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The Life and Times of the Dean of Building Science

Joe Lstiburek, PhD, PE

This week we welcomed Joe Lstiburek, PhD, P. Eng. for a look back at his career and some thoughts on current events. Part 1 this week will focus on the early days of building science up to some current events thoughts on COVID, the Miami building collapse, Code updates and more. Part 2 when we return live from our summer break on September 10th will focus on his new book Moisture Control in Residential Buildings. Don't miss this exclusive look at the Life and Times of the Dean of Building Science.

Joe Lstiburek, B.A.Sc., M.Eng., Ph.D., P.Eng., is the founding principal of Building Science Corporation and an ASHRAE Fellow. He is a building scientist who investigates building failures. Dr. Lstiburek received an undergraduate degree in Mechanical Engineering from the University of Toronto, a master's degree in Civil Engineering from the University of Toronto and a doctorate in Building Science Engineering from the University of Toronto. He has been a licensed Professional Engineer since 1982.

The Wall Street Journal referred to him as "the dean of North American building science." Fast Company magazine called him "the Sherlock Holmes of construction". He is internationally recognized, his work has influenced building codes and standards in every climate zone. He is a recipient of the Carl Cash Award from ASTM, a "Becky" from the Ontario Building Envelope Committee (OBEC) and the EEBA Legacy Award all for lifetime contributions to building science. He has also been inducted into the Building Performance Industry Hall of Fame and has received the NESEA Professional Leadership Award for "changing the way we think about building science and how we perform our work".

Dr. Lstiburek is an acclaimed educator who has taught thousands of professionals over the past four decades and has written countless papers. He has a joy for telling tall tales to his protégés and audiences.

Nuggets mined from today's episode:

Joe Lstiburek followed his father into both aerospace engineering and then construction.

Joe Lstiburek first learned the term building science at a meeting where he unknowingly disagreed with the presenter a building science legend (Gus Handegord) and was rescued by another (John Timusk). Handegord and Timusk became Joe's mentors.

Joe built the first dynamic wall house for John Timusk. (Counter current heat exchanger). Infinite R value by warming air coming inward and using an air source heat pump. "An insanely elegant solution". It is 60% efficient. Today continuous exterior foam insulation makes this type of wall system unnecessary.

In 1979, Joe built his first perfect wall home. There was no home building permit required. Water managed EIFS, before it was realized that water management was a potential EIFS problem. Super insulated, with 8" of rigid polystyrene foam insulation on the exterior masonry wall with a fluid applied water control layer. The interior of the home featured exterior decorative concrete block which functioned as thermal mass. Added an additional pane of glass to make the available double pane windows triple pane. Used long screws and plastic washers and lugs to attach the insulation. The home was heated by a wood stove, with ducted make-up air.

Joe was a serious home builder who built 30 homes losing \$500K while doing it. High interest rates forced Joe out of homebuilding.

Finding himself unemployed, Joe became the youngest R&D director for the Canadian Homebuilders Assn.

Joe coined the term "perfect wall" after colorizing a black and white illustration from Professor Neil Hutcheon's work in 1953-54.

People don't read old stuff.

I've spent most of my life dealing with failure. Failures educate more than successes. Failures have made Joe the man he is today.

Joe, predicted that EIFS synthetic stucco would fail due to moisture issues – they were “face-sealed” and needed to be “water-managed”.

The first energy crises was driven by activists; people who don't understand physics and who have found that politics trump physics. There is no such thing as a free thermodynamic lunch. Tightening homes reduced the ability of structures to dry. Heavily insulating homes reduced the ability of structures to dry. This double misunderstanding caused 1,000s of home to rot and loss of life due to CO poisoning. Joe's outspoken views cost him his job and got him blacklisted. Without work he moved into his mom's basement. Joe's predictions on the deleterious effects of tightening and insulating existing homes were eventually proven right.

Finding himself unemployable in Canada, Joe began working in the US. He was advised by mentors to go to either Pittsburgh or Cleveland to see if he could figure out why paint was peeling off the exterior of homes. Joe met Jim LaRue in Cleveland who did a show “House mender does house calls” and asked Jim if peeling paint was a problem. LaRue confirmed it was. For 8 months Joe commuted back and forth from Toronto to Cleveland investigating the problem. Joe wrote a paper titled “Insulation induced paint and siding problems”. Joe's mentors paid for his airfare so he could attend the meeting and present his paper.

Green & Covid

You know the mess is coming. Activists who don't have technical knowledge, will do the stupid stuff first. Joe feels like the street sweeper who cleans up other peoples' messes at the end of the Rocky & Bullwinkle show. Increasing ventilation and raising RH in buildings in northern climates is problematic. Increasing ventilation rates in humid climates is problematic.



The history of Building Science Corp. (BSC) Joe was dating an immigration attorney who advised him that a change in US immigration law would make it easier for him to become legal in the US. She advised him to incorporate a business in Chicago and then send himself a letter offering employment. Joe was the first person to enter from Sarnia, Canada to the US under the program.

In his early days in the US, Joe was blacklisted from speaking at conferences and events, so he began organizing his own conferences, seminars and training. Joe was tossed out of events - EEBA labeled him too disruptive. Unable to afford plane tickets, Joe drove his rusty Ford Tempo to events with only a gasoline credit card. Joe was passionate about skiing. He would drive from Toronto to Aspen, CO to ski because a ski resort there gave reciprocity to members of Canadian ski patrol. Joe would teach a building science class and then ski for a couple days. On one horrible day of skiing, Joe found himself on the mountain with only one other skier with whom he tried to keep up. It turned out that the skier was a woman architect who had heard of Joe. She asked if he could come by the office and do some training for their staff. He was asked what his fee would be to review a set of house plans, he said \$2 per sqft. A huge roll of plans arrives for a 66,000 sqft home. Joe knew the owner was Saudi Prince Bandar. That project led to an international incident when sometime later, Joe unknowingly hung up on Akio Toyoda (Toyota). That project led him to Charles Schwab. Rich people give money to museums and hospitals which have a tendency to have building science problems.

The most important building science advice Joe Lstiburek ever received was that the 3 biggest building science problems are: water, water---nothing else matters.

Joe met future wife Betsy Petit (an architect) at a training course where he spent the first morning tearing up architects.

Summer Camp

In the 1980s, Joe realized that old people who had important knowledge were beginning to die without an opportunity to pass the knowledge on. Joe asked mentor Gus Handegord how much he would charge to teach everything he knew in 3 days. Gus said it would be impossible for him to teach everything he knew in that time period and for \$10K he would teach everything he felt the audience could absorb. Joe was willing to spend \$5K and asked a few people if they would be willing to spend \$500 to listen to Gus for 3 days. Joe received 20 checks. At the event Joe offered to refund half of everyone's \$500. He was told that it so difficult to get the employers to pay for training that he should spend the extra money on food and booze. At the first event, an attendee unhappy with the food told Joe that the food at the event was an embarrassment. Joe asked, if he thought he could do better. The attendee told Joe, that he knew he could do better. Joe pulled out a credit card and gave it to the attendee. The attendee asked about a budget? Joe said there was no budget but there was an expectation "impress us".

Pete Consigli was the attendee. He took over the kitchen and with help from Jack Springston there was magnificent food overnight. The event grew from 50 people to 500 people. Joe built Pete a commercial kitchen that is only used 4 days a year. Summer Camp has become a cult event.

Memorable Summer Camp Moment- A glazing consultant burst into a crowded presentation and announced that the “documents have been unsealed by a court ruling” and he was able to discuss the window failure at the John Hancock building.

Favorite Summer Camp Photo, Mac Pearce lovingly cuddling a bottle of Sassicaia 1997 wine.

Building Codes

Joe Lstiburek got involved in building code making in 1999-2000 when he was told to stop whining about the codes and to get involved. Working on building codes isn't easy, sometimes it takes 9 years (3- 3 year cycles) to facilitate change. Joe is proud that he was able to change building codes in the following ways: vapor barrier requirements, vented and unvented roofs, conditioned attics and conditioned crawl spaces. He currently is trying to allow returned air out of closets.

Joe likes learning from younger mavericks who were told you can't do that.

Miami Building Collapse

Joe is familiar with prior structure failures in Ontario - parking garage failures, bridge failures due to salt water corrosion of reinforced concrete.

Joe noticed that in Miami:

- The pool deck was flat and lacked water management.
- Questions the water proofing under planters on deck.
- Don't be a dope, slope.
- Inspect like crazy.

RoundUp-

Joe Lstiburek-
COVID

- Mask requirements are ridiculous as the masks are ineffective.
- Aerosol transfer.
- Stokes's law.
- Improve filtration and add more filtered circulation rather than increase air change/ventilation.
- Don't increase humidity.
- Humidifiers are bioweapons.

Restoration Global Watchdog Pete Consigli-

- Pete and Z-Man learned of Joe Lstiburek from fellow RIA members Reed Dow and Mark Bradley who felt that Joe's info was valuable and would greatly benefit the restoration field.
- Pete and Z-Man attend MEHRC events in Philadelphia where we met IAQ, HVAC and Building Science pioneers including Joe Lstiburek.
- Pete and Z-Man were happy to have introduced Joe Lstiburek and Mac Pearce to the restoration industry. Mac Pearce and Joe Lstiburek were consistently the highest rated speakers at RIA events.
- Pete's definition of Sicilian Feast is "Thanksgiving on steroids."
- Pete's favorite Joe Lstiburek quote, "Pete Consigli had an unlimited budget and still managed to exceed it."

Sneak Peak at Joe Lstiburek's next IAQradio interview:

How to build energy efficient buildings, that are affordable and don't make people sick or rot.

Z-Man signing off

Trivia question:

Name the building related non-profit, NGO established by the U.S. Congress in the Housing and Community Development Act of 1974, Public Law 93-383

Answer: National Institute of Building Science (NIBS)

Answered by: John Lapotaire