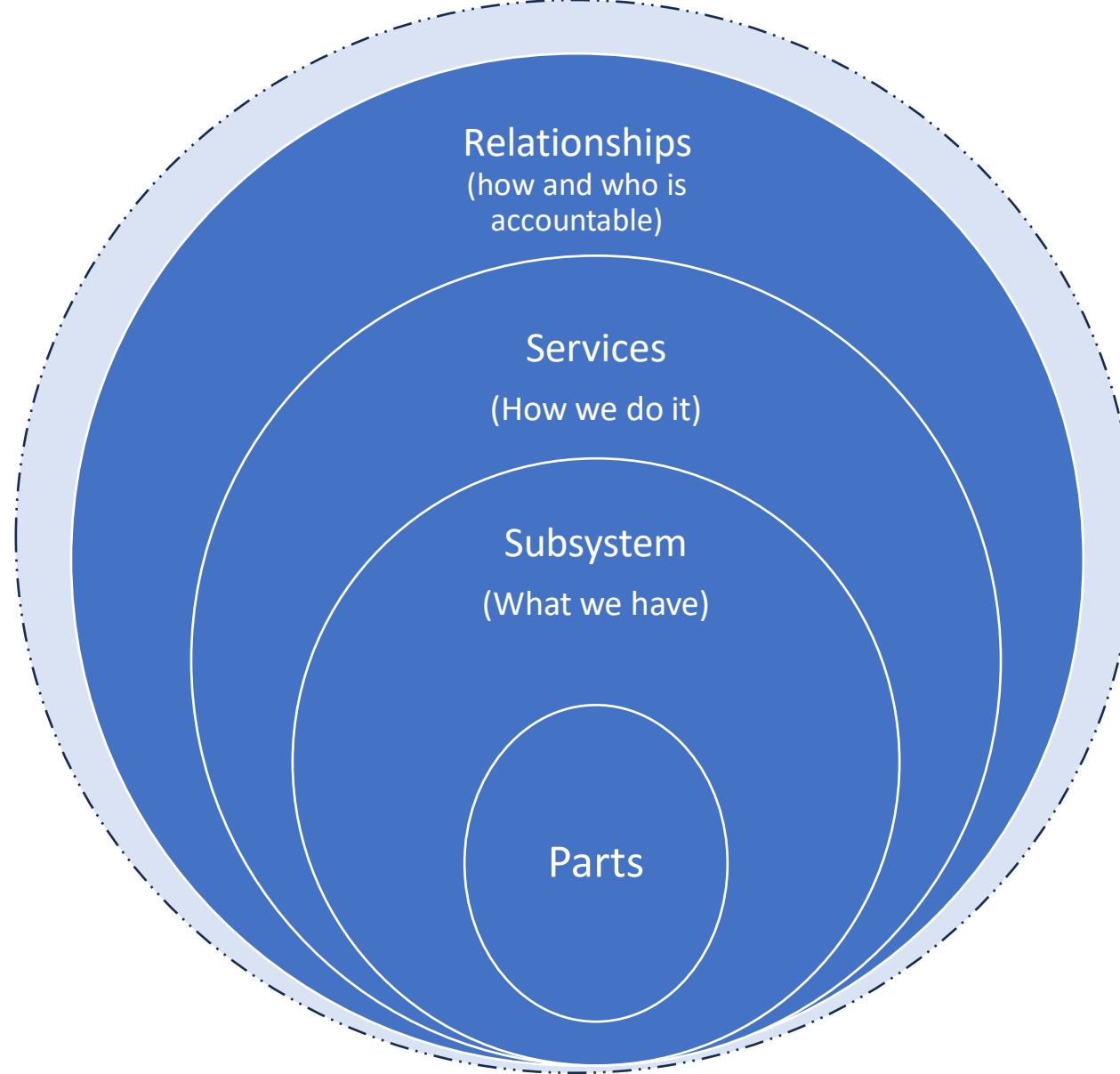




Welcome to Systems Thinking for Ventilated Facades

- Ventilated facades may have started in Norway in the days of huts.
- Systems Thinking was Socrates wasn't it?
- And Better buildings were built hundreds of years ago.
- And I took Building Science about thermal bridging in the ___'s



The Division 07 System inside the entire building system, inside the entire property system, inside the entire community system, and so on, and so on...



The point of it all

By building the Division 7 activities as a system, from sheathing out to cladding, with the most narrowly focused accountability, in a comprehensive and tightly woven collaboration and relationships, we will overcome barriers and reach new goals in façade design and construction.*



CERACLAD
Rain Screen Exterior Siding System



*drawing the line at the current Division separations to reflect the norms within which we must work.

Hmmm.

Systems thinking is a way of making sense of the **complexity** of the world by looking at it in terms of **wholes** and relationships **rather than by splitting it down into its parts**.^{[1][2]} It has been used as a way of exploring and developing effective action in complex contexts,^[3] **enabling systems change**.^{[4][5]} Systems thinking draws on and contributes to systems theory and the system sciences.¹

Tools for the Systems Thinkers: 6 Fundamental Concepts of Systems Thinking.³

- Interconnectedness
- Synthesis
- Emergence
- Feedback Loops
- Causality
- Systems Mapping



Systems thinking is a **holistic** way to investigate factors and interactions that could contribute to a possible outcome. A **mindset** more than a prescribed practice, systems thinking provides an understanding of how individuals can work together in different types of **teams** and through that understanding, create the best possible processes to accomplish just about anything.²



1 Wikipedia
2 Academic Source
3 The Embedding Project



Put competition where it belongs, without compromising collaboration.
“Right People on the Bus”**



Cost at the beginning



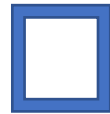
Inherent Quality



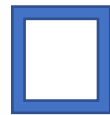
Tight feedback loop Design through to Construction*



Narrowing accountability



Excellence in Specification: “Say What You Need”

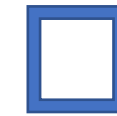
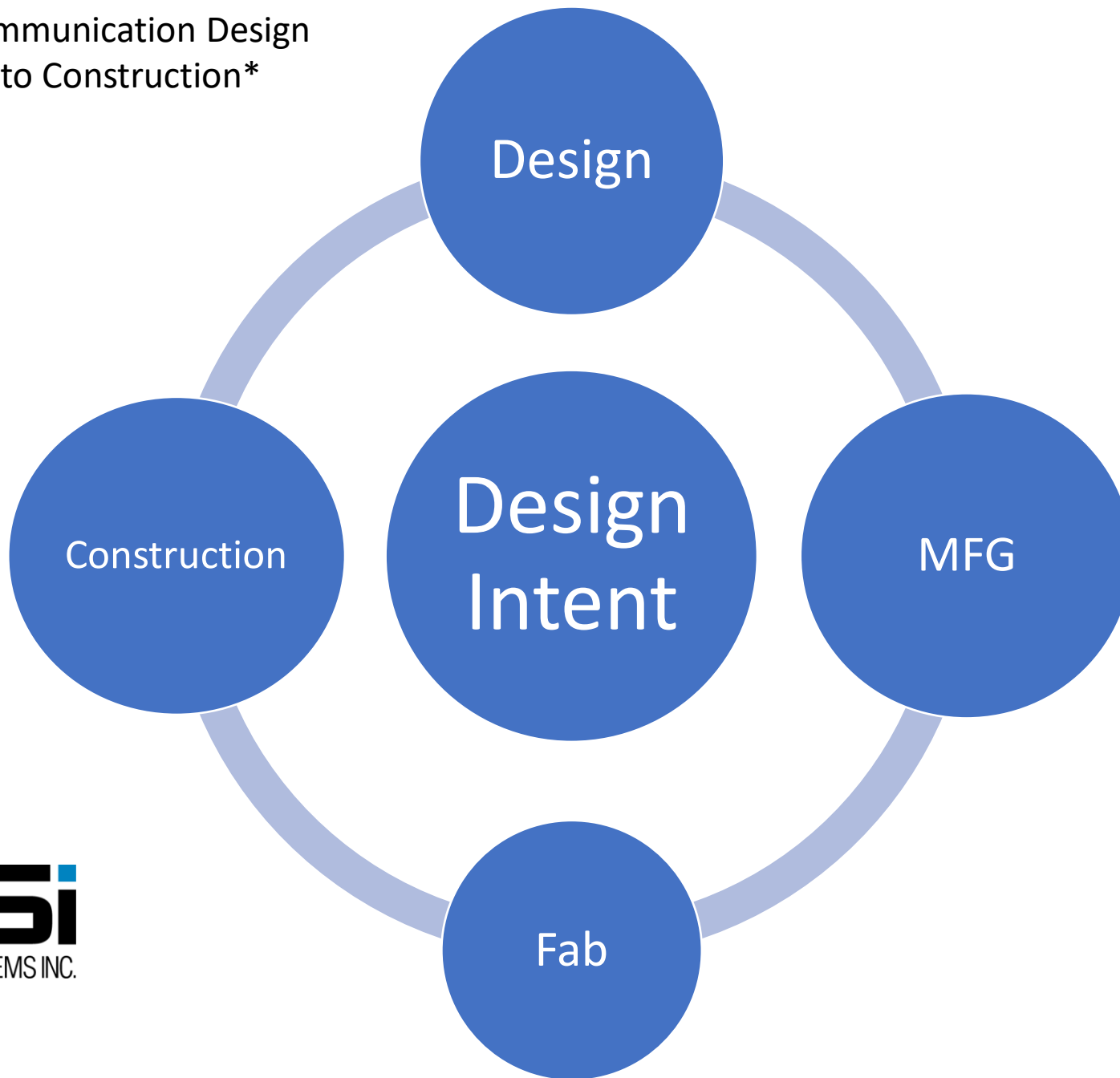


Excellence in Documentation “Say what you are going to do, do what you are going to say”



*allowing for industry standard norms and tolerances

**Good to Great James Collins



Put competition where it belongs, without compromising collaboration. "Right People on the Bus"***



It would be kind to call this a linear process of:

- > Design Intent
- > Design
- > Manufacturing
- > Fabrication
- > Construction
- > Relationships





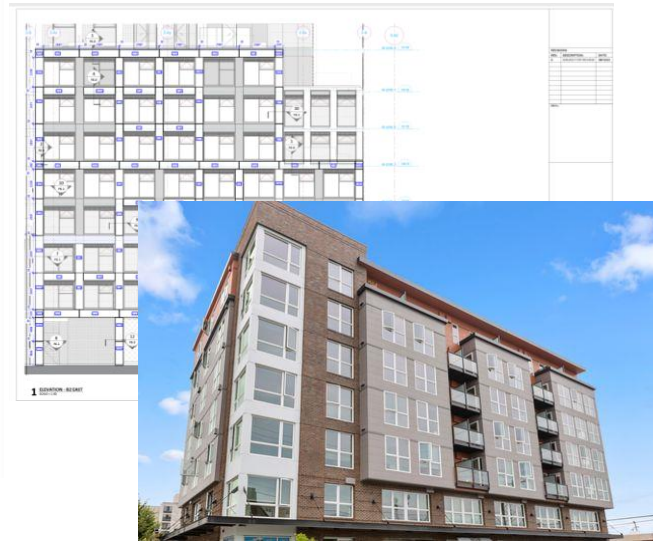
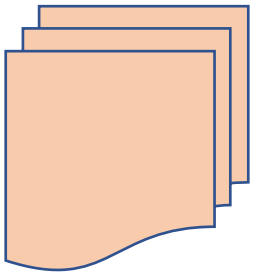
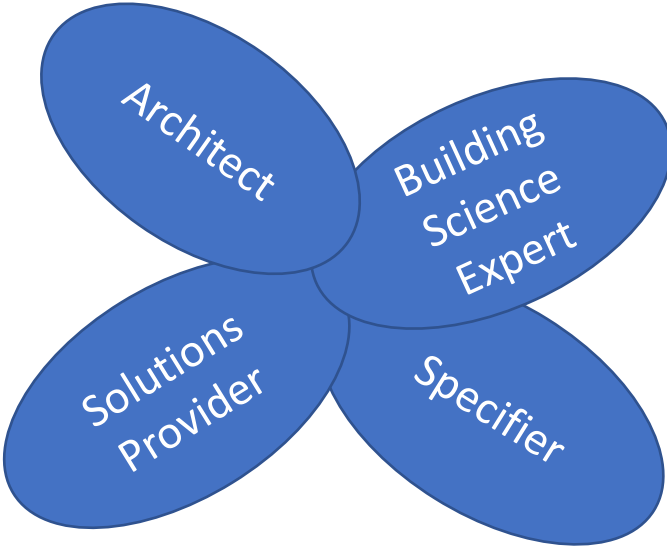
Plainly put, Systems Thinking Allows Focused Accountability

Design Precision

Excellent Tender Package

Competition

Design and Construction
Feedback Loops





Inherent Quality™

In manufacturing we seek to design it simply and correctly so few to no decisions are being made on the factory floor.

Same in construction, simple, transparent, systems that are inherently good, so that few to no decisions are being made on the site.

Simply put:

Easy to get right.
Hard to get wrong.

Done right, good people can do good work,
not excellent, unique people in emergency
rescue.



CERACLAD

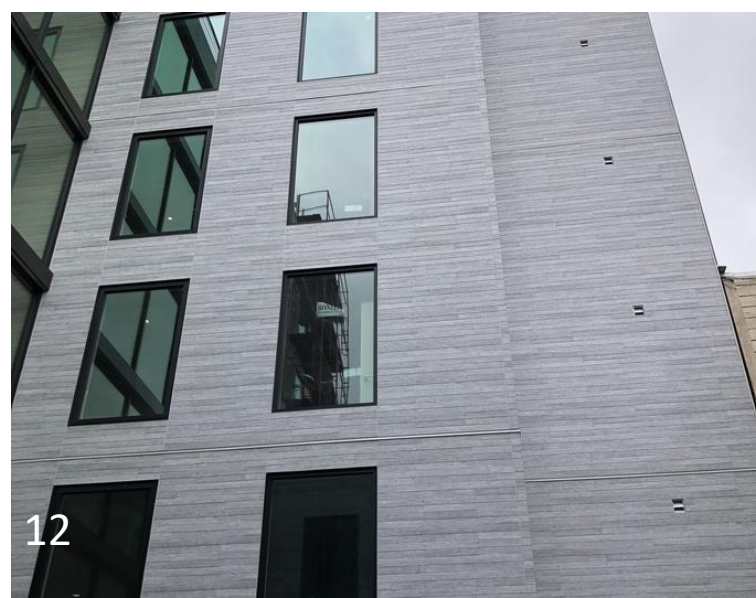
Rain Screen Exterior Siding System

www.facadesystemsinc.com

12



www.facadesystemsinc.com



12



CERACLAD is a factory-finished fiber cement siding system suitable for new construction and retrofit projects, manufactured by KMEW, owned by Panasonic and Kubata. 6 Factories in Japan.

No limit on height. Non-combustible. CMCC rated.

Attachment ventilated rainscreen façade system with matching trim for corners.

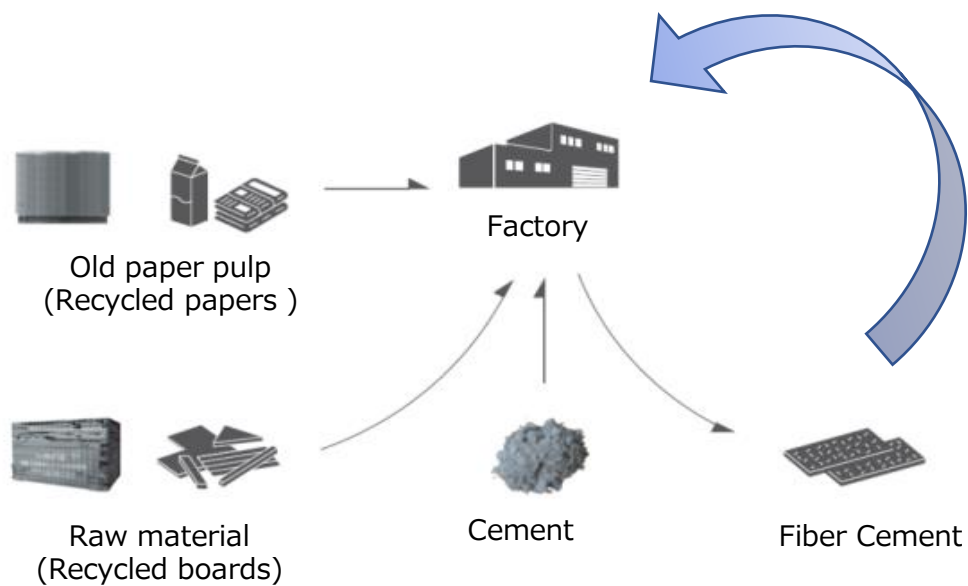
Large panel size; all Panels are 10 feet x 18" with ship lap edges.

- ✓ Total Cost; material, installation, life.
- ✓ Aesthetic choices = curb appeal
- ✓ Health and Well being: ventilated façade
- ✓ Sustainability; Mindful Material
- ✓ Performance: Proven in tough freeze thaw conditions

Fiber cement manufacturing process



CERACLAD
Rain Screen Exterior Siding System



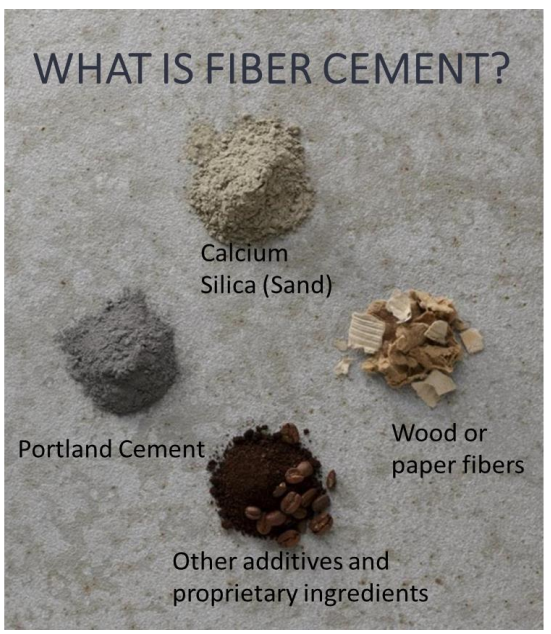
Fiber cement typically has anywhere from 30-60% recycled materials

A large percentage of the recycled content can be “post-consumer” recycled content, typically 8-22%

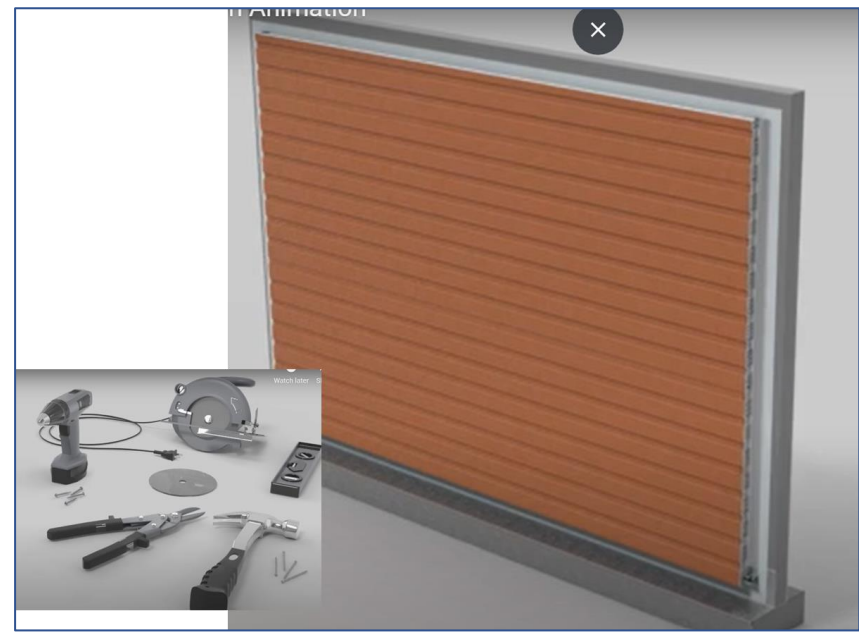
Some manufacturers also have takeback programs for construction scraps

Inherent Quality in Fibre Cement Rainscreen

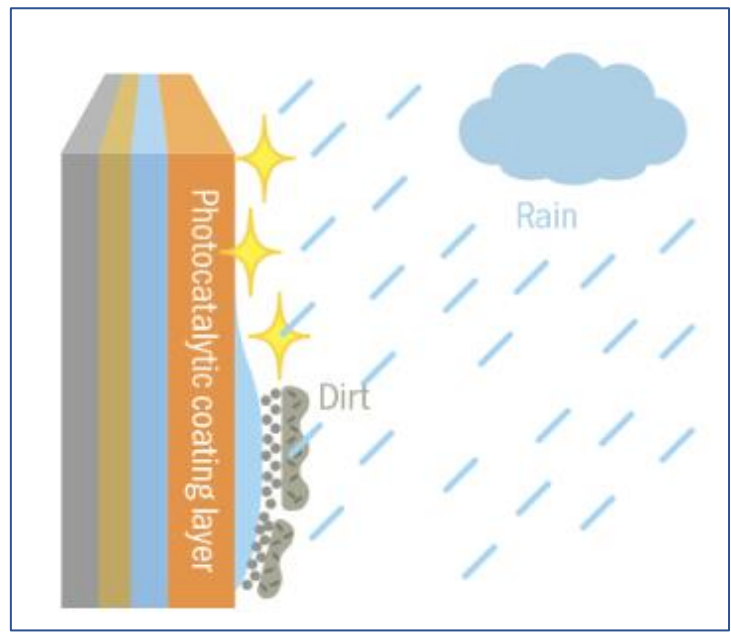
Simple Raw Materials



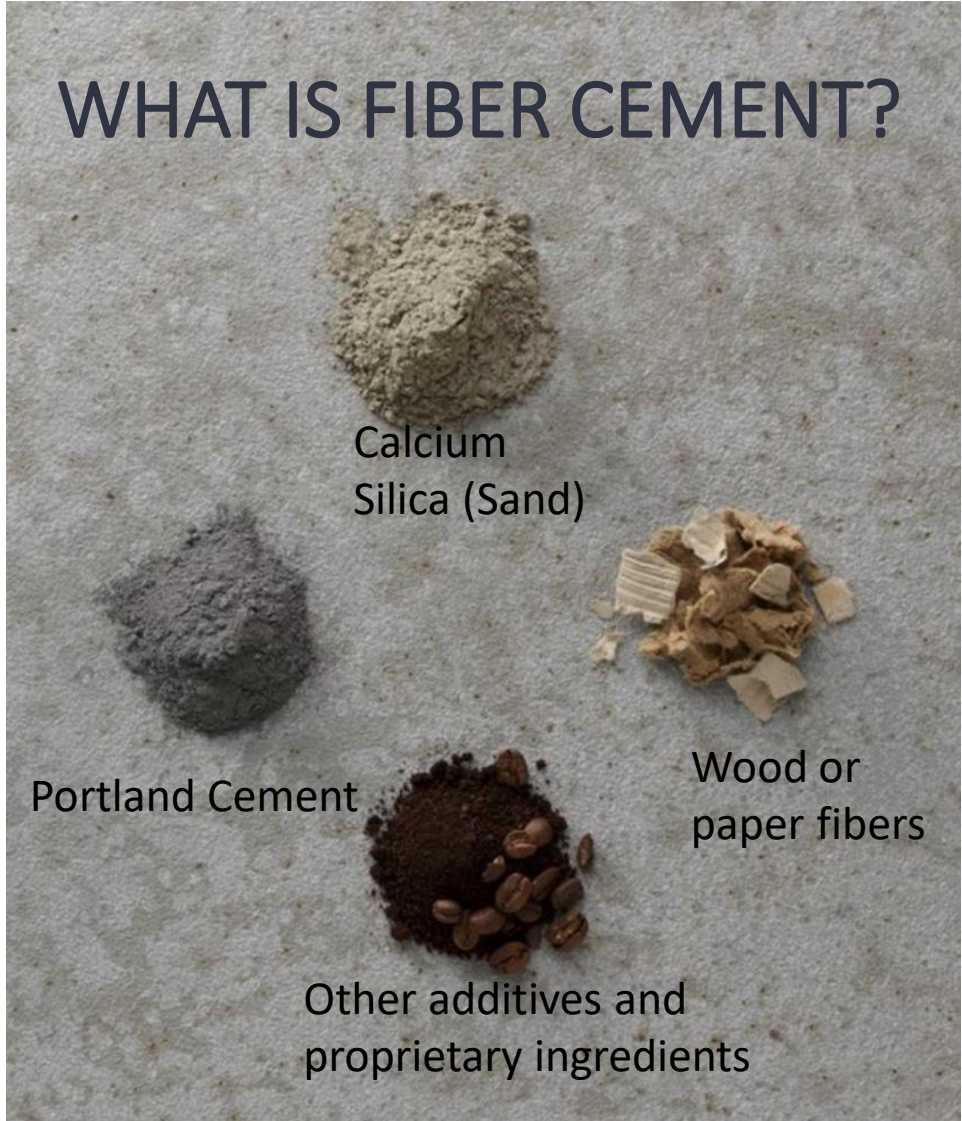
Simple Assembly SYSTEM



Self Cleaning Surface



And did I say unlimited colour and textures, reasonable prices, and long warranty....



Simple Ingredients. Panels Manufactured In
Precise Manner

Resilience in Commodity Inflation

Sustainable footprint



Why is CERACLAD A System? Rain Screen Exterior Siding System



Little to no fabrication



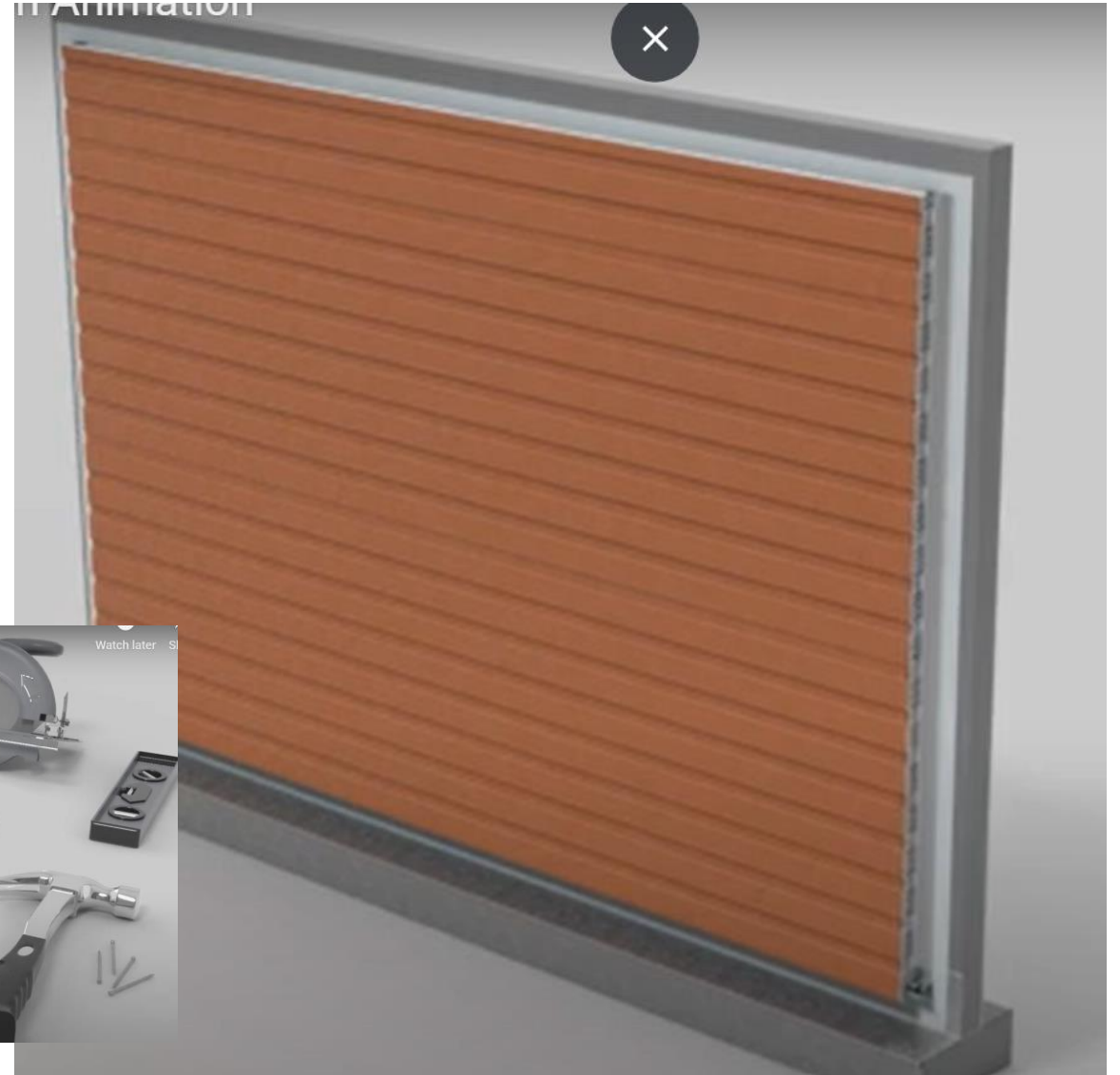
Complete package, easily integrated with other elements. **Inherent Quality**

- Clips
- Rails, trims, corners
- Implied alignment and attachment.

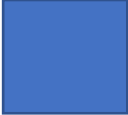
CERACLAD install video

Systems = Inherent Quality

- Simple tools
- Easy to do right, difficult to do wrong.
- Reduces dependence on expensive skilled labour.

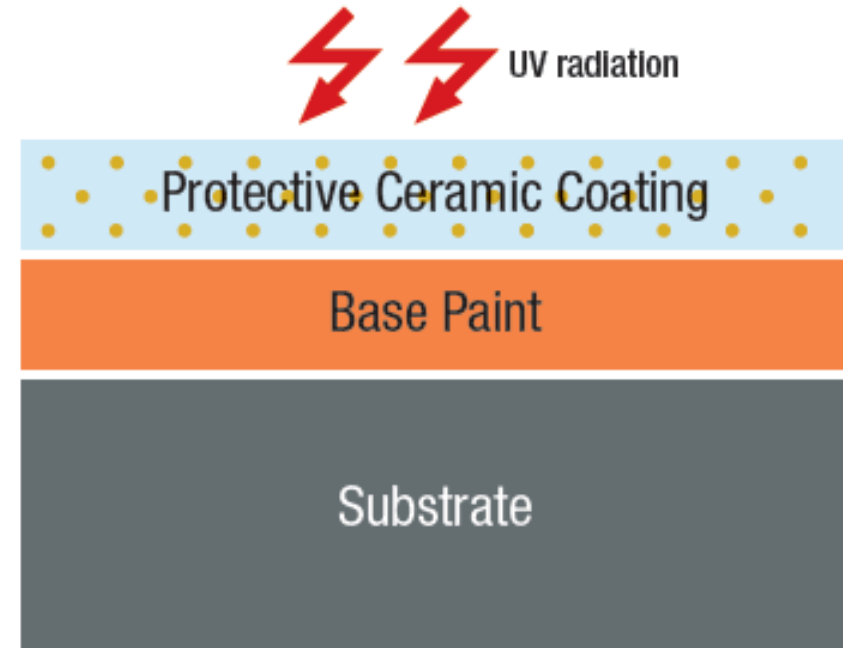
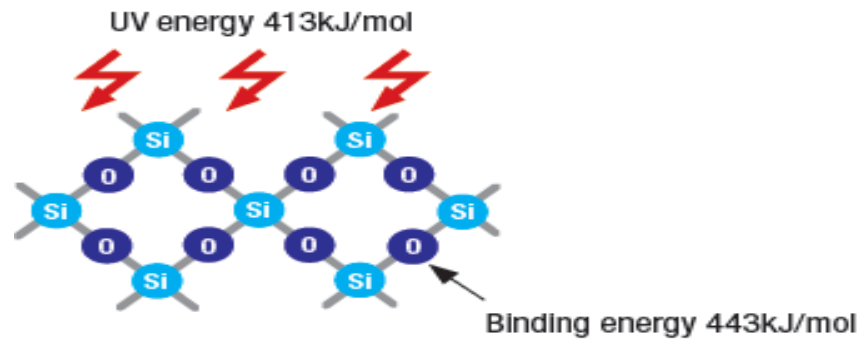


Panasonic



Ceramic Coated

- Not Sacrificial
- Prefinished in Japan
- UV blocking Ceramic coating protects finish and color



• UV absorber

The protective ceramic coating prevents the penetration of ultraviolet rays into the colored layer.

Self cleaning video



CERACLAD
Triple-Coated Rainscreen Siding Systems

Finishes

Coatings: Graffiti Resistant



Two Kinds of Graffiti Resistant Coatings:

Sacrificial Coating

- Clear Polymer coating that is applied to the substrate and protects the material underneath
- Graffiti is removed with the coating (usually by high pressure washing)
- Coating is reapplied after removal
- Cheap, effective.
- Not low maintenance due to reapplication process
- Repetitive power-washing can damage material underneath

Permanent Coating

- Some manufacturers offer this as a factory coating option
- Many different types, but all act in the same way to repel water and oil
- If applied right, can be cleaned over and over

Cost

Meet Budget
Excellent Design Choices

Chart



CERACLAD
Rain Screen Exterior Siding System



NBK ARCHITECTURAL
TERRACOTTA
A Hunter Douglas Company



TRESPA®



SWISS
pearl®



Argeton



EQUITONE



DEKTON
FACADES
designed by COSENTINO




JamesHardie



dryvit



vicwest
BUILDING PRODUCTS



FSi
FACADE SYSTEMS INC.

Design Freedom



Inherent Quality

- v Cheap products, small material premium \$12-14 / sq ft for panels and accessories.
- Install ease
 - speeds construction
 - Lower labour costs
 - Less reliance on skilled labour
- Risks
 - Reduce or eliminate overages
 - No surprises



Look For Systems, Not Components



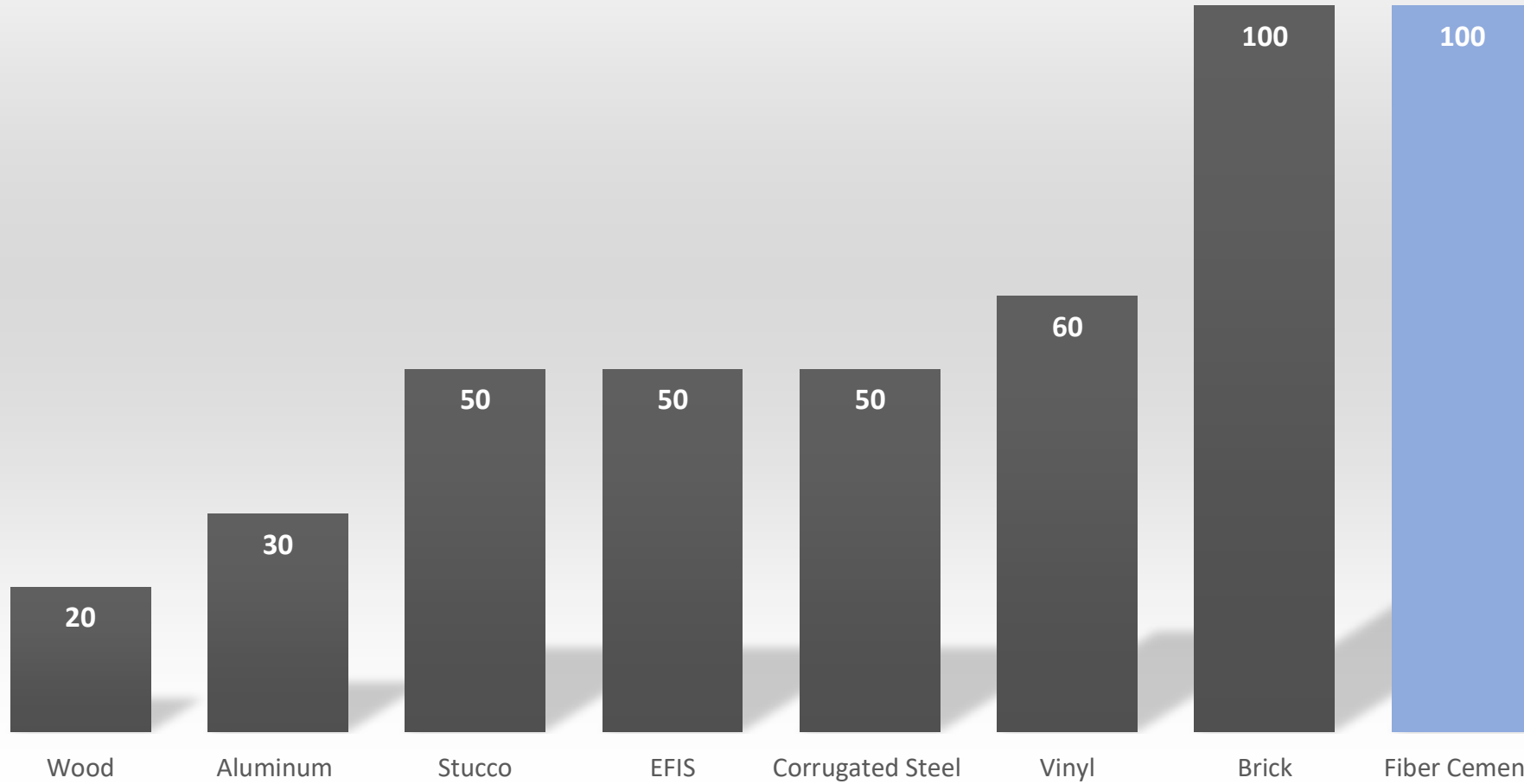
Budget \$50 - 70/Sq ft

- CERACLAD (\$12/sq ft)
- U-Kon Subsystem (\$7/sq ft)
- AVB
- 100mm Insulation
- Design and Engineer's Stamp
- Equipment
- Labour

"Sheathing to cladding" On Budget

Expected Service Life of Cladding materials

Years

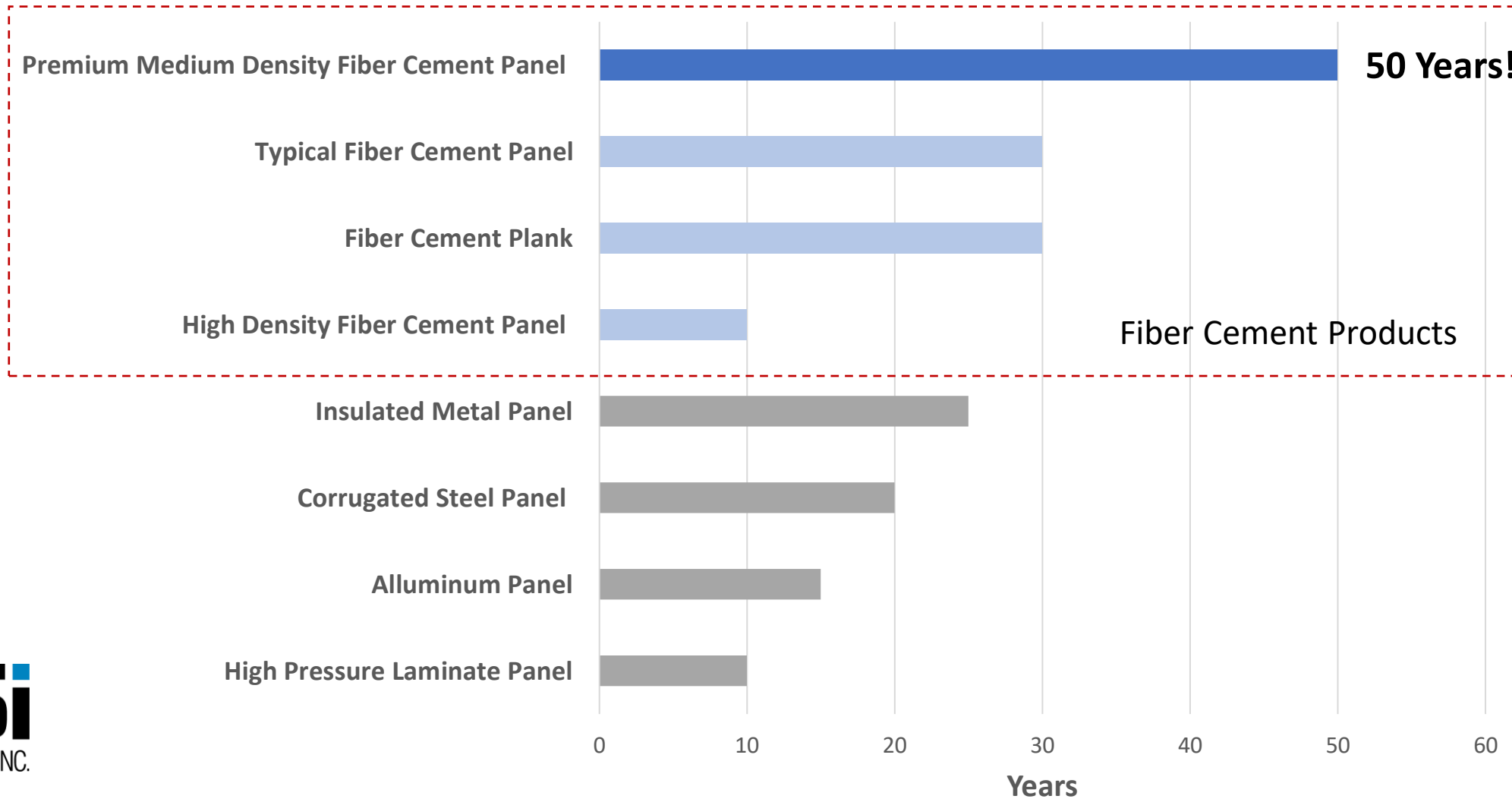


FAC

Source: International Organization of Certified Home Inspectors



Typical Product Warranties, Cladding Materials





Youth
Activity Centre



THE
GREEN CHAIR
PROJECT





VICTOR VALLEY COLLEGE

STUDENT SUCCESS
BEGINS HERE







Put competition where it belongs, without compromising collaboration.
“Right People on the Bus”**



Cost at the beginning



Inherent Quality



Tight communication Design through to Construction*



Narrowing accountability



Excellence in Specification: “Say What You Need”



Excellence in Documentation “Say what you are going to do, do what you are going to say”

Something for resilient aesthetics

*allowing for industry standard norms and tolerances

**Good to Great James Collins

CERACLAD cares about Architecture



49 Podcasts and running
Several Canadians
About Architecture, not CERACLAD

Why don't you be one!!



Thermally Broken Subsystem

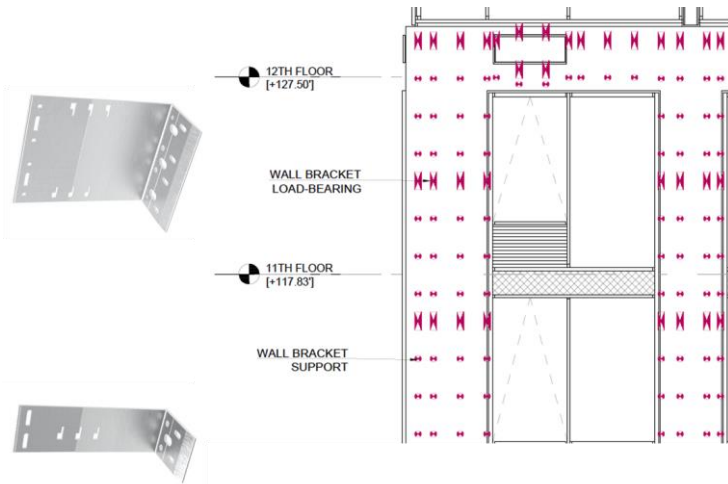
- Sheathing to Cladding
- Design and supplied – Sole Accountability
- Comprehensive drawings and speculations
- Pre and Post award confidence

Add these to your requirements, let's discuss



Inherent Quality in Thermally Broken Subsystems

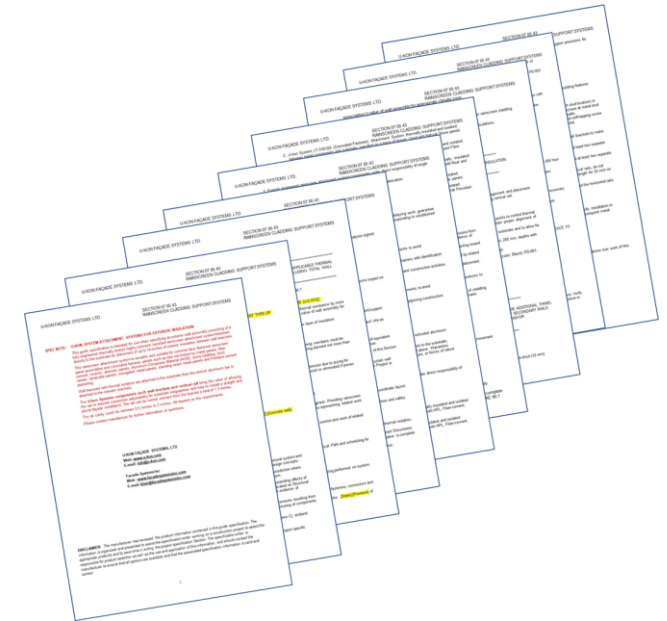
Design Precision



Widest Range of Systems



Excellence in Engineering and Documentation



Build = Design

Build = Design Starts at Beginning



**Best accomplishments are at the beginning;
Greatest Failures Avoided are too.**

- Design review.
- Cladding layout review.
- Initial system recommendation.
- Initial structural engineering and resulting thermal performance.
- Comprehensive value engineering.
- Cladding fabrication recommendations.
- Document creation; details, specifications.
- Budgeting.



You Should Ask for This.

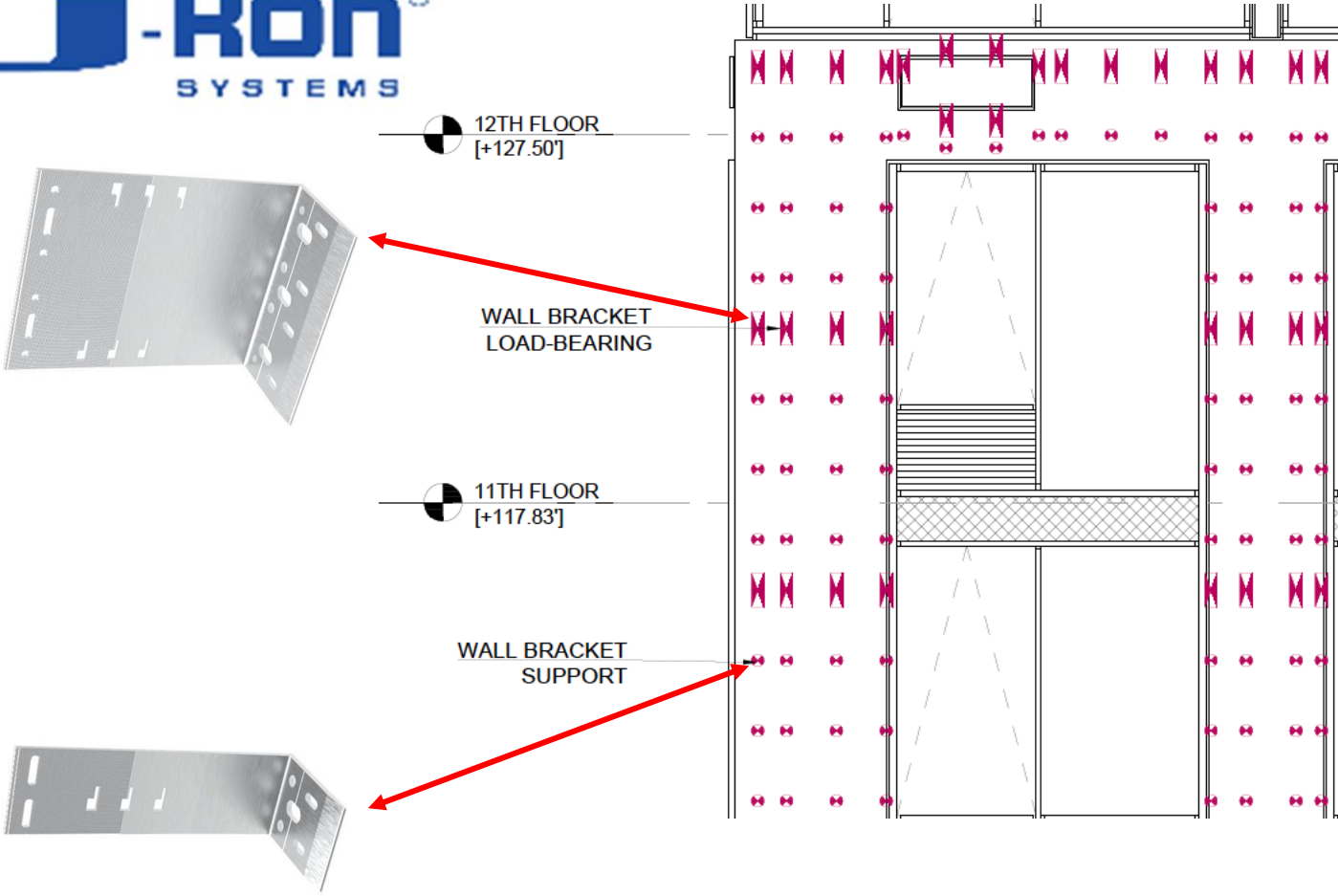
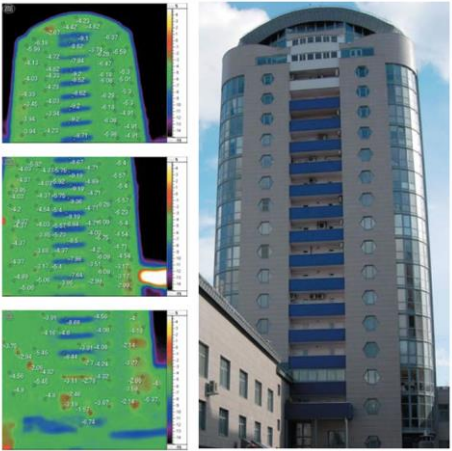
Structural and Thermal Engineering Together



A façade is modelled for structural requirements and thereby thermal results.

Initial **budgeting** and value engineering opportunities identified.

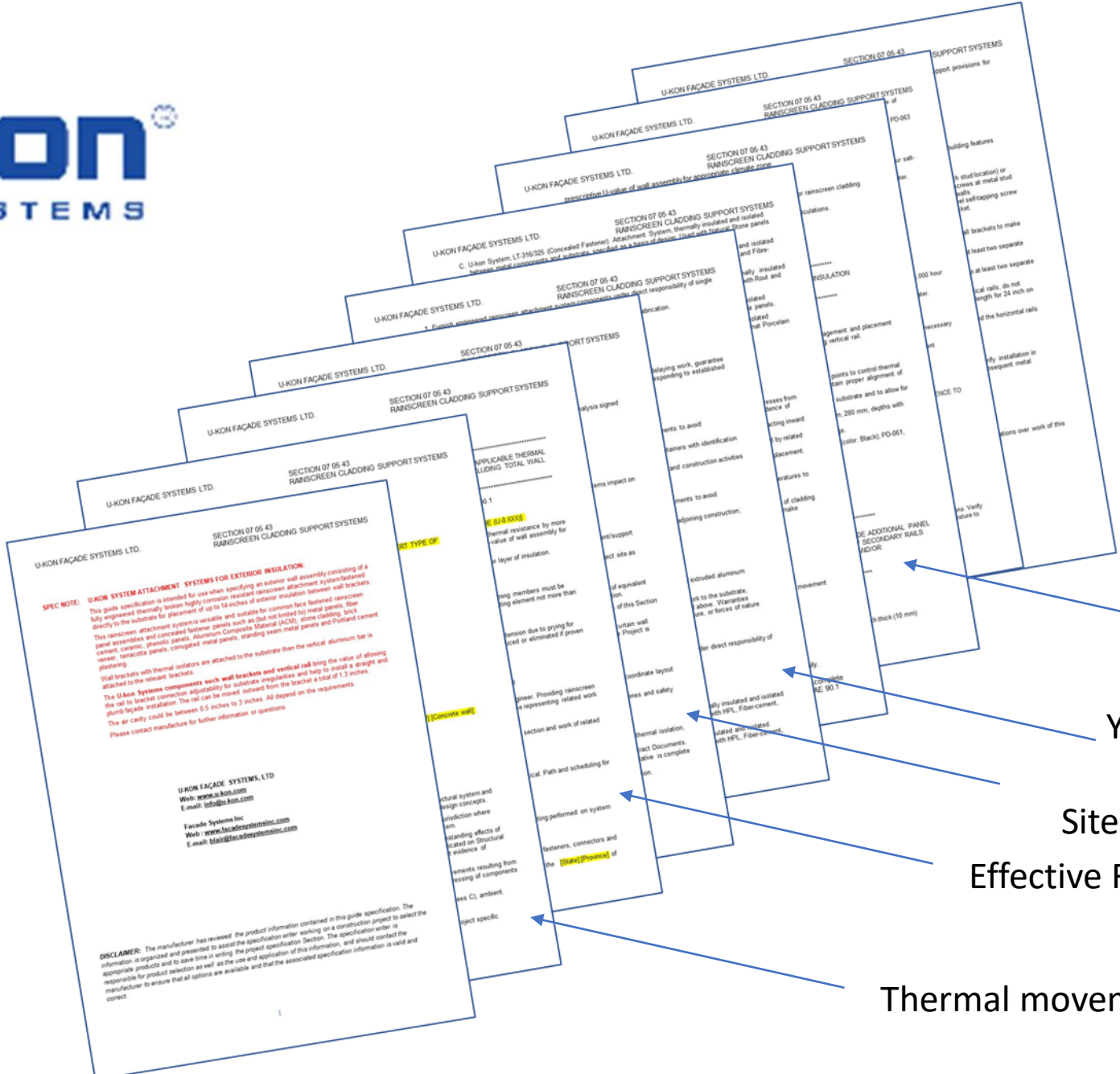
Problems revealed early.



Location of wall brackets; based on structural analysis



That is a spec!



Sole accountability

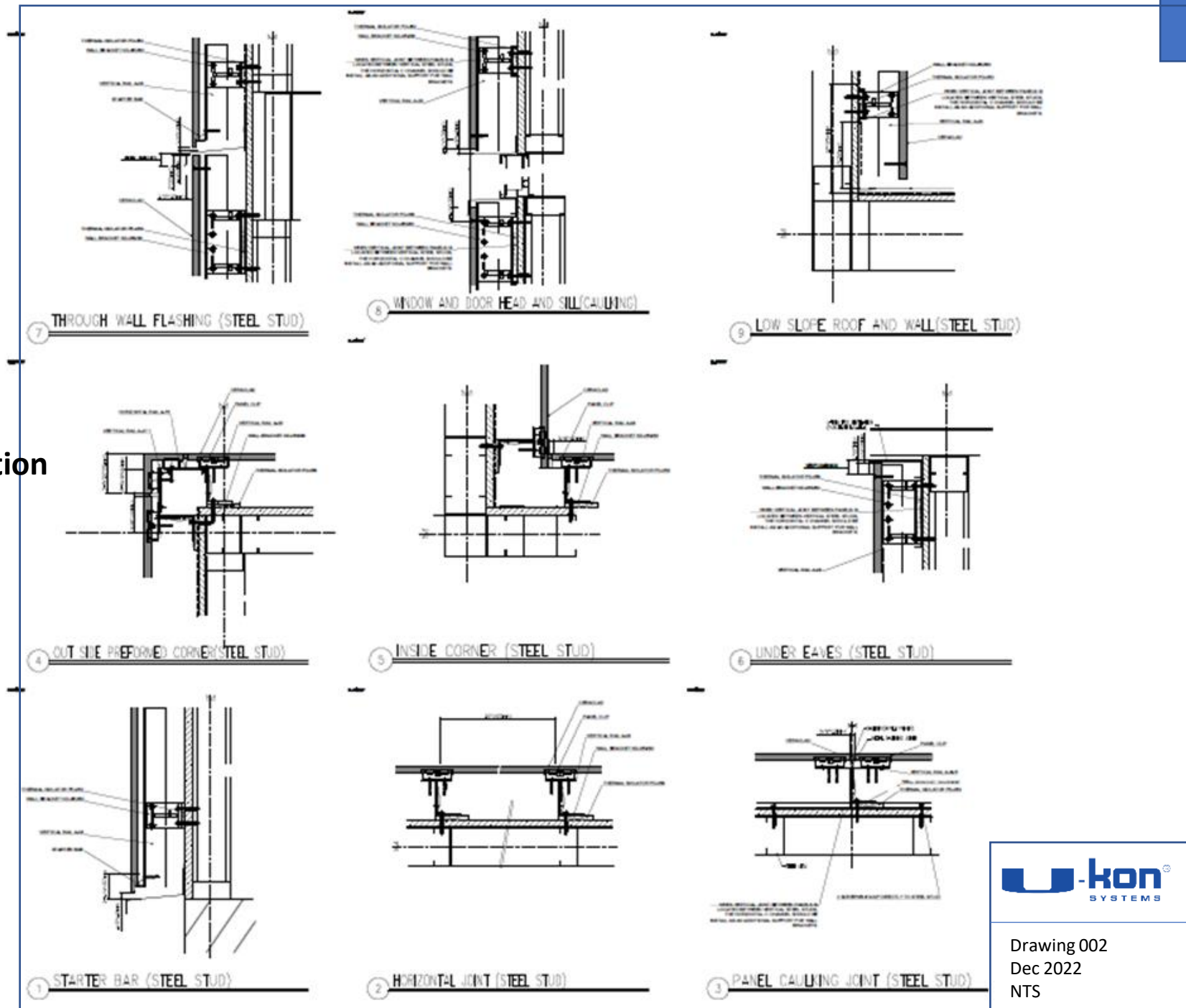
Years in business

Site Launch meeting

Effective R value

Thermal movements





Excellence in Documentation



Drawing 002
Dec 2022
NTS



Sole
Accountability

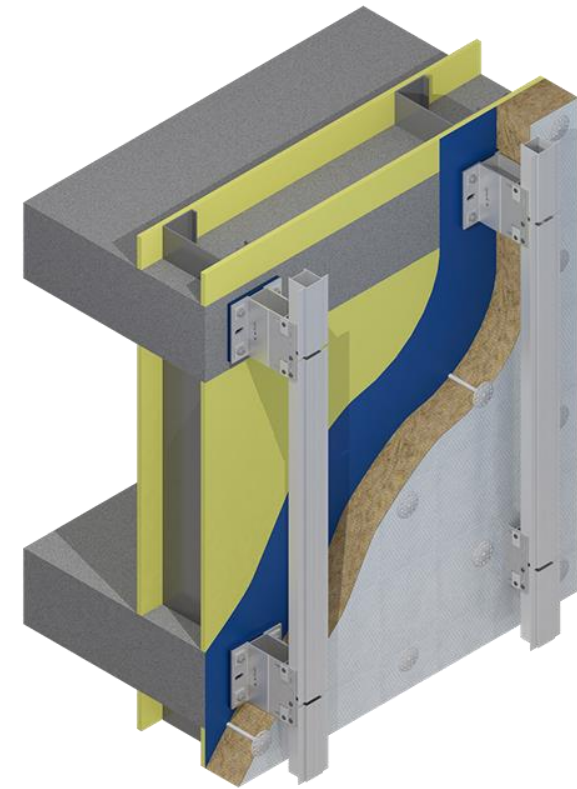
Why is U-Kon a System?

High Performance

Innovative (slab-to-slab)



Simple



*And Everything Between

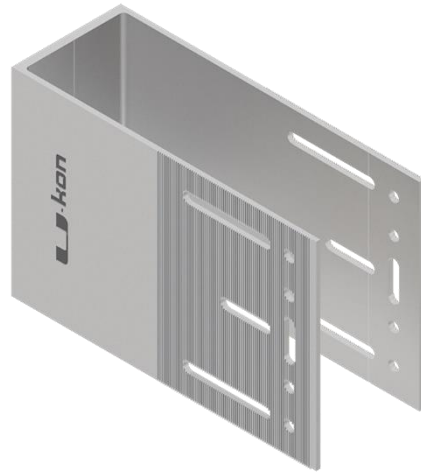


Wall Brackets that offer Options – High Performance

Different brackets, extenders, materials provides unique flexibility

Adjustable in three directions: higher quality, faster install

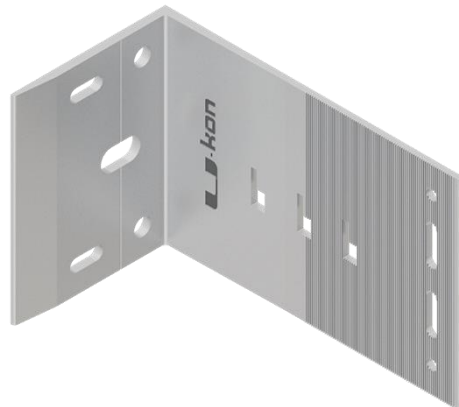
WALL BRACKETS “U” SHAPE



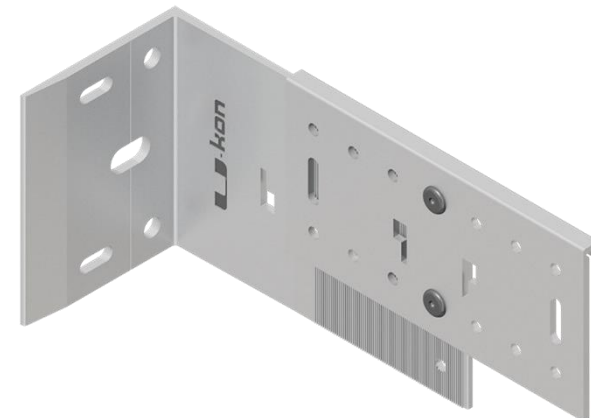
WALL BRACKETS “U” SHAPE WITH EXTENSION



WALL BRACKETS “L” SHAPE



WALL BRACKETS “L” SHAPE WITH EXTENSION

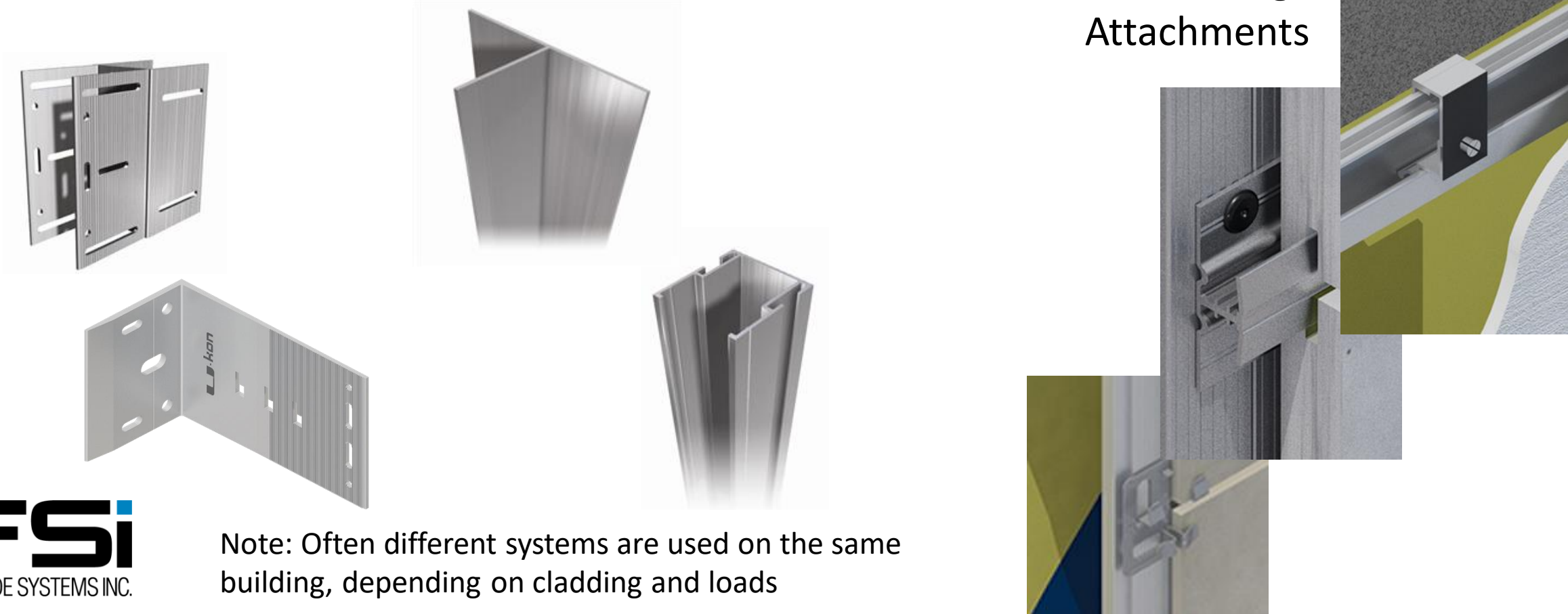


Bespoke Systems “Building Blocks”

#1 Wall Brackets

#2 Profiles

#3 Cladding Attachments



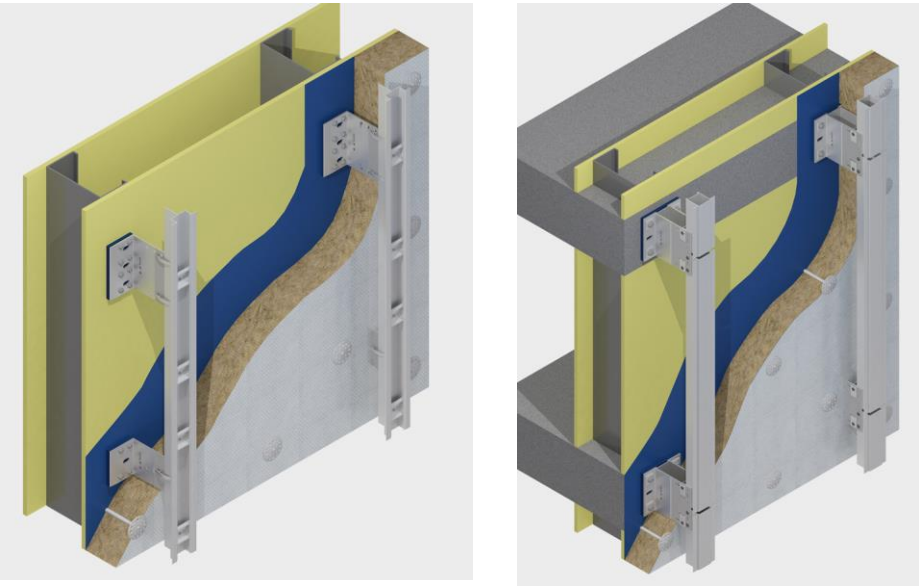
Note: Often different systems are used on the same building, depending on cladding and loads

Victoria BC Stone Install

- 3" out of true ground to roof
- Adjusted with U-Kon Subsystem.



Thermal Performance Explained

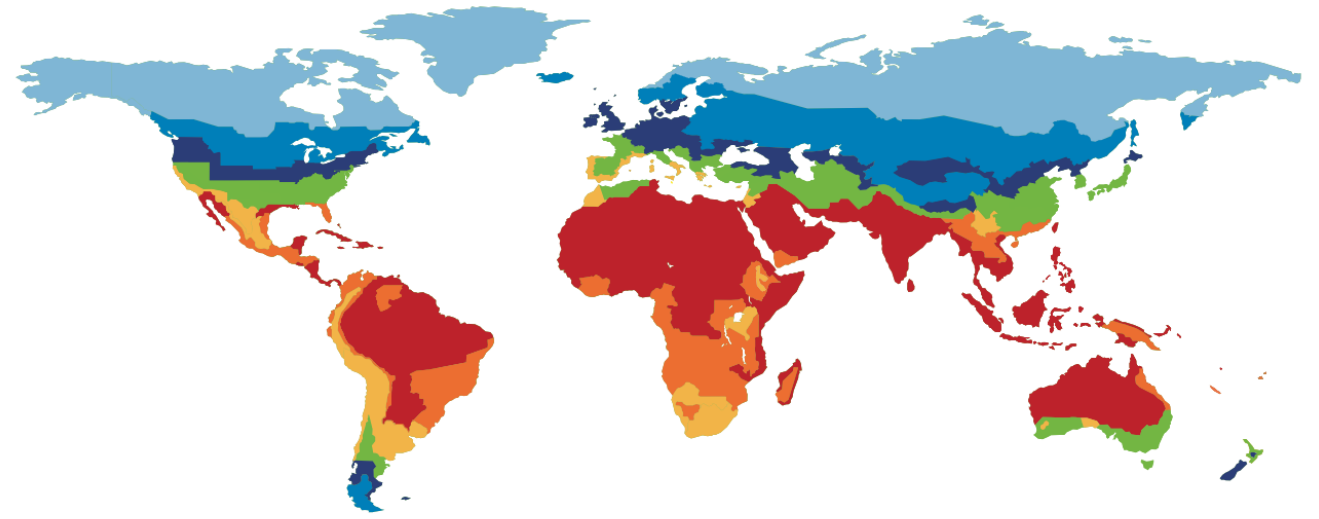


Vertical Spacing in	Exterior Insulation Thickness in	Exterior Insulation Nominal R-Value	Aluminum Bracket	Stainless Steel Bracket	Assembly Effective R-Value (Stainless steel Bracket HIGH)*
			Assembly Effective R-Value	Assembly Effective R-Value	
24	4	R-16.8	R-14.3	R-17.7 (20%)	
24	5	R-21.0	R-16.0	R-21.1 (25%)	
24	6	R-25.2	R-17.7	R-24.8 (29%)	
36	4	R-16.8	R-15.8	R-18.3 (14%)	
36	5	R-21.0	R-18.0	R-21.9 (18%)	
36	6	R-25.2	R-20.2	R-25.8 (22%)	
48	4	R-16.8	R-16.7	R-18.7 (11%)	
48	5	R-21.0	R-19.3	R-22.4 (14%)	
48	6	R-25.2	R-21.8	R-26.3 (18%)	
120	4	R-16.8			18.2*
120	5	R-21.0			21.9*
120	6	R-25.2			25.8*

THERMAL ANALYSIS PERFORMED BY MORRISON & HERSHFIELD

* - Bracket is mounted to the intermediate floor slab, thermal bridging of the concrete slab must be included in the analysis. As a result, a linear transmittance value, Ψ , is provided to account for the thermal bridging effect of the intermediate floor.

Passive House – Façade System



cool, temperate climate



phA

CERTIFIED COMPONENT

Passive House Institute

arctic climate



CERTIFIED COMPONENT

Passive House Institute

cold climate



CERTIFIED COMPONENT

Passive House Institute

cool, temperate climate



CERTIFIED COMPONENT

Passive House Institute

warm, temperate climate



CERTIFIED COMPONENT

Passive House Institute

warm climate



CERTIFIED COMPONENT

Passive House Institute

hot climate



CERTIFIED COMPONENT

Passive House Institute

very hot climate



CERTIFIED COMPONENT

Passive House Institute

Innovation



Recladding in your marketplace?

IDEAL SOLUTION FOR RENOVATION

- WHEN WE DO NOT HAVE GOOD/STRONG BACKUP WALL
- WHEN WE NEED MINIMIZE THERMAL BRIDGING
- WHEN WE NEED TO PROVIDE FAST INSTALLATION

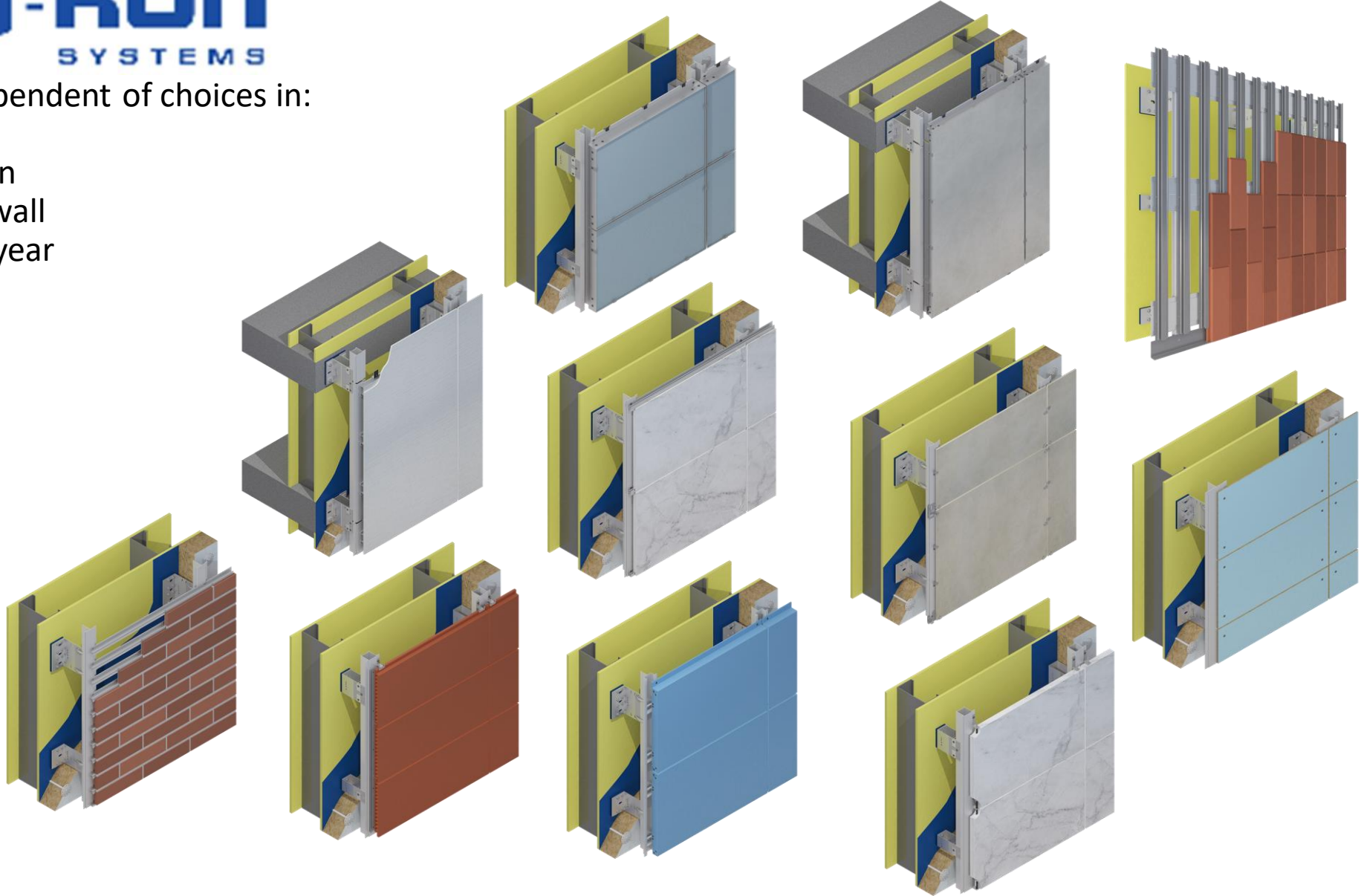




Subsystem Independence

Systems independent of choices in:

- Cladding
- Insulation
- Backup wall
- Time of year
- Location
-





Put competition where it belongs, without compromising collaboration.
“Right People on the Bus”**



Cost at the beginning



Inherent Quality



Tight communication Design through to Construction*



Narrowing accountability



Excellence in Specification: “Say What You Need”



Excellence in Documentation “Say what you are going to do, do what you are going to say”



Something for resilient aesthetics

*allowing for industry standard norms and tolerances

**Good to Great James Collins

Extra Questions : the horizon

- Prefab walls and Modular inherently integrates everything.
- What if new types of Insulation.
- I love Passive work because it drives tight collaborative processes, so everything I am saying might happen naturally.
- More Cladding companies thinking about their attach systems.

- You.....

Achieving High Performance Facades Should Not Be Left To Chance

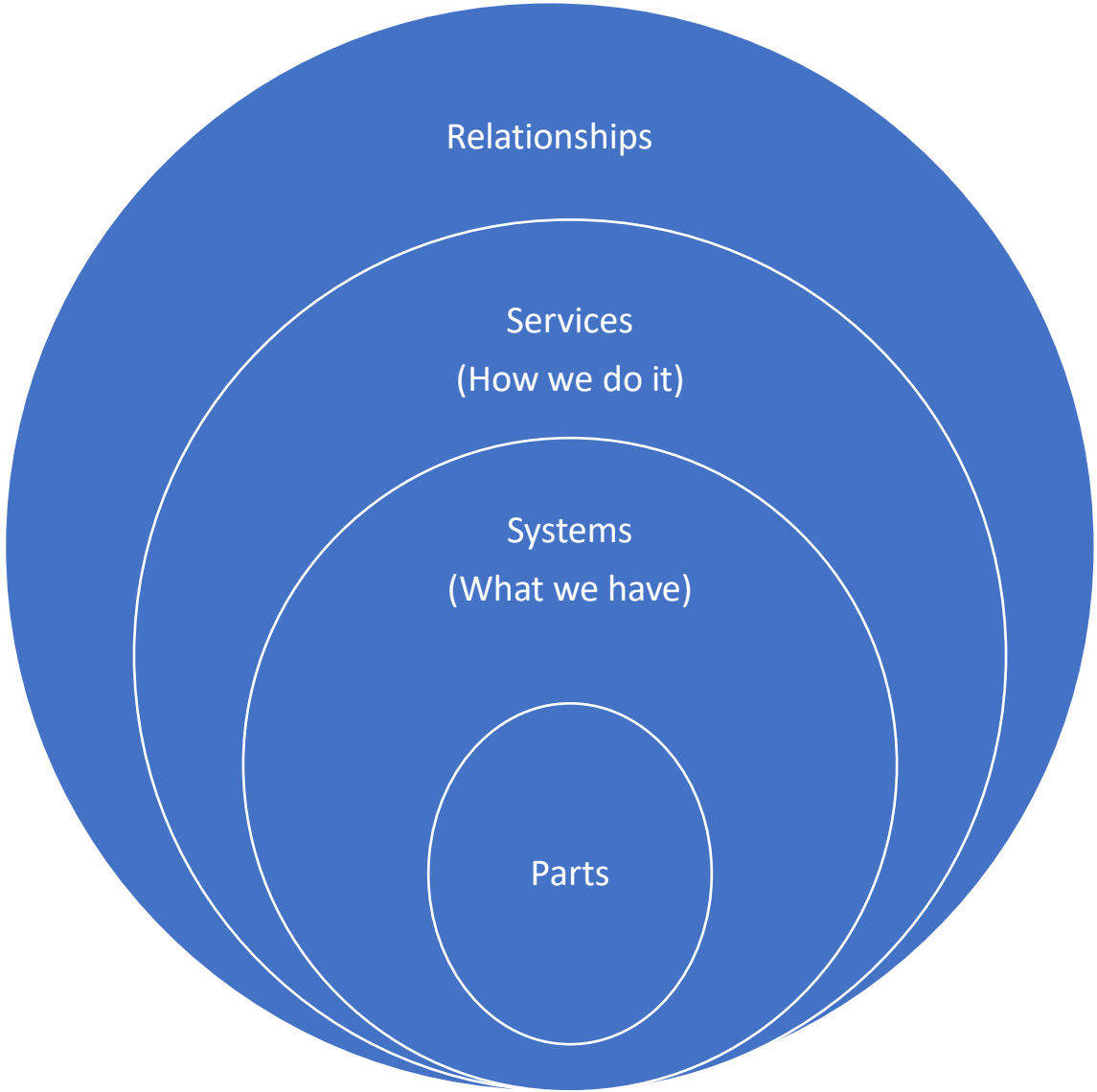
- Professional Engineer.
- Leader in engineered based businesses for 25+ years in three industries.
- Building industry since 2005.
- Clients tell me they appreciate the technical service.
- A testimony: *“You have always been an experienced voice in the world of facade materials, so we look forward to continued discussions on how we can realize our design objectives, from both an aesthetic and technical point of view.”*



Agent for Facades and Building Systems that are Innovative, Aesthetic, Sustainable, Constructible, Affordable and Proven.



Fear this



Aspire to this

What's Next

Tells us your woes, challenges, and curiosities about high performance facades. You can help us help you or guide us on our next webinar.

Under no obligation, let's review a project at any stage and discuss some ideas.

or just give us a call. We love learning.

We hope we have set expectations about how you should proceed on thermal and structural aspects of high-performance facades... and taught you a bit about us, wink wink.

Webinar Recordings Available – More CEU’s

Fibre Cement Systems for
Midrise Residential :
Design through
Construction



FSi
FACADE SYSTEMS INC.

onal Behavior and
ure Transport in
n-Performance
cades: Design
onsiderations



otta Facades.
xpensive But
ey're Not



Are You Building High
Performance Facades?



one: Realize Your Vision
ordably with Precision.



FSi
FACADE SYSTEMS INC.

Next Round of Webinars April 2023

Join me

- Technical content
- Rally conversation
- Bring out the best



Blair Davies, P.Eng.

An Expert and Agent for High Performance Facade Systems that are innovative, aesthetic, sustainable, constructible, affordable and proven.



Subscribe for High Performance Facades Knowledge

Sign up to receive few (we do not fill your inbox) technical, inspiring, informative messages

Email

[SIGN UP](#)