalls will discuss their primary functions, different options to achieve NBC code requirements, and achieve your projects fire and acoustical needs. Introduction to Area Separation Firewalls will provide an overview of the construction of Gypsum Firewalls and how these systems can help meet your design and project needs, while still meeting NBC code requirements.

MITCHELL SCHITTLER, LEED AP® BD+C, WELL® AP, ROM CERTAINTEED

Designing for Hot Dip Galvanizing

16 MAR 12 Noon

Hot-dip galvanizing provides a high-quality, long-term corrosion protection to steel in two ways. First as a physical barrier to corrosion and second by means of cathodic or sacrificial protection that is unique to zinc. Though corrosion resistance is inherent any time galvanizing is used, more specifiers select hot-dip galvanizing for other reasons including lowest initial life-cycle cost, durability, longevity, versatility, sustainability and aesthetics. In addition to learning the benefits of utilizing hot-dip galvanized steel, we will also examine ASTM specifications, design best practices, inspection and preparing the galvanized surface for painting or powder coating

DARCY PRETULA, P.ENG FROM DAAM GALVANIZING

APR

Scavenger Hunt Challenge

Scavenger hunt challenge between Edmonton and Calgary. All proceeds going to the chapter's charity

MAY

Annual General Meeting

JUN

Golf at Strugeon Country Golf and Country Club

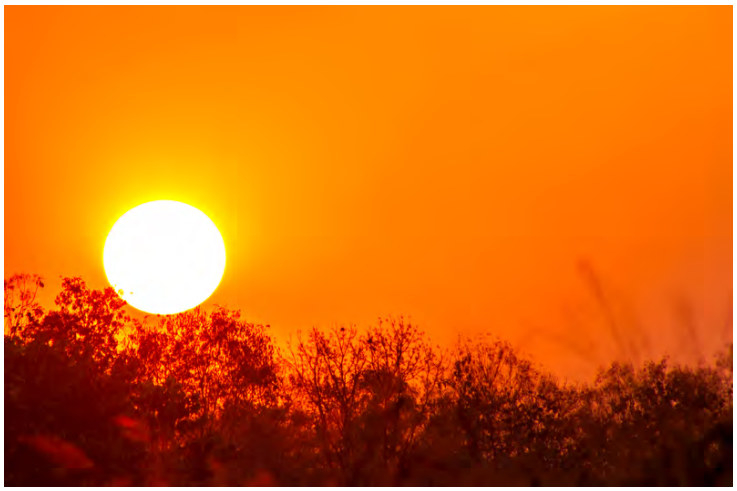
Visit our Website for more information

http://edmonton-csc.dcc.ca/

Articles of Interest

India May Become Too Hot for Construction by the 2030s, McKinsey Warns

Sourced from: https://www.globalconstructionreview.com / GCR Staff



Management Consultant McKinsey has raised the prospect of India experiencing more lethal heatwaves by the 2030s that make construction and other outdoor work lethal.

It says periods when outdoor work is unsafe will increase 15% by 2030 compared with today's levels, with an economic cost of up to $250bn.

Its study just published on the effect of climate change in India suggests rises in heat and humidity could make the subcontinent one of the first places in the world to experience heat waves that "cross the survivability limit for a healthy human being resting in the shade".

It says there is a 40% chance that this could occur as early as the 2030s.

The north of India has historically exhibited some of the world's hottest "wet-bulb" temperatures – a measure that combines the effects of heat and humidity, and provides a better measure of heat stress on the human body than air temperature alone. These recordings are carried out using a thermometer wrapped in wet cloth.

In May and June last year, India and Pakistan recorded dry bulb temperatures 50.8°C, leading to the banning of construction work between 11am and 4pm. Typically, those most at risk are daily-wage labourers, including construction workers, as well as rickshaw operators and vegetable sellers.

India's wet bulb temperatures rarely exceed 32°C, the limit at which heat-adapted people can do outdoor work. Thirty-five degrees, around the hottest ever recorded on Earth, is commonly regarded as the heat-stress limit for human life – at that point, a human can survive, resting in the shade, for about five hours.

According to McKinsey, heat waves in the hottest parts of India could begin to breach 34° by 2030, close to the record of 35.4° recorded in the Gulf a few years ago. However, the effect of urban "heat islands" may push temperatures above the survival threshold in cities.

By 2050, portions of northern India could begin to experience heat waves that cross the 35° limit at least once a decade, but before this happens outdoor workers will require longer and longer breaks as their core temperatures rise and they become less able to work.

The effect of climate change is exacerbated by the high population density of northern India, and the scarcity of air-conditioning. Up to 200 million people may be exposed to lethal heatwave during the 2030s, about half of whom will have access to chilled air if economic growth allows them to buy it. At present, only about 10% of Indians have air-conditioning.

By 2050, the number of people living in at-risk regions will increase to as many as 480 million, although most people in India are expected to own an air-conditioning by then.

The effect of this scenario on construction and other outdoor industries will be a rapid decrease in

productivity. McKinsey estimates that the number of daylight hours during which outdoor work is unsafe will increase 15% by 2030, compared with today's levels.

It comments: "This is significant because India's economy is highly dependent on heat-exposed labour. As of 2017, heat-exposed work produces about 50% of GDP, drives about 30% of GDP growth, and employs about 75% of the labour force, some 380 million people … we calculate that lost labour hours due to increasing heat and humidity could put approximately 2.5-4.5% of GDP at risk by 2030, equivalent to roughly $150-250bn."

It adds that addressing the risk of lethal heat waves by 2030 using air-conditioning could come with capital costs of up to $110bn.

Contract Frustration a Challenging Force Majeure Alternative

Sourced from: https://canada.constructconnect.com /John Bleasby

The possible application of force majeure provisions in construction contracts due to COVID-19 has been given considerable attention recently. Discussions have centered on the wording of force majeure clauses and how specific they might be in the event of a pandemic.

Yet there are other options that could be pursued if a contracted party determines that it cannot meet its obligations. Richard Swan and Preet Bell of Bennett Jones LLP explain that, "Where an event occurs after entering into the contract that renders the contract impossible to perform and goes to the very root or heart of the contract, the doctrine of frustration provides that the contract has become frustrated."

Frustration shares a similar purpose with force majeure. "Frustration may provide relief from the obligations under a contract where an event renders the performance of the contract impossible or radically different from what was originally agreed to," say contract experts at Torys LLP.

Michael Bordin of Gowlings WLG adds that both also have an important restriction in common – Frustration is not applicable simply due to more onerous or higher costs associated with fulfilling the contract. "It must be positively unjust to hold the parties to the contract."

At the same time, Gowlings says that there can be financial implications when frustration has been ruled. "Many provinces have enacted provincial legislation to administer the outcomes of contracts found to be frustrated. For example, Ontario's Frustrated Contracts Act applies to any contract that is governed by the law of Ontario and that has become frustrated and consequently discharged. It prescribes that amounts paid or benefits conferred prior to discharge are recoverable. Additionally, it allows the severance of frustrated obligations of a contract if the remainder was substantially performed prior to discharge."

The challenge, however, is that establishing the "doctrine of frustration" is a very high bar to clear. Not only that, Swan and Bell say the consequences are different as well. While force majeure might mean a temporary suspension or deferral of work, frustration signals the end of the contract itself. That may not be the desired outcome.

Despite the challenges of establishing frustration, its application might still be a Hail Mary option worth considering if a contract has no force majeure provisions at all. "Despite the occurrence of an extreme and impairing event, Canadian courts (excluding Quebec) have not implied a force majeure provision in common law," says Sahill Shoor of Gowling WLG. While noting some exceptions, he also says, "This infers [that] the standard rules of force majeure interpretation would not apply if there is no force majeure clause expressly written in the contract."

Shoor cites the Supreme Court's outlook towards frustration as, "a situation [that] has arisen for which the parties made no provision in the contract and the performance of the contract becomes 'a thing

radically different from that which was undertaken by the contract'." However, in addition to the unforeseeable impact of an event – say, COVID-19 – Shoor says the absence of a force majeure provision would be a prerequisite for the doctrine of frustration to apply. "This means that courts will choose to apply either frustration or force majeure – parties are not meant to rely on both."

Given the high threshold required to establish force majeure and frustration, Bordin suggests that parties try to find a negotiated solution. "Litigation is always uncertain. Consider giving real notice to the party."

Blake, Cassels & Graydon LLP agrees. "Force majeure and frustration are last resorts which will not be applied if parties have not exhausted the options available to them to perform their obligations under the contract."

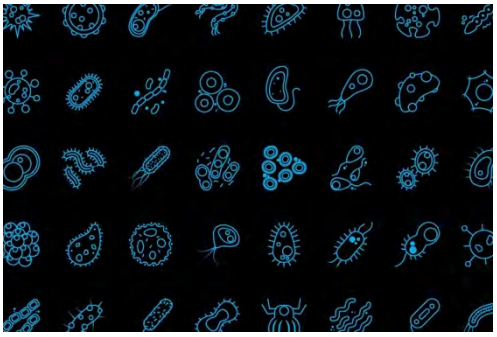
"Dialogue with the other side, especially in these circumstances [when] they may be facing similar issues. You may be able to work something out," says Bordin. Delaying performance under the contract, re-scheduling commitments to a later date, or negotiating clearer terms regarding when and why the contract might no longer be binding are all are worth consideration versus the expense uncertainty of legal processes.

Think Small: Architecture and the Microbiome

Sourced from: https://www.architectmagazine.com / Blaine Brownell

In "End of the Anthropocene" (https://offramp.sciarc.edu/articles/end-of-the-anthropocene), an article published in Sci-Arc's Offramp journal a few years ago, architecture professor Ted Krueger describes the recent discovery of a planet dominated by over a trillion species of terraforming life forms. These earth-shaping organisms not only exert control over the planet's geology but also its atmosphere and hydrosphere. Where is this celestial body? "You're living on it," writes Krueger. "The terraformers are microorganisms."

Krueger is an associate professor and graduate director at the Rensselaer Polytechnic Institute School of Architecture; he studies the microbiome and its influences within buildings. In "Microecologies of the Built Environment," a chapter that he authored in The Routledge Companion to Biology in Art and Architecture (2019) (https://www.routledge.com/The-Routledge-Companion-to-Biology-in-Art-and-Architecture/Terranova-Tromble/p/book/9780367873394), Krueger argues that architecture's conventional focus on the human scale should expand to include the microbial scale: "The growing realization of the spectacular diversity of phyla, species, and strains of micro-organisms and their ubiquity, and even more so, the deep interrelationship between humans and microbes, demands that designers also become aware of these relationships and begin to use them as positive assets in their configuration of the world."



In recent decades, scientists have discovered surprising facts about microorganisms' influence on human and planetary health. Research programs such as The Human Microbiome Project have revealed the extent to which bacteria and other organisms are a fundamental part of human anatomy. For example, each of us carries between two and six pounds' worth of bacteria that outnumber our own cells by a factor of 10. This may be unsettling news, given our current obsession with sanitation and antimicrobial treatments. But these bacteria provide many critical health benefits related to digestion, vitamin production, and the fighting of illness. According to the HMP website: "An ever-growing number of studies have demonstrated that changes in the composition of our microbiomes correlate with numerous disease states, raising the possibility that manipulation of these

communities could be used to treat disease."

For Krueger, such manipulation can extend beyond the human body, since our microbiomes are connected to the microecologies in our buildings. "A fog of particles containing micro-organisms surrounds us and follows us through our daily activities," he writes in the Routledge Companion. As we now know from coronavirus transmission studies, we share microbes with our surroundings when we sneeze, talk, cough, and so on. We also slough-off skin and hair cells throughout the day. Building occupants come into contact with these micro-ecologies by stirring up dust particles, touching microbe-covered surfaces, or breathing in organisms suspended in the air. This can lead to illness – xs seen with Legionnaire's disease, sick-building syndrome, and COVID-19. But not all building microecologies are bad. In fact, beneficial microbes are often more desirable than sterile spaces.

Krueger argues that architects should operate more like creative chefs than forensic doctors, manipulating conditions to encourage the cultivation of healthy microbiota.

One welcome setting for a healthy microecology is a food-processing facility – particularly one where fermentation or similar techniques are involved. Krueger offers the example of artisanal cheese-making, which relies on functional microbiota that influence the character of the food produced. In other words, these facilities contain their own "house" microecologies that fundamentally affect the qualities of the cheese. Discovered in recent years, this phenomenon reveals that interior environments have a more significant influence on food-making processes than previously understood – a realization that merits further study. "This new understanding of the role of the microbial environment suggests that, perhaps soon, house microecologies will be designed through the selection of materials, conditions, spatial configurations, and inoculations," Krueger writes in the Routledge Companion. He argues that architects should operate more like creative chefs than forensic doctors, manipulating conditions to encourage the cultivation of healthy microbiota. "Currently we try to exclude other species [in buildings]," he says. "Then, we go camping on the weekend in 'nature' because we feel renewed by the contact with the species we have eliminated." Instead, architects should develop multi-scale, multi-species design criteria that enable us to co-exist with other organisms.

Another area of growing interest in the study of microecological function is the fighting of disease. Just as the human biome plays a role in protecting the body from illness, architectural microbiota are known to be capable of preventing pathogen transmission. Microbial mats are used for water filtration, for example. Interior plant-based phytoremediation is also used to purify indoor air. More research is required, however, to understand the potential for building microecologies to fight disease transmission. Krueger suggests that "understanding how pathogens exist in and move through environments could have immediate applications in how we design indoor environmental systems." Typical HVAC systems, for example, are very efficient in moving microbes between individuals. These systems should be redesigned to direct pathogens away from us by using some form of microbe-activated filtration media—an element that could be critical for mitigating the spread of the coronavirus. "The changes we make in response to COVID might well make the environment a better one for resisting the common colds or the flu," Krueger adds.

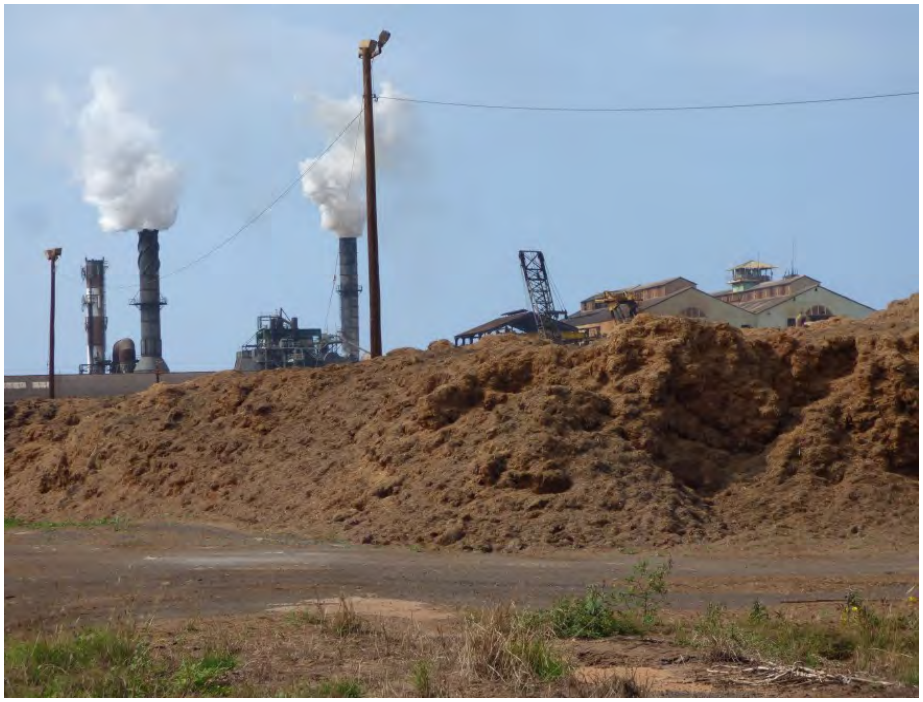
Microbes can also help carry out fundamental building processes. For example, they can be used to construct and repair building materials. Some bacteria create calcium carbonate via bio-mineralization, forming rock while pulling CO2 out of the atmosphere. For example, Durham, N.C.-based Biomason harnesses this natural phenomenon to create pre-cast concrete building modules. "Micro-organisms that deposit carbonates as a function of their metabolic activity have been used to stabilize soils without excavation or other disturbance and can stabilize existing structural materials without the use of applied coatings," Krueger writes in the Routledge Companion. Microbes can also play a significant role in sewage treatment. Large-scale composting, which breaks down human

waste and eradicates pathogens, could replace entire conventional plumbing and sanitation systems (last spring, Krueger taught an architecture studio where students designed a composting facility capable of processing the entire human waste of Manhattan).

Although invisible, the microecology within the built environment has significant potential to enhance human health. An architecture designed to cultivate microbiota would support a kind of small-scale agriculture, or micro-agronomy, that could benefit human occupants and other species. “I expect that there are changes to the indoor environment that might foster a cooperative community, shifts in material and the geometries of their surfaces at a microscopic scale, adjustments to acidity, humidity, and airflow,” says Krueger. Although we may not be able to perceive surfaces or systems that support the growth of diverse microbial communities, we would appreciate the benefits they might provide, much in the way that the bacteria-powered phytoremediation that takes place within the root systems of plants is invisible, yet we appreciate the plants themselves. “We appreciate the oxygen they supply, the acoustic properties they bring to the space, the smells that they might offer us, and the opportunity that they create for birds or pollinators,” says Krueger. “Positive experiential benefits might accrue from an effort that is operating at an invisible scale."

A Sugar High for Architects

Sourced From: Sourced from: https://www.architectmagazine.com / Blaine Brownell



Left: Piles of bagasse on a sugar plantation in Maui

In an "Illustrated History of How Sugar Conquered the World," an article that Kristy Mucci published in Saveur, she argues that understanding Western history requires understanding sugar. Not only has sugarcane fulfilled humanity's insatiable desire for sweetness, but it has also served as a spice, a medicine, and a symbol of power and oppression.

Today, sugarcane is the world's largest crop in terms of production quantity. Over 120 countries produce nearly 180 million metric tons of sugar, 80% of which is harvested from tropical and subtropical sugarcane. While the focus of production is the plant's sweet juice, increasing attention is also paid to bagasse. With a name derived from the Spanish word bagazo, originally meaning "rubbish," bagasse is the residual byproduct of sugarcane stalk processing. Ten tons of sugarcane produce about three tons of bagasse, which is composed of 45% cellulose, 28% hemicellulose, 20% lignin, in addition to other materials. In fact, the composition of bagasse fibers is similar to that of wood, with a high water content, and bagasse is often put to practical use – primarily as a biofuel source to power sugarcane mills.

But a growing number of scientists and product manufacturers are also developing new applications for bagasse, including using it to develop new building materials and other products that retain the

fiber's sequestered carbon while offsetting the use of less environmentally responsible alternatives. For instance, Celotex offers a bagasse-based soft board called Caneboard, which is produced in the company's New Orleans facility.

Bagasse was first used to make commercial building products nearly a century ago. CSR Limited (short for Colonial Sugar Refining Company), a leading building products manufacturer in New South Wales, Australia, was founded in 1855. According to the Pyrmont History Group, the CSR mills had a surplus of bagasse in the 1930s – a time when building material demands accelerated after the Great Depression. In response to the changing market, the company began to produce a commercial product called Caneite made from pulped bagasse fiber. CSR rolled this raw material to ensure homogeneous thickness and density, then heat-cured and cut it into boards for wall linings, floor underlays, acoustics, and other applications. The product was sufficiently successful that annual production grew to 10 million square feet by 1939, motivating the company to invest in other building materials (and eventually shift out of the sugar refining business altogether).

Sugarcane bagasse ash can be used in Portland cement as a supplementary material. The ash consists primarily of silicon dioxide – an ingredient that has been thoroughly tested in Portland cement blends – and may replace 20% to 50T of the cement without adversely affecting its performance.

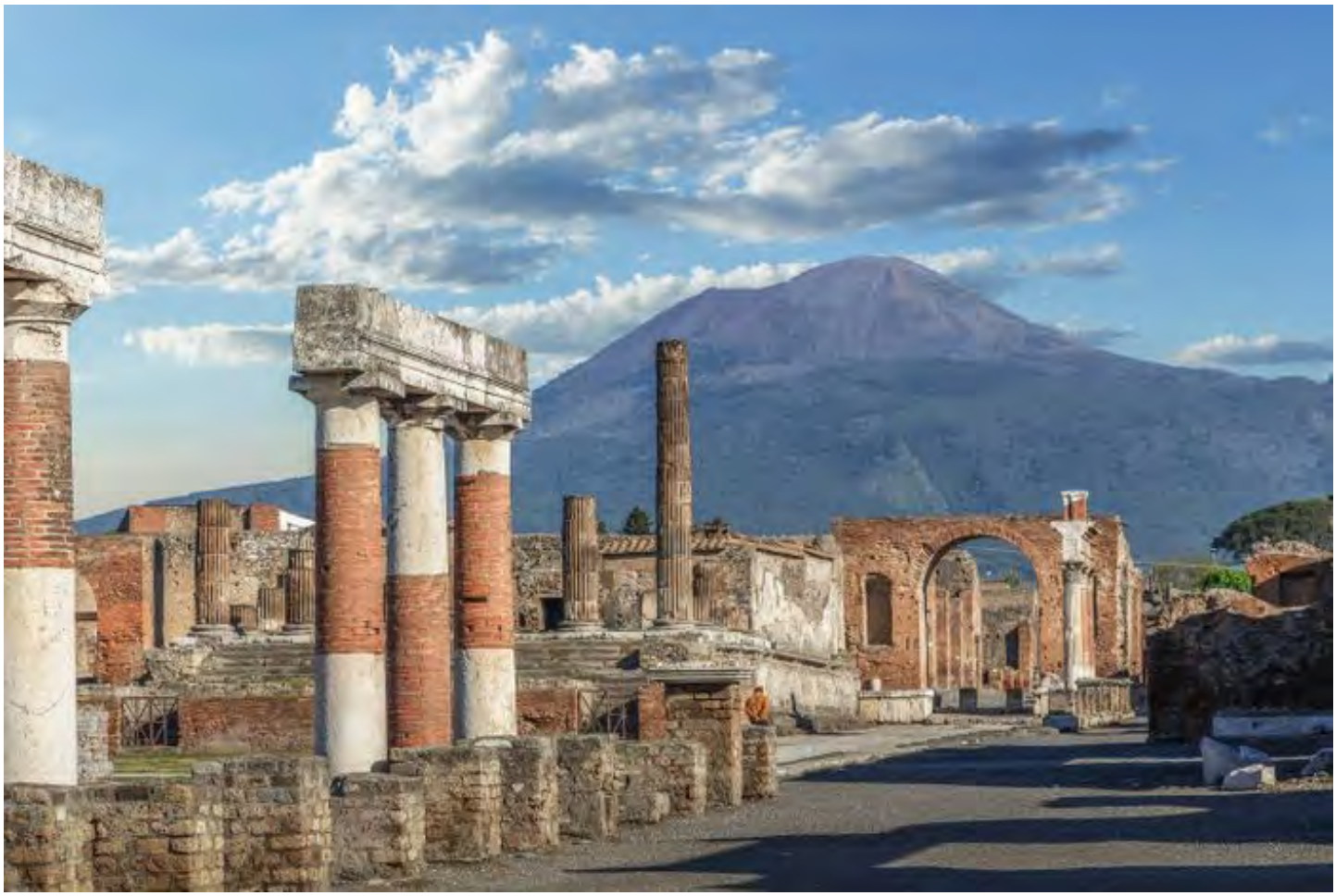
Bagasse can also be used in another form. When the chaff is burned as a fuel source, the resulting residue is sugarcane bagasse ash. Like fly ash, SCBA can be used in Portland cement as a supplementary material. The ash consists primarily of silicon dioxide—an ingredient that has been thoroughly tested in Portland cement blends—and may replace 20% to 50% of the cement without adversely affecting its performance. Researchers have experimented with SCBA in concrete, mortar, bricks, and clay tiles. Since the ash is relatively lightweight, it can also reduce the mass of building blocks. Another study determined that SCBA increases chloride- and sulfate-resistance in construction materials.

In addition, bagasse can be used as a plastic substitute – particularly for one-time-use products. The material's inherent biodegradability makes it preferable to petroleum-based polymers that accumulate in our oceans and take centuries to break down. Bagasse compares favorably to, say, the corn-based PLA bioplastic in that it requires less processing energy, decomposes more rapidly, and takes advantage of a preexisting waste stream. Scientists at Northeastern University have recently developed a bagasse-based material with improved moisture resistance. By adding the nontoxic alkyl ketene dimer, the researchers were able to create a material with improved wet mechanical strength during its first use (such as disposable tableware) while remaining safely biodegradable. Additionally, the manufacturing process has a 97% lower carbon footprint than the production of conventional consumer plastics.

As these examples demonstrate, bagasse offers compelling advantages when it is used to make building materials and consumer products. It is a significant source of biowaste that may be repurposed in various applications with lower emissions and less waste than the materials it replaces. That said, using more bagasse – as with any biomaterial – should be considered within a larger framework of future needs and sustainable agricultural practices. For example, sugarcane is increasingly used to make ethanol-based fuel in addition to sugar and bioplastics, suggesting there may be greater demand for the resource in the future. Bagasse not only invites architects and designers to develop creative uses for a material that was once regarded as trash, but it also asks them to consider the broader industrial ecology of renewable materials in general.

If Your City Were Really Dying, You Probably Wouldn't Know

Sourced From: https://www.curbed.com / Justin Davidson



Pompeii (Buena Vista Images/Getty Images

How does a great city die? How does a place that generations saw as a vibrant center – essential, teeming, terrifying, grand – become a sad and silent field? I've always found the relics of mass abandonment creepily thrilling: Mayan pyramids pushing through the jungle canopy at Calakmul in Mexico's Yucatán Peninsula, raucous with monkeys; the ochre-and-gold remains of Morgantina, a gracious Greek enclave high in the Sicilian hills; Bodie, California, once the home of 10,000 miners and scroungers and now just vacant houses and taverns parching in the desert sun. These sites make it easy to envision the future obliteration of Washington, D.C., or Los Angeles. It's harder to grasp how that passage unfolds, except, perhaps, in the form of some violent upheaval – an earthquake, a pestilence, an alien invasion, burning everything in a matter of minutes.

And yet, as Annalee Newitz writes in a new book, Four Lost Cities: A Secret History of the Urban Age (W.W. Norton), convulsive destruction is rare, and even more rarely definitive. Cities tend to scrabble back from disaster and attain even greater glory, as London did after the Great Fire of 1666, Chicago after its 1871 conflagration, San Francisco after the earthquake of 1906, and Berlin after the Allied bombings of World War II. In his 2005 book, Collapse, Jared Diamond argued that urban death results from the interaction of environmental calamity and war or social upheaval, which periodically overwhelms apparently solid societies, driving them to extinction. Newitz offers a less deterministic and more nuanced overflight of history, alighting on four metropolitan centers that took centuries to rise and endured for centuries more before following unpredictable paths to disarray. No unified theory of failure here.

The cities Newitz examines were radically different. Pompeii was a merchant metropolis, its streets lined with shops, its population organized into providers of specialty services like sex, cooked food, and legal advice. A New Yorker would feel at home there in minutes. The Neolithic city of Çatalhöyük, in what today is Turkey, was a collection of farming villages in which everyone's home was a workplace. Cahokia, on the banks of the Mississippi, served as a kind of pre-Columbian Vatican, a center of grandeur and religious order. Angkor, in Cambodia, a royal capital carved out of the jungle, was engineered for spectacle and astrological perfection. Each of these places had its own reason to die, usually at such a glacial pace that no one resident or even a whole generation would have registered the decay. The constant is that they expired when their leaders grew tired of keeping them going or the cost of upkeep wasn't worth the return. Mismanagement and inertia are more formidable foes than cataclysm, though they administer less dramatic death.

Even for Pompeii, the archetypal example of a city crushed by nature's rage, the end didn't come as definitively as hindsight would suggest. It's true that Vesuvius erupted in A.D. 79 and sent a pyroclastic flow of ash, molten rock, and murderous gases sweeping through the streets, killing more than 1,000 people as they cowered and poisoning the volcano's fertile slopes. And yet thousands more survived to prosper – not in that spot, but in nearby cities, seeding the entire area with Pompeii's distinctive mix of cosmopolitanism, mercantilism, liberalism, and social mobility. A generation of liberti, or former slaves, took advantage of the move to shed the stigma of their status and, in some cases, appropriate the wealth of the families they had served. The flood of displaced people challenged the imperial government in Rome to meet their needs and match their resourcefulness, which it did by building new roads, stadiums, neighborhoods, and theaters. Enough people profited from disaster to keep Pompeian culture alive.

The long view suggests that what looks like failure eventually morphs into another form of success. Newitz doesn't touch on Rome's slow and agonizing illness as the empire fell apart and the city reverted to a muddy slum. And yet it was reborn, again and again. This week (February 4, 2021), Rome celebrates 150 years since it was wrested from papal control – or, rather, papal neglect – to become the capital of Italy. In the first two decades after 1871, it leapt from a premodern city, its churches interspersed with pastures, orchards, and floodplains, into a metropolis of industrial Europe. Its population doubled in those 20 years, then doubled again and again (it now stands at about 2.8 million), and its prosperity swelled along with it.

Newitz chronicles archaeologists' attempts to narrate epochs through the stories of individual people. In Pompeii, we meet Julia Felix, an enterprising landlady and bathhouse operator, and a woman named Murtis, who hung out her shingle as a professional fellatrix. The chapter on Çatalhöyük lingers on the figure of Dido, a woman who, about 10,000 years ago, fell hard enough to break several ribs, an injury that threw off her gait for the remaining decades of her life, leaving the marks of suffering etched in her skeleton. Moving up and down ladders and across the tops of houses that functioned as public space, Dido "strolled between rooftop workshops, goat pens, shade canopies, and small braziers for cooking outdoors." None of these ancient urbanites, Newitz makes clear, would have had reason to shake their heads and mutter that their hometown was doomed.

By the same token, Newitz could not have known, during the years of researching and writing Four Lost Cities, that it would come out just as pundits were proclaiming a new round of urban extinctions. Perhaps this book would have been timely in almost any decade, especially in New York, which has been suffering a more protracted death than the soprano in a Verdi opera. Deindustrialization started squeezing the life out of it in the 1950s, suburbanization kept up the attack in the 1960s, followed by crime in the '70s, crack in the '80s, Disneyfication in the '90s, 9/11 and financial crisis in the 2000s, and gentrification in the 2010s. Now the pandemic is here to finish the job – or perhaps hand it off to sea-level rise. Ashes to ashes, dust to dust, if the virus don't get you, the climate must.

New York faces some brutal trials in 2021: budget sinkholes, echoey office buildings, vacant storefronts, devastated businesses, and eviscerated cultural institutions. No smiley-faced boosterism will ease the transition. Even if the freshly vaccinated millions emerge from their lairs in search of a long-deferred good time, if the immigration gates swing open again, and if jobs flow back, recovery may well be rough. But all the journalistic catastrophizing portrays a more profound, epochal failure of the kind that Diamond and Newitz chronicled. Pessimists see New York's entire raison d'être burning away as the creative class meanders off to cheaper, more spacious pastures, taking their tax contributions with them. The notion that a city's decline can drag on for hundreds of years, or reverse itself a few centuries later, is not much comfort when you have a single lifetime that you would prefer to spend on the upswing. But then perhaps what we really mean when we say that a city is dying is that it has changed since we were young.

One lesson of Newitz's book is that decline is a collective choice. Angkor's reservoirs were oriented in the wrong direction to manage its worsening cycle of floods and droughts, and its rulers gave up on rebuilding them. That's a precedent that the stewards of New York's infrastructure may want to study. Another conclusion is that cities are social arrangements, not fixed geographical entities or accumulations of architecture. The successful metropolis endures thanks to its adaptive powers. In our time, the changes in façades, streets, costumes, and habits take place at high enough speed that our Didos and Julia Felixes can watch it happen in real time – or on YouTube. Stock footage of New York in the 1910s, '30s, '50s, and '70s, shows us a city of shades and long-demolished buildings that is at once deeply foreign and utterly familiar. Flexibility is the most effective tool of survival.

Elon Musk: First Mars City Will Start With Glass Domes

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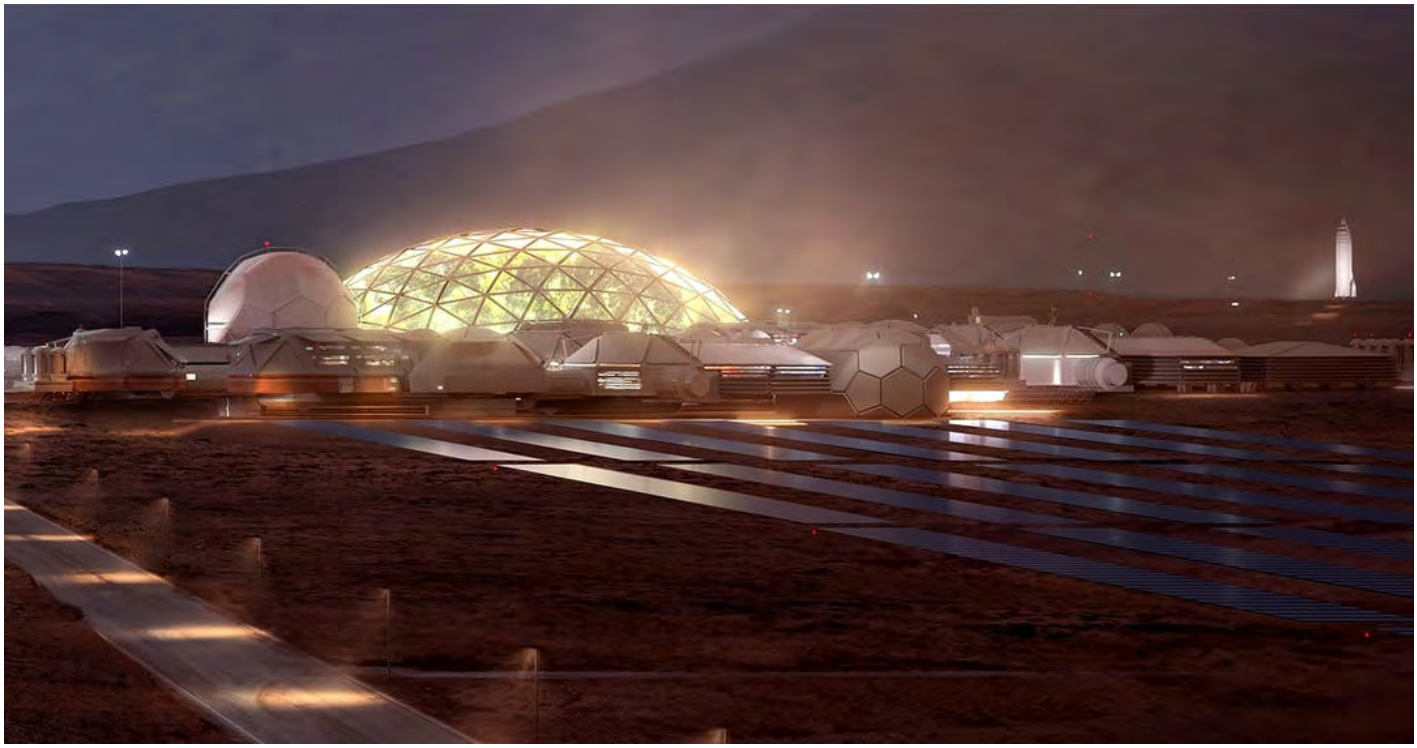

Image by SpaceX

SpaceX CEO Elon Musk has some ambitious plans to turn humanity into an multiplanetary species.

With the aid of a fleet of Starship spacecraft, the intrepid billionaire wants to establish a permanent foothold on Mars, one million people strong, by 2050.

Now, Musk is publicly fleshing out his vision further.

“Life in glass domes at first,” Musk wrote in a Thursday tweet, responding to a question about what life on Mars will look like early on. “Eventually, terraformed to support life, like Earth.”

Scientists and science fiction authors have long suggested that terraforming could allow humans to breathe on the open Martian surface. But that vision is still a distant dream – far beyond the first Martian bases, according to Musk.

“Terraforming will be too slow to be relevant in our lifetime,” Musk wrote in a follow-up tweet. “However, we can establish a human base there in our lifetime. At least a future spacefaring civilization – discovering our ruins – will be impressed humans got that far.”

Terraforming Mars is indeed a massive undertaking. An analysis last year concluded that it may require 3,500 nuclear warheads every single day to increase Mars’ atmospheric pressure to breathable levels and melt the planet’s ice caps in order to release carbon dioxide, which will then be trapped in the form of greenhouses gases.

But there’s one big snag with that plan. The ensuing radiation would also turn the surface completely inhabitable.

And a 2018 study also concluded that there simply isn’t enough trapped carbon dioxide on the Red Planet to sufficiently raise enough atmospheric pressure to sustain humans on the surface.

But those limitations aren’t going to stop Musk from going after his dream of establishing a permanent presence there.

Musk has previously claimed that with the help of “a thousand” Starship spacecraft, massive rockets he says will be capable of carrying to 100 tons of cargo or 100 passengers between planets, “a sustainable Mars city” could be established. About 100 vehicles would each have to carry 100 tons of cargo every two years, according to Musk’s calculations.

Early settlements might look a little rough around the edges.

“Getting to Mars, I think, is not the fundamental issue,” he said during a September virtual Humans to Mars summit. “The fundamental issue is building a base, building a city on Mars that is self-sustaining.”

“I want to emphasize, this is a very hard and dangerous and difficult thing,” he added at the time. “Not for the faint of heart. Good chance you’ll die. And it’s going to be tough, tough going, but it’ll be pretty glorious if it works out.”

The ambition lies very close to the entrepreneur’s heart – or at least his marketing strategy.

“If we don’t improve our pace of progress, I’m definitely going to be dead before we go to Mars,” Musk said during the Satellite 2020 conference in Washington back in March.

His space company has come a long way in turning Starship a reality. Several early prototypes have already taken to the skies, albeit only to a height of roughly 500 feet. In the following weeks, the first prototype will attempt fly to an altitude to nine miles.

If everything goes according to Musk’s ambitious plan, the first Starship will make its way to Mars as soon as 2024.

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- **Alberta Construction Safety Association (ACSA)** www.acsa-safety.org
- **BuildingSMART Alliance** (North American Chapter of BuildingSMART): www.buildingsmartalliance.com
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- **Biomimicry Guild** www.biomimicryguild.com
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- **Architecture 2030** www.architecture2030.org
- **Building Information Modeling (BIM) Forum** www.insightinfo.com/bimforum
- **Biomimicry Institute** www.biomimicryinstitute.org
- **Canada BIM Council** 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

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

Alberta Painting Contractors Association (APCA)
www.apca.ca

Alberta Wall & Ceiling Association (AWCA)
http://awca.ca

Alberta Roofing Contractors Association (ARCA)
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American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
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The Canadian Wood Council (CWC)
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Portland Cement Association
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Alberta Painting Contractors Association (APCA)
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Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA)
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Association of Science and Engineering Technology Professionals of Alberta (ASET)
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Terrazzo, Tile & Marble Association of Canada (TTMAC)
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Bulletin Board

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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 and we will be quick to get back to you!

Open Positions Include:

Officer Engineer
Officer Marketing
Newsletter Editor
Chapter Liaison

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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