LESS IS MORE

A whole-life carbon perspective





ARCHITECTURE

PLANNING

INTERIOR DESIGN









HEALTHCARE

K-12 SCHOOLS





CIVIC



WHO AM I? ARCHITECT BY DAY, CONTENT CREATOR BY NIGHT.



Users have minimal control once the building it built, contractors can't do much once the building is designed, architects are constrained by the design brief, and owners have a plethora of constraints revolving around market demand, maintenance, and affordability. In many ways it is a vicious circle of everyone thinking another group is responsible for making change. Of course, the obvious rebuttal to this argument is that architects and owners, who are the first ones at the table, have more of the responsibility because their decisions during the early stages of the design process have more impact. Although that might be true, I think we need to do less fingerpointing and focus on ALL taking responsibility for the emissions of buildings.

CORPORATE EMISSIONS



Share ...

Steven Biersteker • You Simplifying carbon for the AEC industry by writing to 1,000+ w... 2mo . (5)

A super-insulated envelope isn't low carbon...

If you choose the wrong insulation.

It's important as we continue to improve the energy performance of our buildings to keep an eye on the type of insulation and how it affects the embodied carbon.

Checkout the range on these typical products.

Data from the 2021 CLF Baseline Report.

If you like my content give me a follow and hit the bell.

I post Monday - Saturday @ 6:15am PST.

#carbon #insulation #architecture #design





.....

Steven Biersteker . You Simplifying carbon for the AEC industry by writing to 1,000+ w...

If solar panels are your sustainable strategy...

You're doing something wrong.

On-site energy generation is an important part of a low-carbon building, no doubt.

But it isn't the only solution.

It's important that good we consider all our strategies together, like a cake.

Building these things together will create a more cohesive building that:

- Uses less energy
- Sources clean energy
- Limits the amount of materials used
- Uses low-carbon materials
- Limits the constructed area

#architecture #design #engineering #carbon



WHO & WHY



WHY?

c) The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term











STEVEN BIERSTEKER | ARCHITECT AIBC









THE BASICS

TYPICAL STUFF



TYPICAL STUFF



EN 15978 STANDARD



EN 15978 STANDARD



EN 15978 STANDARD



BCBEC - CONFERENCE & AGM 2023







OPERATIONAL CARBON			
ENERGY USE * ENERGY INTENSITY	15,000 KWH 0.0117 KG ¢ C02e/kWh = 175.5 KG/year	15,000 KWH 0.442 KG Č02e/kWh = 6630 KG/year	5,000 KWH 0.0117 KG CO2e/kWh = 58.5 KG/year
EMBODIED CARBON			
BUILDING AREA * MATERIAL INTENSITY	250 m2 * 150 KG CO2e/m2 = 37,500 KG	250 m2 * 30 KG CO2e/m2 = 7,500 KG	250 m2 * 309 KG C02e/m2 = 77,250 KG

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OPERATIONAL CARBON			رباً التاً
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OLE LIFE CARBON			
ENERGY USE * ENERGY INTENSITY	15,000 KWH 0.0117 KG ČO2e/kWh = 175.5 KG/year	15,000 KWH 0.442 KG ČO2e/kWh = 6630 KG/year	5,000 KWH 0.0117 KG CO2e/kWh = 58.5 KG/year
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STEVEN BIERSTEKER	ARCHITECT	AIBC
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WHOLE LIFE CARBON			
2033 (10 years)	39.2 t	73.8 t	77.8 t

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BCBEC - CONF

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CE & AGM 2023			STEVEN BIERSTEKER ARCHITECT AIBC

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BEC - CONFERENCE & AGM 2023			STEVEN BIERSTEKER ARCHITECT AIBC

CAGBC - Embodied Carbon: A Primer for Buildings in Canada

CALGARY - HIGH PERFORMANCE



VANCOUVER - HIGH PERFORMANCE



IF WE ONLY LOOK AT OPERATIONAL EMISSIONS WE ARE MISSING THE POINT —

VANCOUVER - HIGH PERFORMANCE



WHOLE LIFE CARBON

CAGBC - OFFICE BUILDINGS

STEVEN BIERSTEKER | ARCHITECT AIBC

HOW ABOUT THE ENVELOPE?

EMBODIED CARBON



TYPICAL BREAKDOWN (LETI UK) 1. SUPER STRUCTURE [31 - 48%] 2. SUBSTRUCTURE [17 - 21%] 3. FACADE [13 - 17%] 4. INTERNAL FINISHES [4 - 22%] 5. MEP [4 - 15%]



MATERIAL CARBON EMISSIONS GUIDE

ARCH 2022



The City of Nelson's first edition of its...

MATERIAL CARBON EMISSIONS GUIDE

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1ARCH 2022



RESEARCH

ha/f

Ha/f Climate Design was founded to halve the emissions of the built environment this decade.







SIDING WITH

50MM XPS &

ROCKWOOL

INSULATION

FOUNDATION

INSULATION

WITH 50MM XPS

BRICK	BRICK	BRICK
VENEER	VENEER	VENEER
WITH 73MM	WITH 50MM	WITH 50MM
GUTEX	XPS	XPS
INSULATION	INSULATION	INSULATION

WINDOW	WINDOW
WALL	WALL
SYSTEM	SYSTEM
(VISION	(SPANDREL
GLASS)	PANEL)

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HA/F



Over the past decade energy codes have pushed the design of facades to require more material to achieve higher thermal efficiencies unintentionally driving up embodied carbon emissions as a result.



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HA/F



HA/F



WHAT CAN YOU DO?

MATERIAL PYRAMID

USE LESS METAL

USE MORE PLANTS

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BUILDERS FOR CLIMATE ACTION



4 STOREY | 8 UNIT RESIDENTIAL

GEOGRAPHY MATTERS



Arch Brick 2 ACME Brick Perla, AR



Arch Brick 1 Yankee Hill Brick Lincoln, NE

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GEOGRAPHY MATTERS



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GEOGRAPHY MATTERS



GEOGRAPHY MATTERS





Electricity consumption | Carbon emissions



CONCLUSION

- 1. Have a whole life carbon perspective
- 2. Use less metal & more plants
- 3. Geography matters





THINKSPACE







HA/F CLIMATE

