



# CASCADIA

WINDOWS & DOORS

[CASCADIAWINDOWS.COM](https://cascadiawindows.com)

CASCADIA – EDUCATIONAL PRESENTATION



*Special thanks to LMDG for  
presentation content*

# COMBUSTIBLE COMPONENTS IN NON-COMBUSTIBLE CONSTRUCTION

*A story of testing, research and expanding methods for  
compliance for insulated walls and combustible windows*

---



## WEBINAR ADMIN

---

### WEBINAR TECHNICAL SUPPORT -

- Technical support is available for any issues during the webinar

### CONTINUING EDUCATION CERTIFICATES -

- Will be automatically emailed after the presentation
- AIA & AIBC are automatically submitted (no need to self-report)
- All other association learning credits can be claimed via self-reporting

### QUESTIONS -

- Feel free to post questions at any point during the presentation

### AUDIO -

- We recommend using your computer audio to listen to the presentation. Calling into the presentation may incur long-distance charges from your phone provider.
-



## AGENDA

---

- **INTRO: COMBUSTIBLE “STUFF” IN BUILDING ENCLOSURES**
  - **WHY?**
  - **COMBUSTIBLE CLADDING SUPPORTS**
    - Providing fire safety
  - **COMBUSTIBLE WINDOWS**
    - Expanding use, providing safety
    - Industry research program
    - A changed building code
-



# INTRO TO CASCADIA WINDOWS & DOORS





## INTRO TO CASCADIA WINDOWS & DOORS

---



COMMERCIAL & MULTI-FAMILY



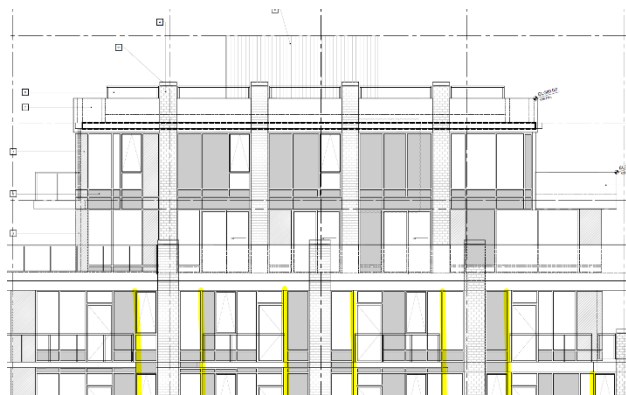
PASSIVE HOUSE & RESIDENTIAL



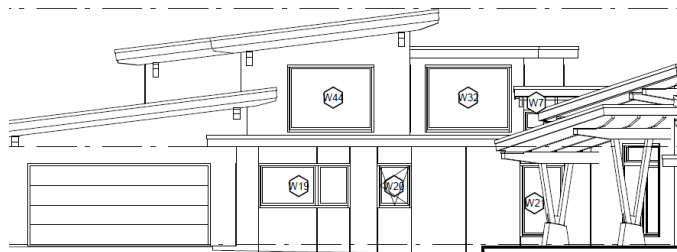
THERMAL SPACER FOR CLADDING  
SUPPORT SYSTEMS

# INTRO TO CASCADIA WINDOWS & DOORS

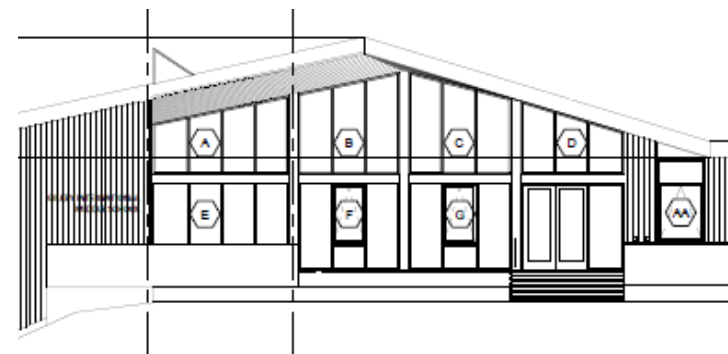
---



WINDOW WALLS



WINDOWS & DOORS



STOREFRONT GLAZING

# INTRO TO CASCADIA WINDOWS & DOORS

---

## ABOUT THE COMPANY

- Manufacturing plant & head office located in Langley, BC
- Founded in 2008

## PRIMARY MARKETS


- BC, Yukon, Washington, Oregon, California

## COMPANY PURPOSE

- To provide simple and cost-effective solutions to stringent energy code requirements







# THE BUILDING ENCLOSURE

*Components, intended functions  
& how they work together*



## INTRO

---

- **THE BUILDING ENCLOSURE**
  - **WHY IS THERE COMBUSTIBLE STUFF IN BUILDING ENCLOSURES?**
  - **COMPOSITES**
  - **ENERGY CODES AND CONSERVATION**
-

## THE BUILDING ENCLOSURE

---

**METAL GIRTS,  
COMBUSTIBLE MEMBRANE**





## THE BUILDING ENCLOSURE

---

**WHY IS THERE  
COMBUSTIBLE STUFF IN  
BUILDING ENCLOSURES?**





## SMALL BUT IMPORTANT CHANGES

---

**THESE COMPONENTS,  
SUCH AS MEMBRANES,  
ARE NEEDED; NOW  
COMPOSITES ARE TOO**



SMALL BUT IMPORTANT CHANGES

---

**COMPOSITES WILL PLAY  
A HUGE ROLE IN MORE  
ENERGY CONSERVING  
BUILDINGS**





## SMALL BUT IMPORTANT CHANGES

---

**LET'S BACK UP  
& START WITH WHY**

---





An aerial photograph of the New York City skyline, featuring numerous skyscrapers and buildings. The Empire State Building is prominent on the left. The Hudson River and New York Harbor are visible in the background. A large teal overlay covers the left side of the image, containing the title and subtitle text.

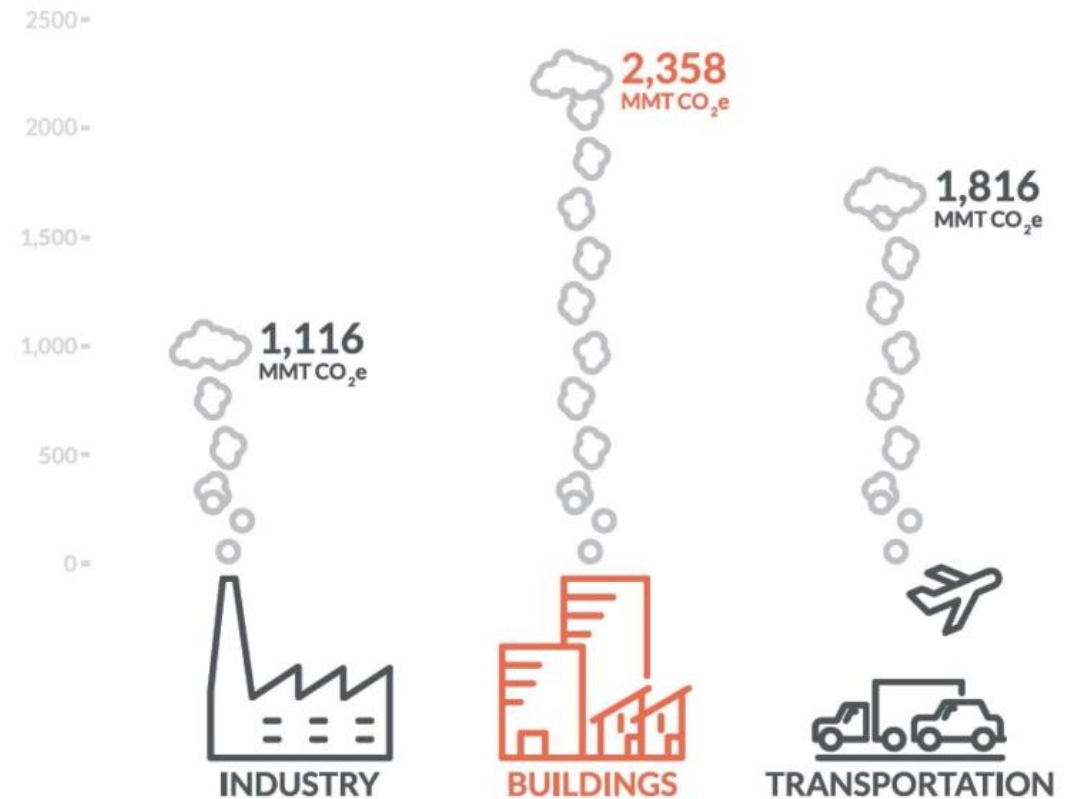
# THE PROBLEM WITH BUILDINGS

*Understanding the impact of buildings on  
our energy grid and environment*



## WHAT'S THE PROBLEM?

**BUILDINGS ARE  
RESPONSIBLE FOR 44.5%  
OF US CO<sub>2</sub> EMISSIONS.**



## SCOPE OF OUR PROBLEM IN *THIS* INDUSTRY

---

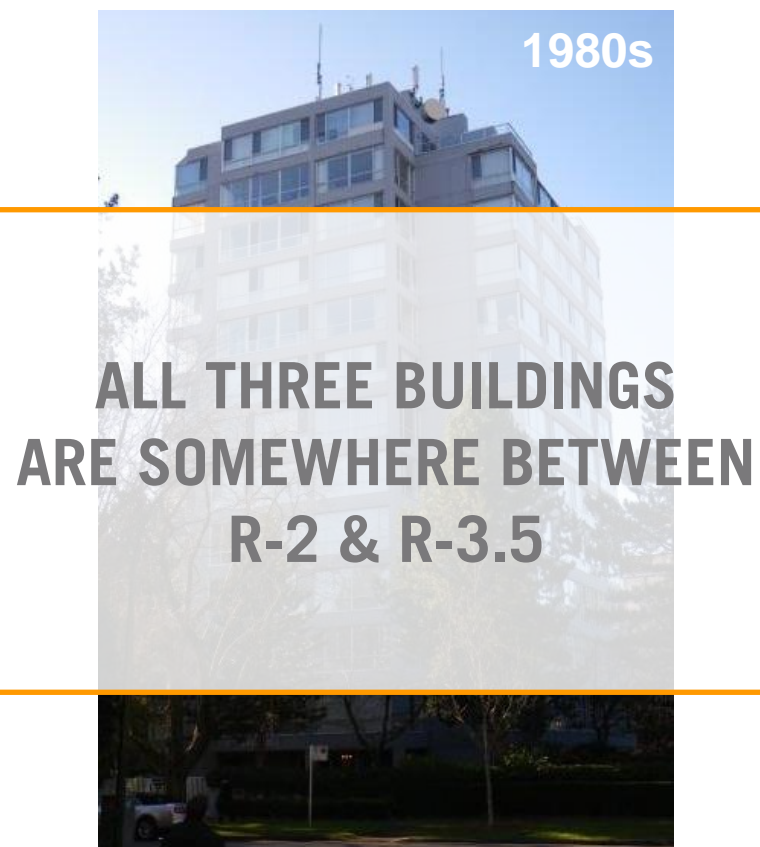
**WHY ARE OUR  
BUILDINGS  
CONSUMING SO  
MUCH ENERGY?**



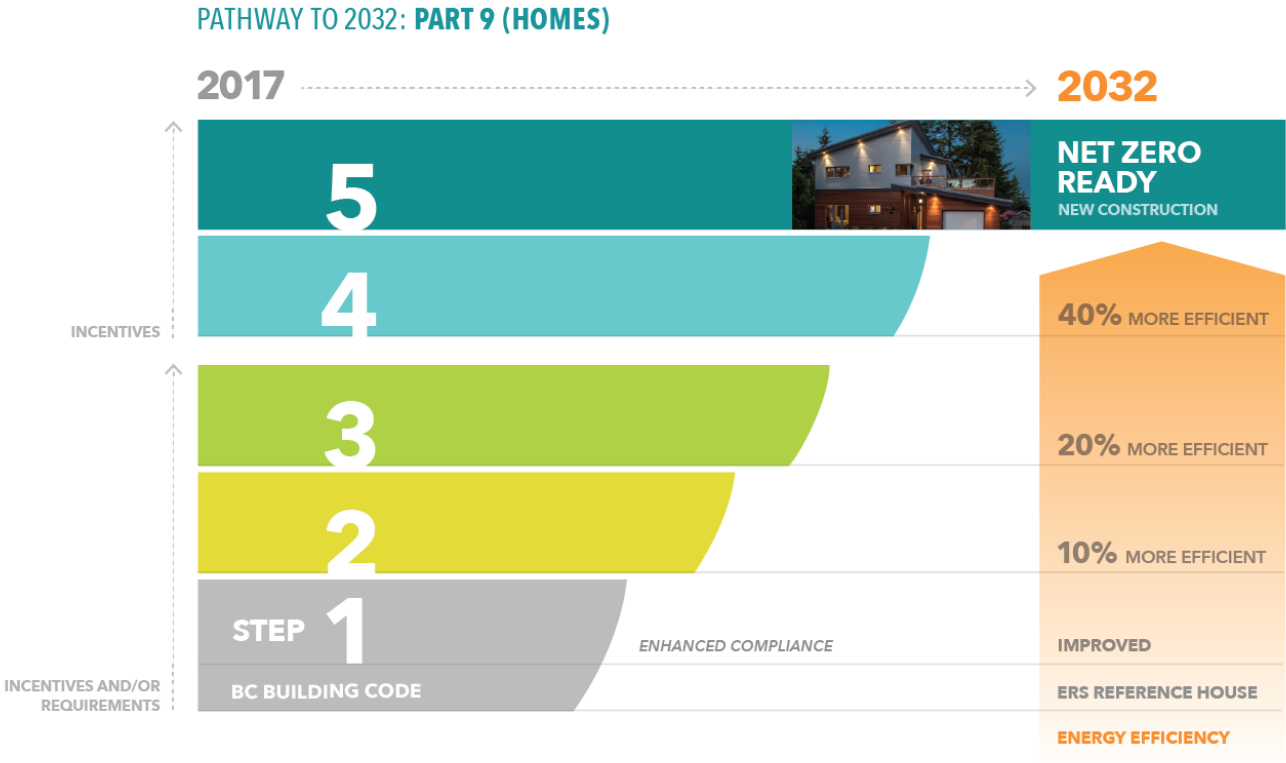


## WHAT R THE NUMBERS?

---



# ENERGY CODES NEED COMPONENTS



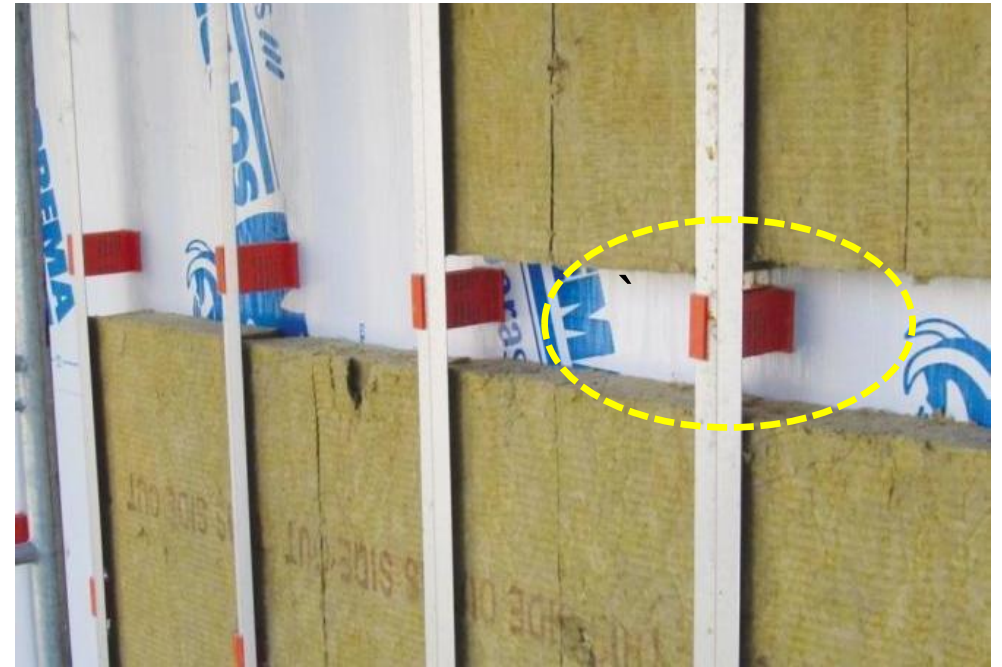
(LEFT) GOVERNMENT OF BRITISH COLUMBIA



## CLADDING ATTACHMENT MATTERS MOST

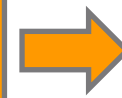


12" OF INSULATION



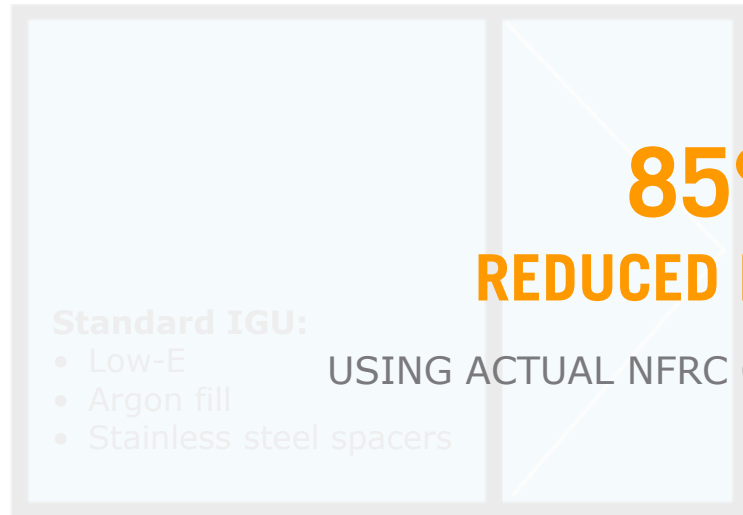
3.5" OF INSULATION

R-value



## IN WINDOWS – FRAME MATERIALS MATTER

Typical Thermally Broken Aluminum Frame



Standard IGU:

- Low-E
- Argon fill
- Stainless steel spacers

R VALUE: 2.0

Typical Fiberglass Frame



Standard IGU:

- Low-E
- Argon fill
- Stainless steel spacers

R VALUE: 3.7

**85% IMPROVEMENT**  
**REDUCED HEAT LOSS THROUGH WINDOWS**

USING ACTUAL NFRC CERTIFIED U-VALUES FROM WINDOW FABRICATORS



## SCOPE OF OUR PROBLEM IN *THIS* INDUSTRY

---

**NEED TO ADDRESS  
BOTH WALLS AND  
WINDOWS, BUT  
FIRST...**



# FIRE SAFETY





## FIRE PROTECTION – THE CLADDING BIG PICTURE

---

**WE NEED TO  
AVOID THIS....**



GRENELL TOWER FIRE, LONDON UK, 2017

Noncombustible Construction

# **COMBUSTIBILITY: EXTERIOR WALLS & WINDOWS**

Created by: David Steer, M.Eng., P.Eng., CP

Presented here by Cascadia Windows Ltd. with permission  
from and credit to LMDG



## Control Fuel/Combustion Process

- Combustibility – meet one of the following:
  - noncombustible (CAN-ULC-S114)
  - limited combustible (Cone calorimeter ULC-S315)
    - to exempt certain combustible materials from the application of Sentence 3.1.5.1.(1) if certain conditions are met, on the basis that the materials are deemed to insignificantly contribute to the growth and spread of fire
    - layer of materials and cumulative emissions
  - **comply with one of the exemptions**

## Noncombustible – Functional Statement Control Fuel/Combustion Process

- To limit the **severity** and **effects** of fire or explosions (F02)
  - clarify what constitutes noncombustible construction
  - limit the probability that construction materials will contribute to the **growth** and **spread** of fire, which could lead to harm to persons or damage to building (OS1.2/OP1.2)
  - limit severity
    - prevent ignition
    - manage fire spread



Noncombustible Construction

# PERMITTED COMBUSTIBLE COMPONENTS

# Control Fuel

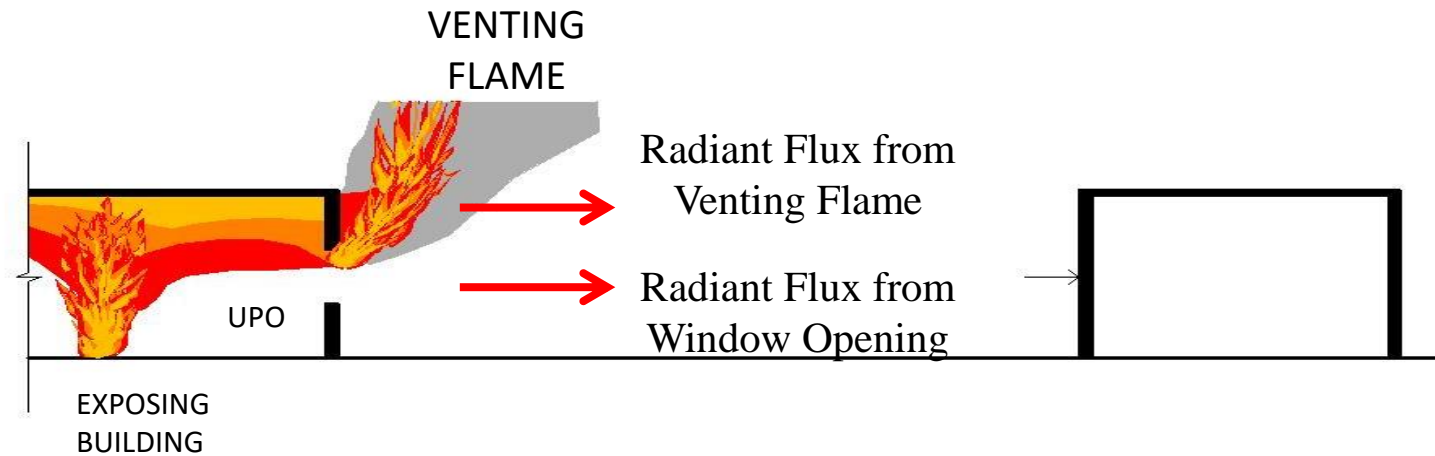
- To permit the use of certain combustible materials, on the basis that they are deemed to insignificantly contribute to fire growth and spread
  - Minor combustible components [3.1.5.1]
  - Roofing [3.1.5.3]
  - Combustible glazing and skylights [3.1.5.4]
  - Cladding [3.1.5.5]



Non-Combustible Construction

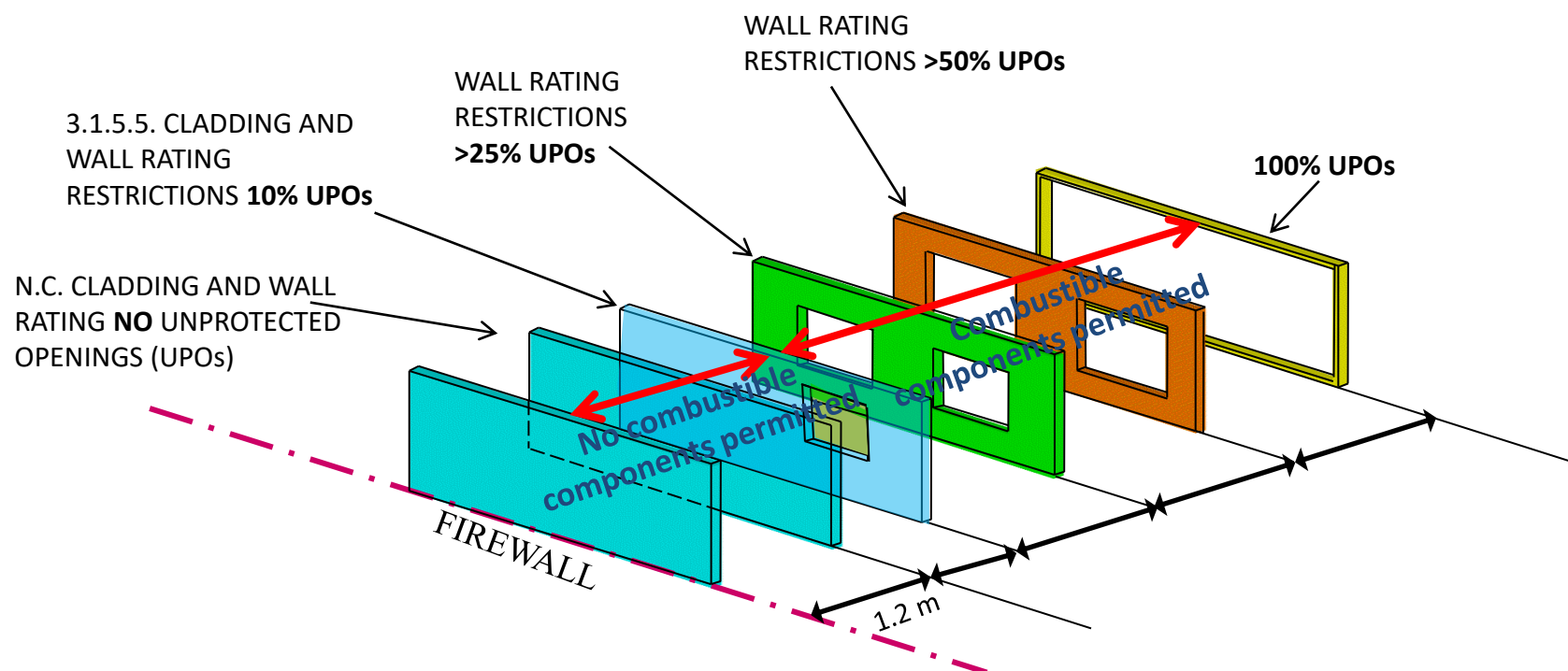
# **EXTERIOR CLADDING**

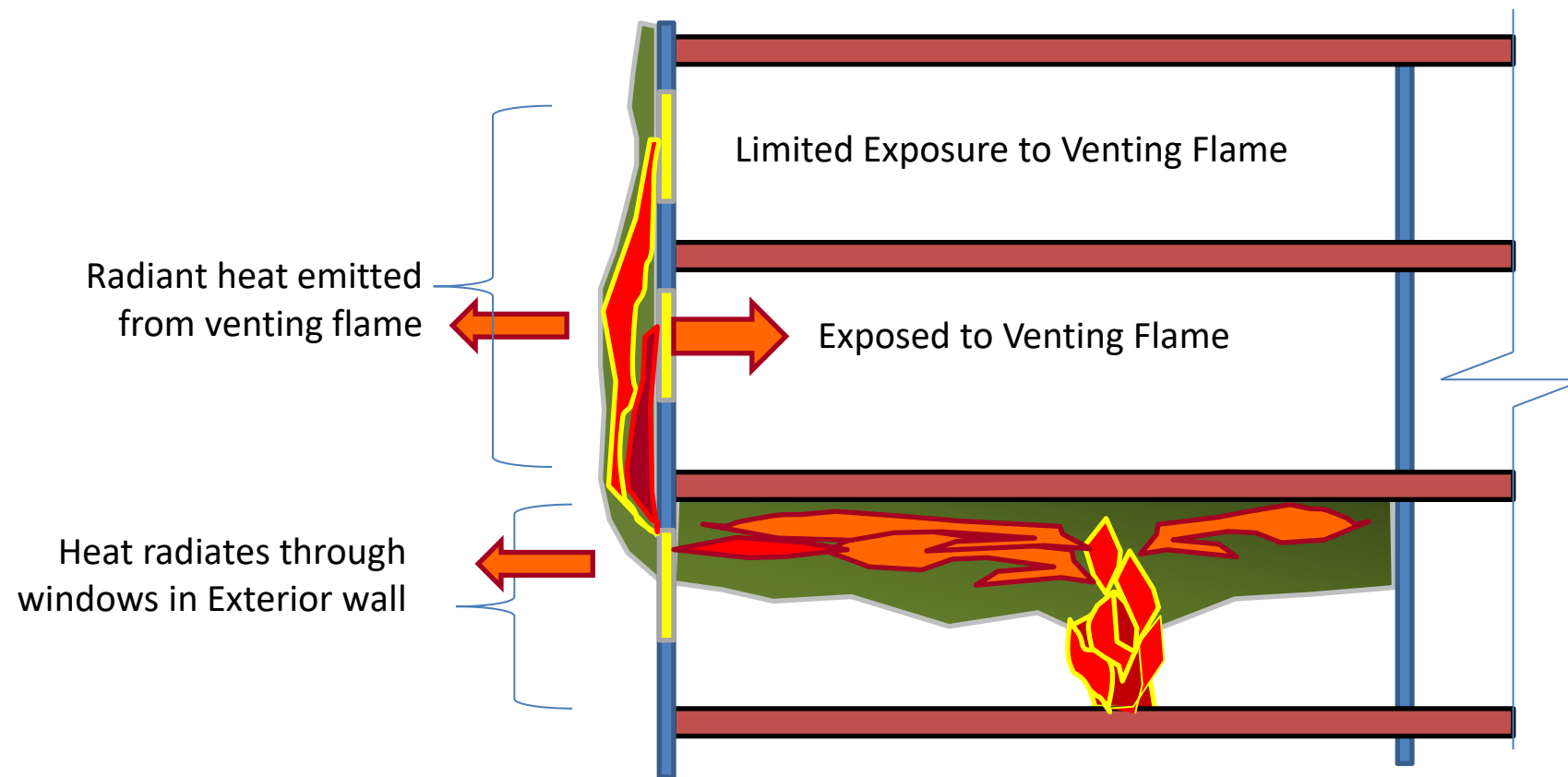
# Code Concept of Building Exposure and Justification for S134 Test

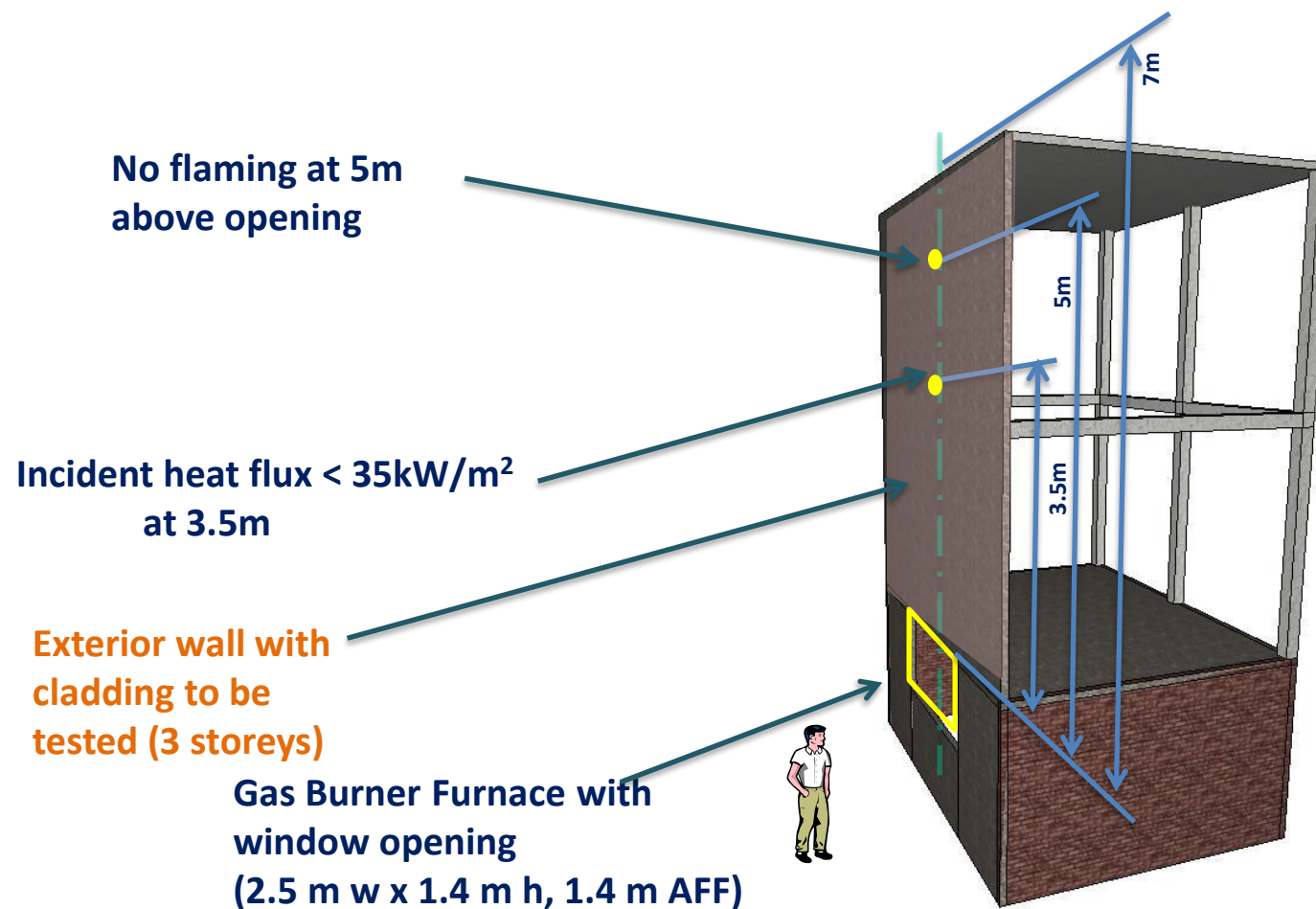




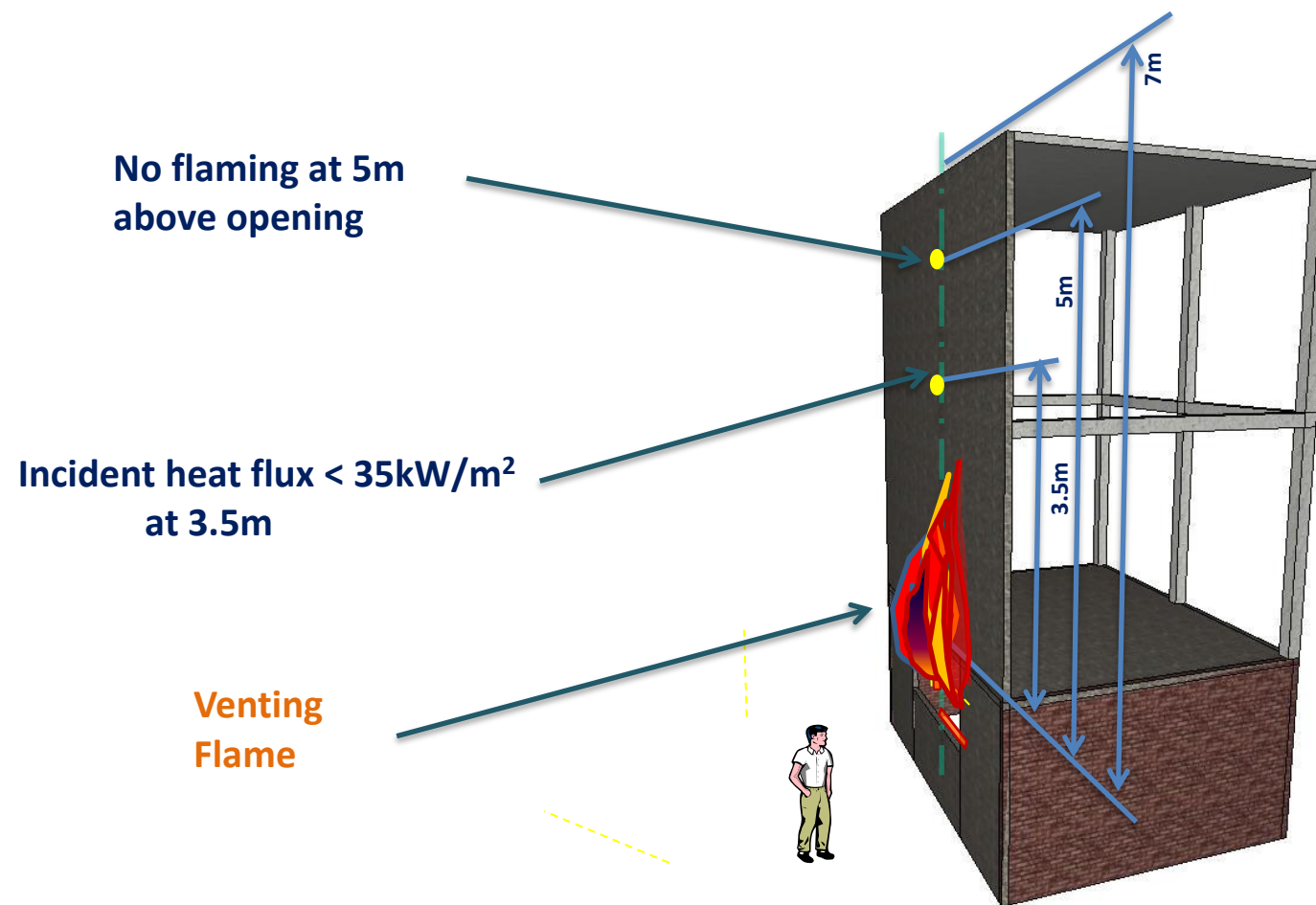
## Spatial Separation Protects Other Buildings

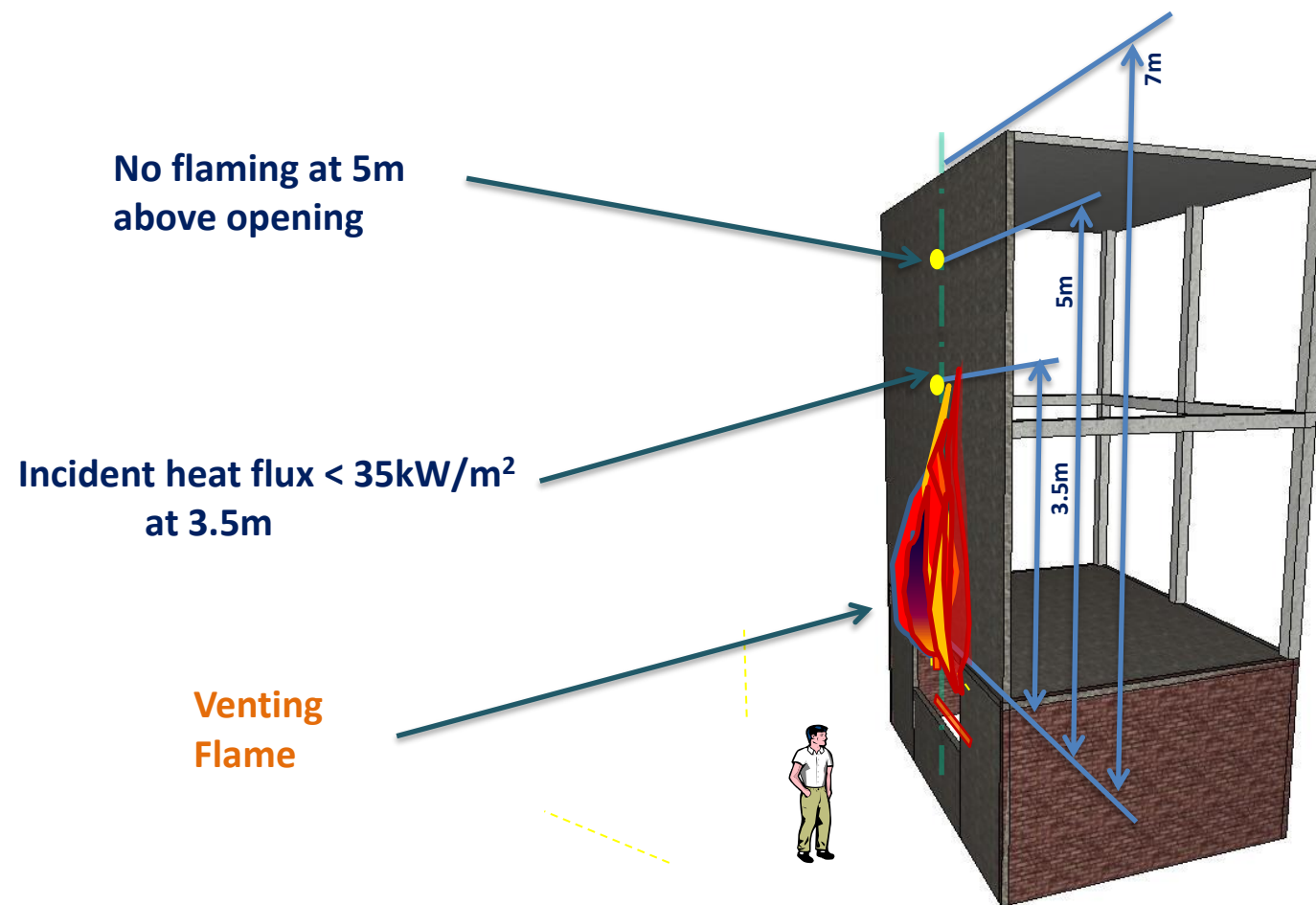


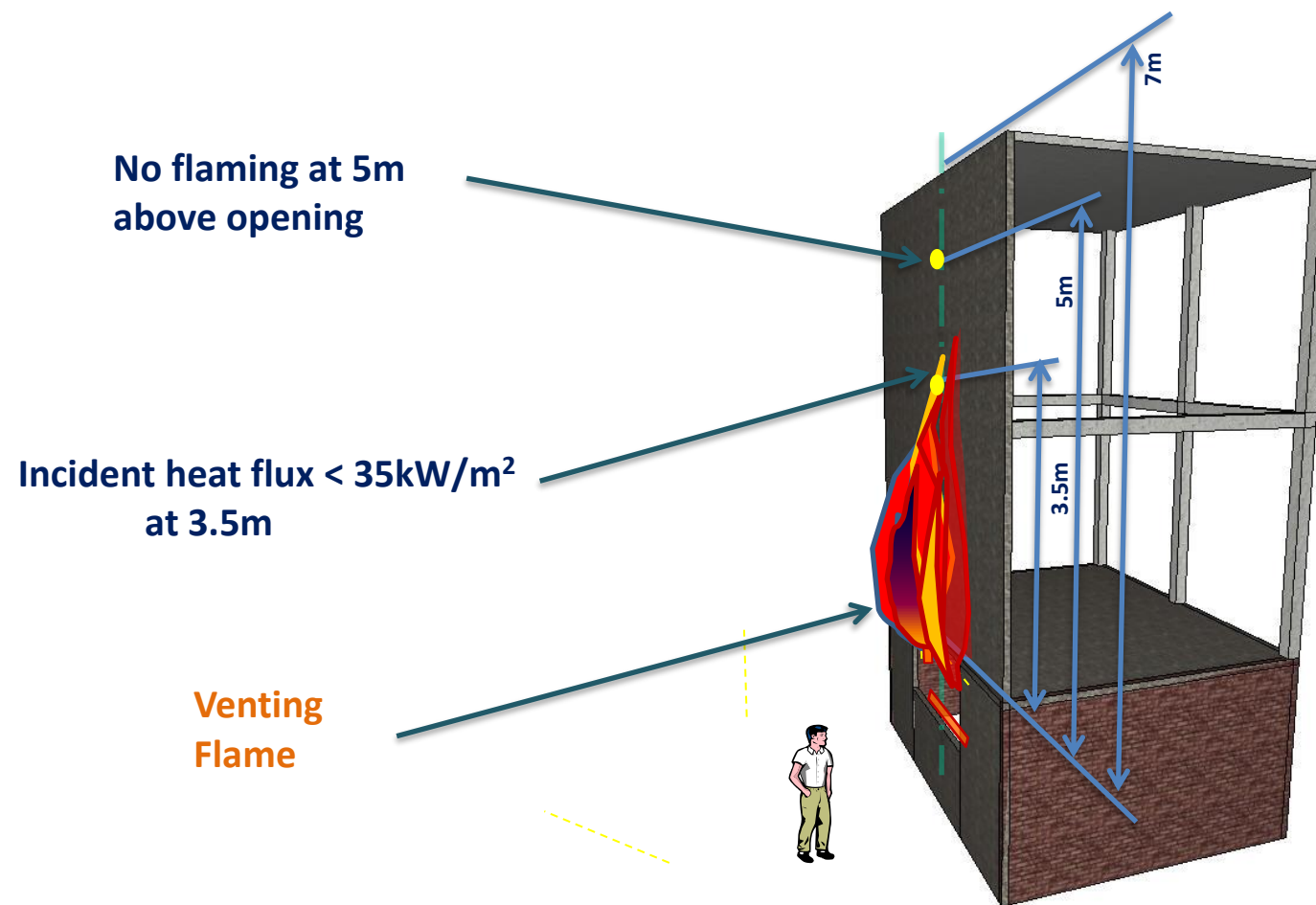




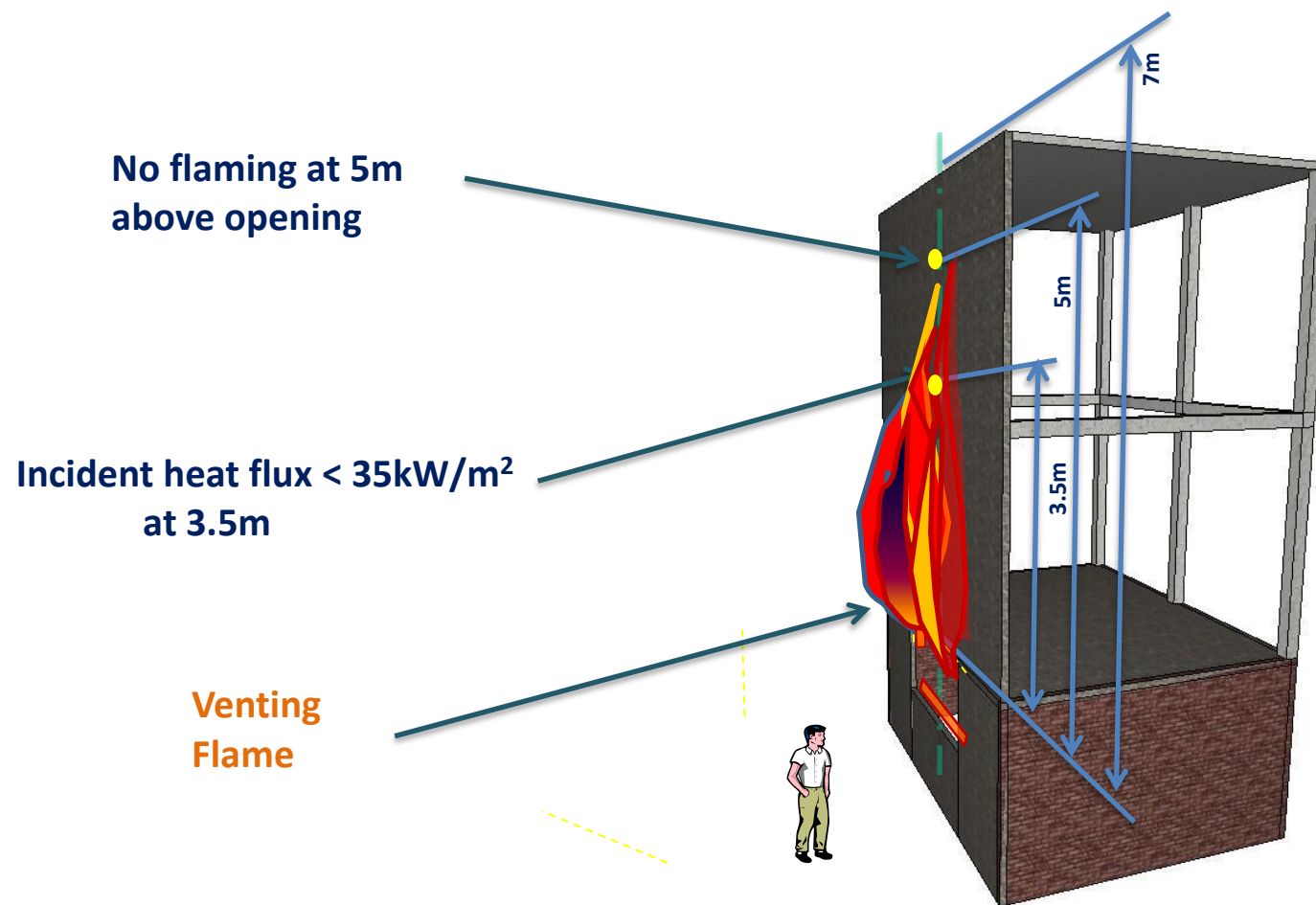


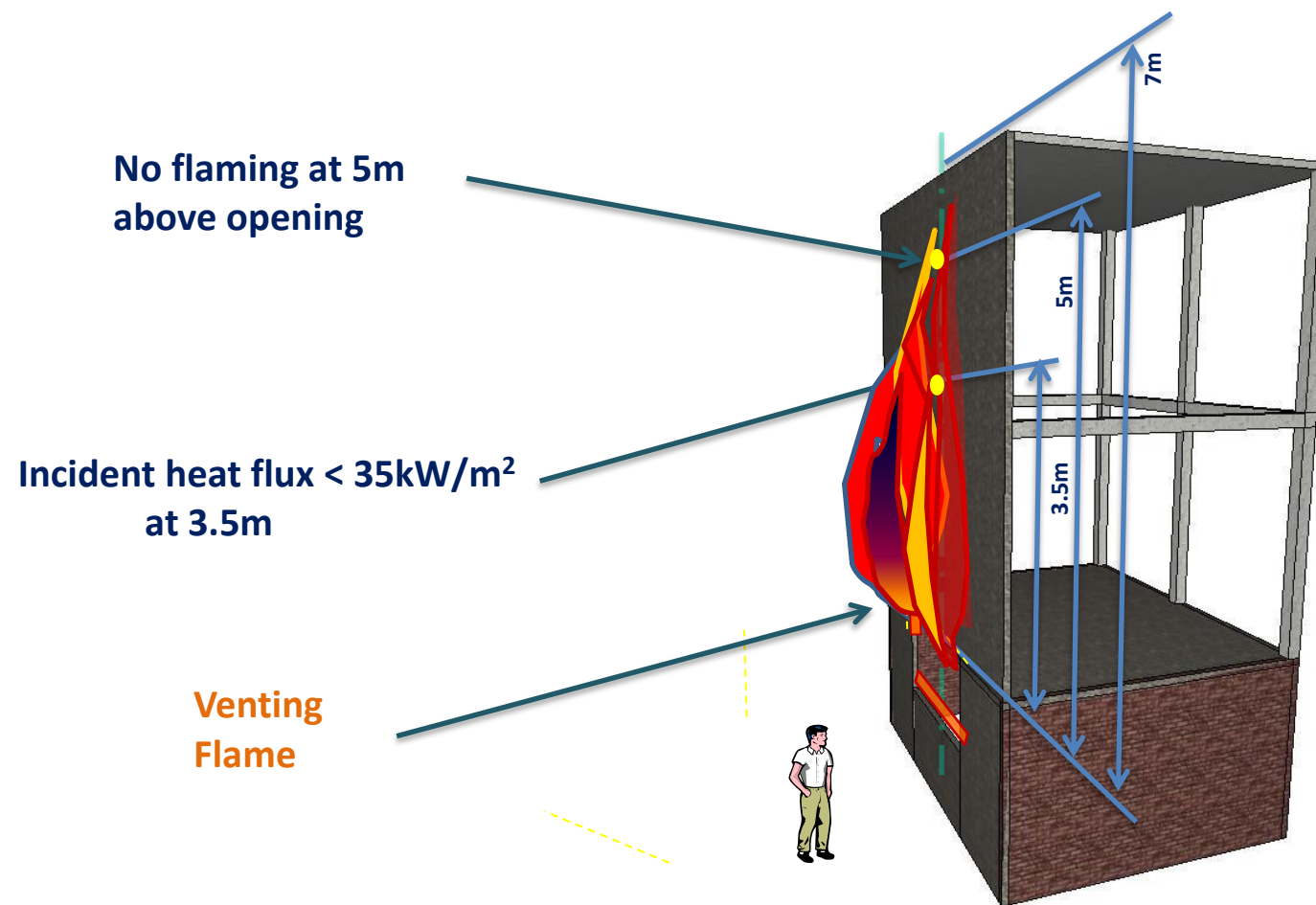






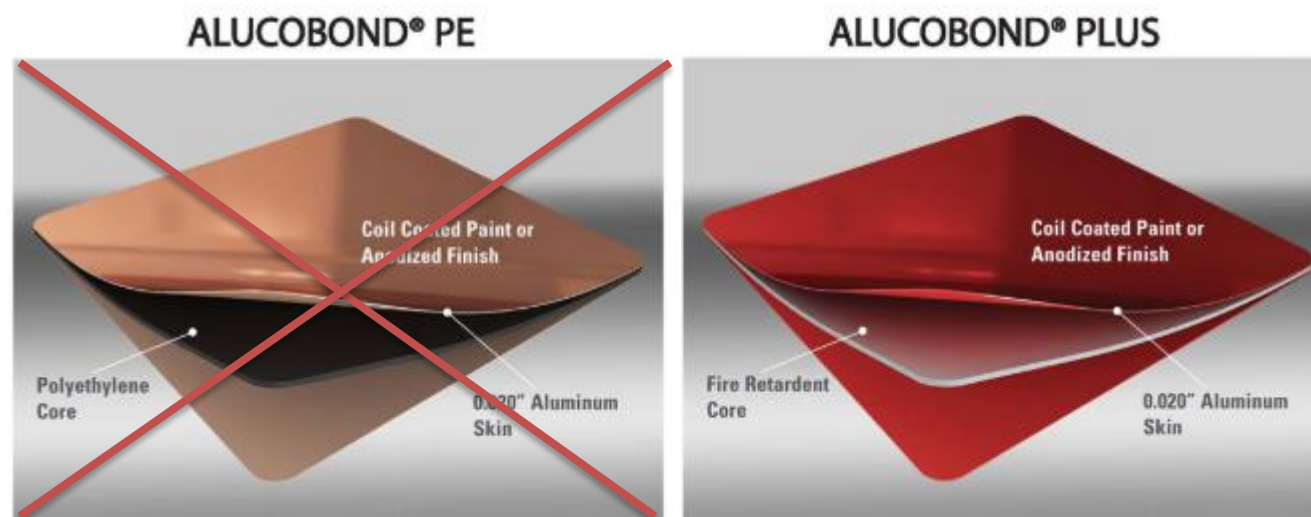






# Common Products

- Aluminum composite panels
- Steel skinned panels with foam plastic core





# GETTING UP CLOSE

*A more detailed look at wall components*



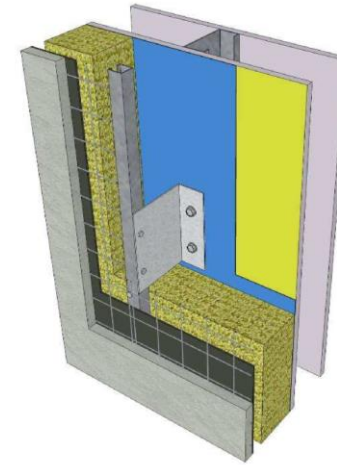
## WHY A COMBUSTIBLE SPACER?

---



### FIBERGLASS SPACER

- Adjustability happens outboard of the insulation
- Fiberglass spacer matches thickness of insulation
- Fiberglass spacer maintains thermal performance at tight spacing



### METAL CLIP & RAIL SYSTEM

- Adjustable rails (L-angles) can penetrate insulation
- Thermal break is therefore only a portion of insulation depth
- Thermal performance relies on large spacing of clips



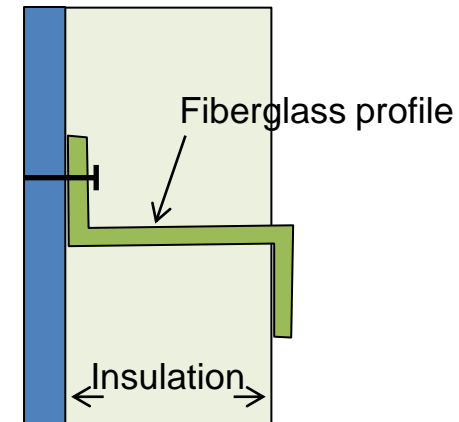
## WHY A NON-COMBUSTIBLE CONNECTION?

---



### FIBERGLASS SPACER

- Screws are directly fastened through the entire clip:
  - Screws reduce thermal performance slightly
  - Screws allow for non-combustible connection
- Tensile connection from screws; fiberglass resists shear and compression



### FULLY COMPOSITE SYSTEMS

- Best thermal performance
- “Combustible” structural connection
- Generally lower strength
  - Thinner webs mean lower strength
  - Pull-out may be an issue, depending on product design



# A HISTORY OF CLIP DESIGN

*The past through the present*

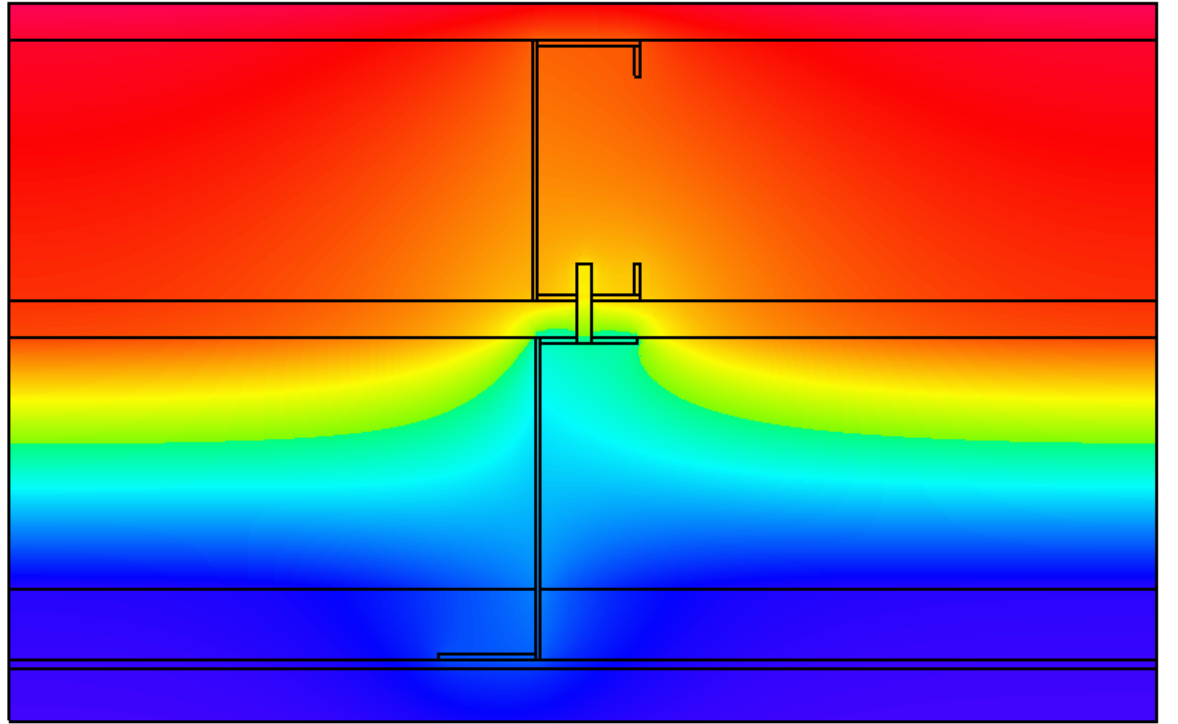


## THE PROBLEM

---

**OK, SO WE HAVE  
A CONDUCTIVITY  
PROBLEM....**

---

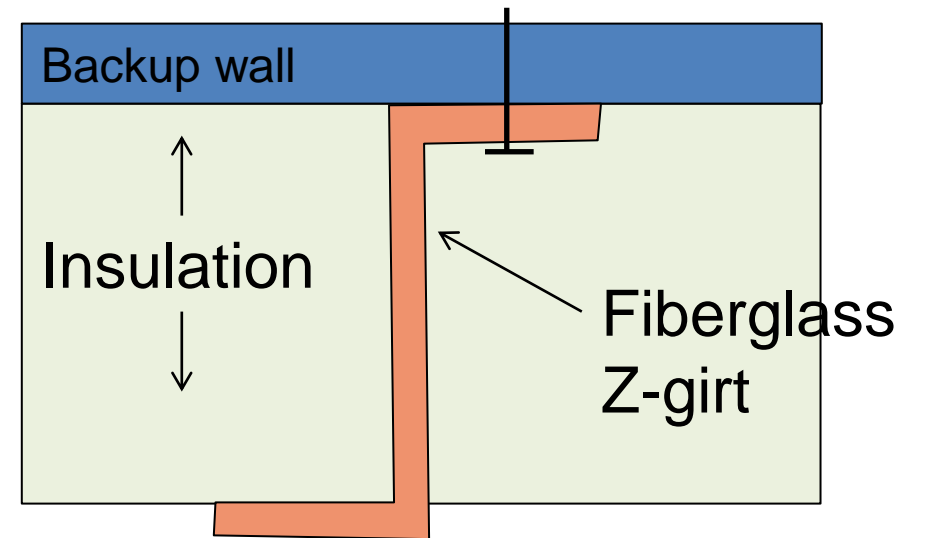


## STEP 1

---

Lets use a material with very low conductivity – like fiberglass.

**PROBLEM: PULL OUT STRENGTH**

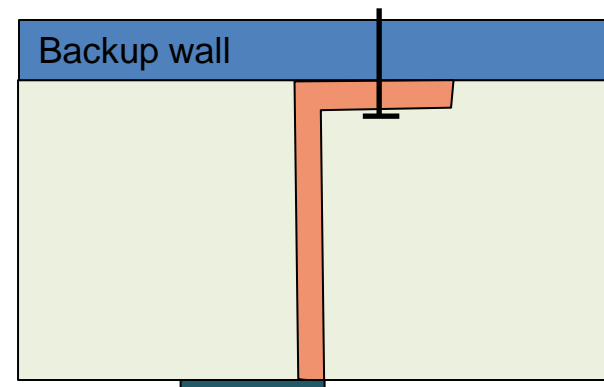
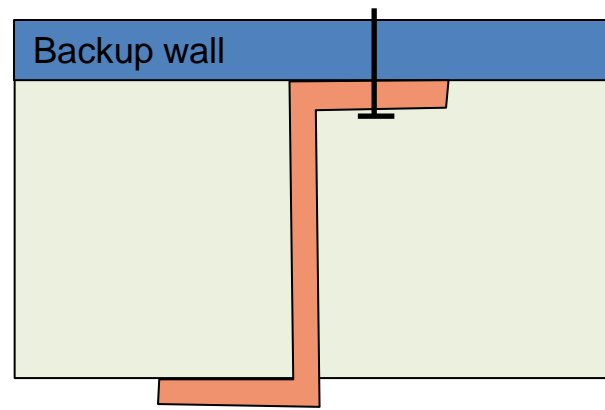




## STEP 2

---

### PROBLEM: SCREW PULL OUT



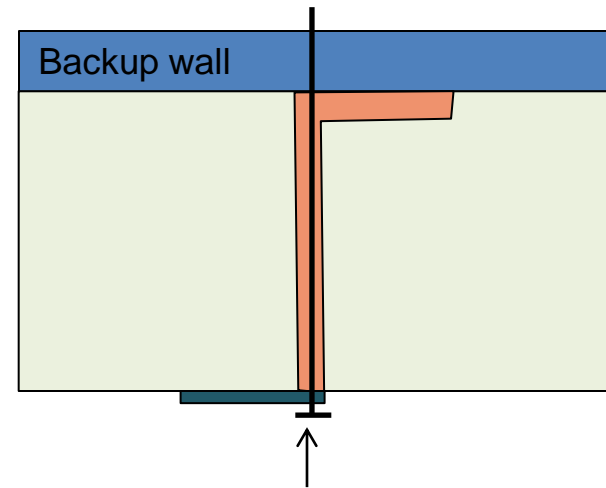
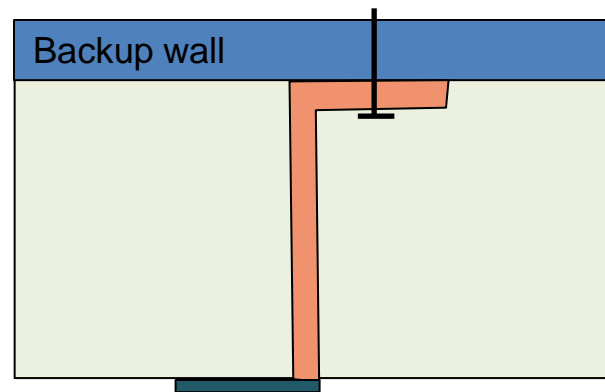
↑  
Make this leg steel – solves pull-out issue. Connection problem though...

---

## STEP 3

---

### PROBLEM: COMBUSTIBILITY



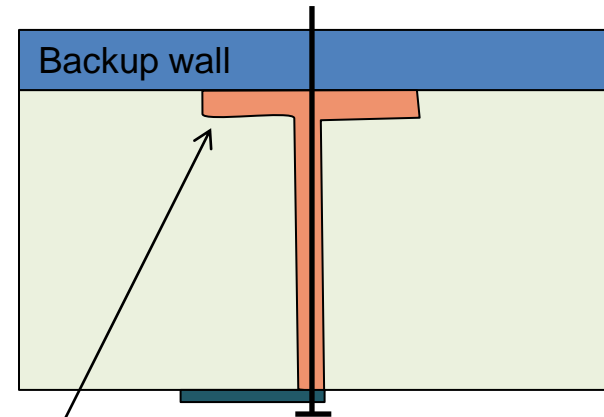
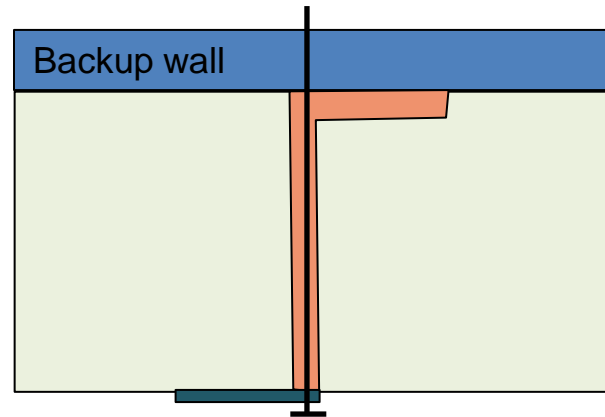
Use long screw to attach  
outer steel directly to stud

---

## STEP 4

---

### PROBLEM: ROTATION AT INNER LEG



Make inner leg on both sides

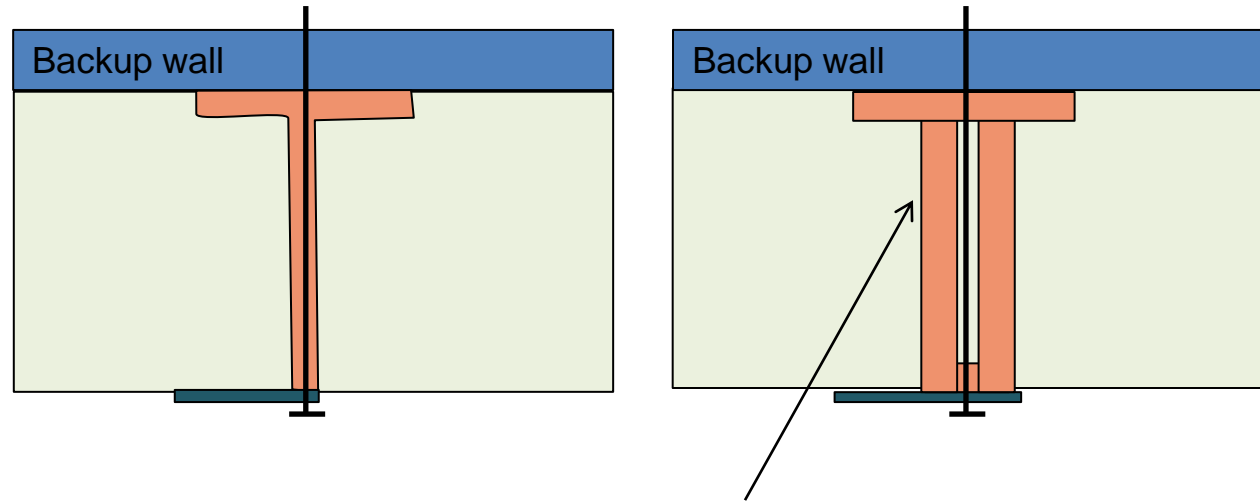
---



## STEP 5

---

### PROBLEM: INTERFERENCE BETWEEN SCREWS & WEB



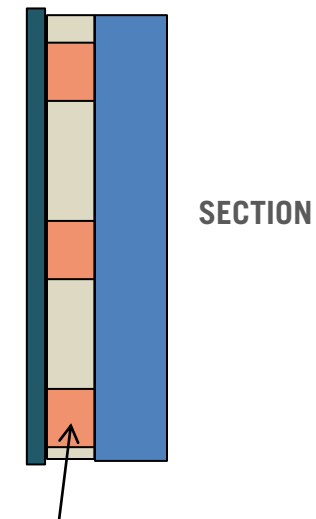
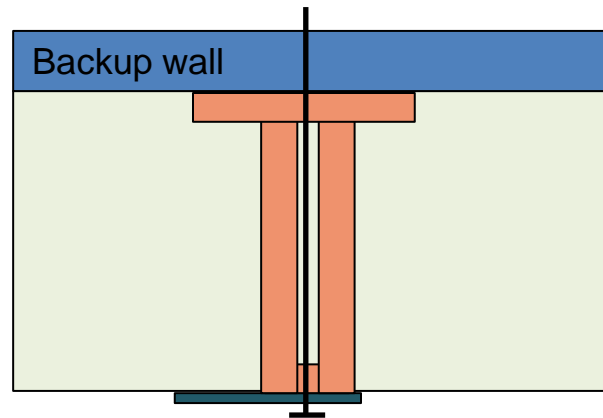
Two webs allow  
screws in between

---

## STEP 6

---

**PROBLEMS: COST OF CONTINUOUS MEMBER TOO HIGH  
THERMAL PERFORMANCE COULD BE BETTER**



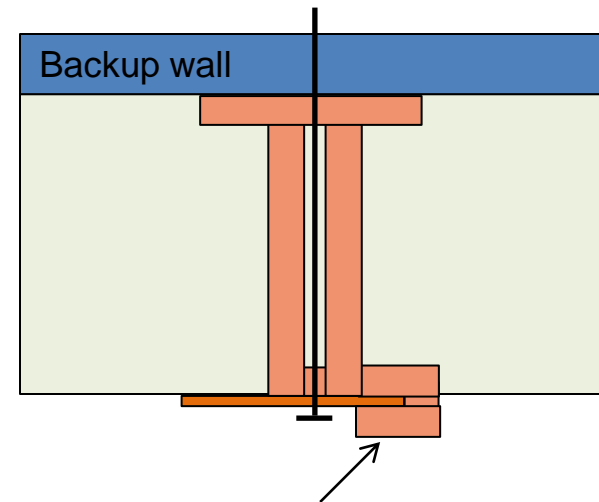
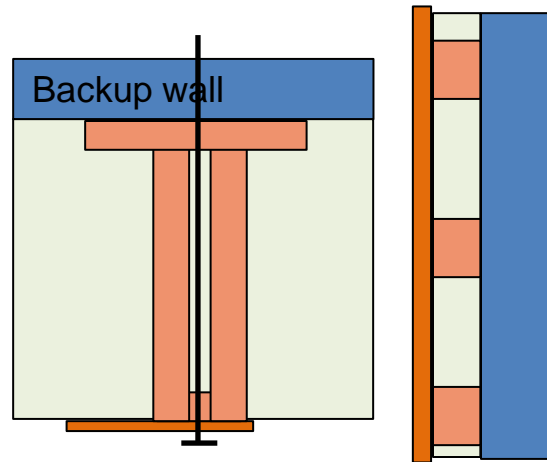
Make pieces intermittent

---

## STEP 7

---

### PROBLEMS: INCONVENIENT INSTALLATION (TOO MANY PIECES)



Provide retainer clip to  
clip pieces onto continuous steel

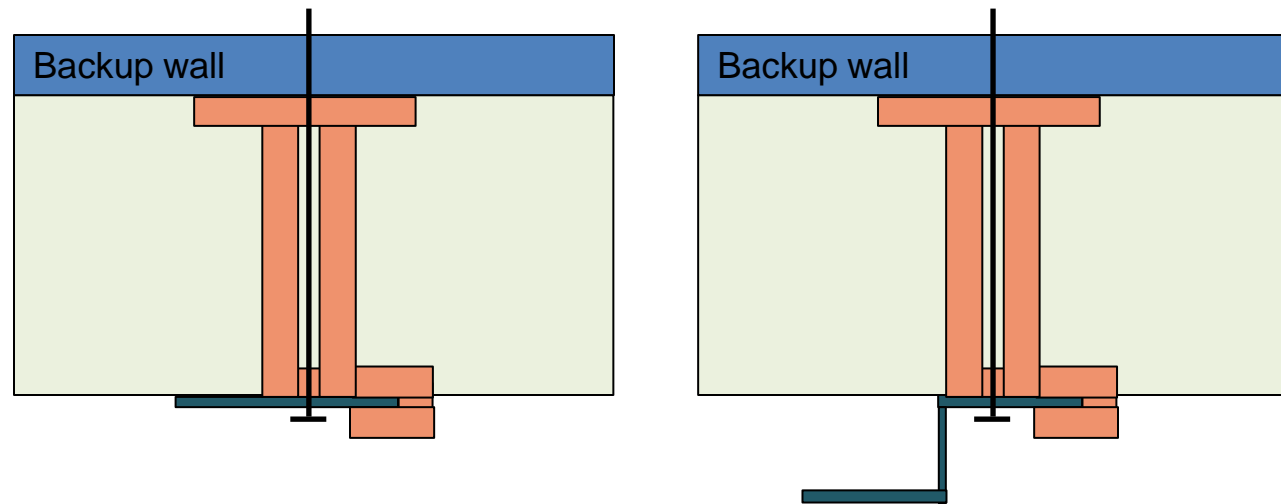
---



## STEP 8

---

**PROBLEMS: NEED EXTERIOR DRAINAGE CAVITY**  
**NEED STEEL TO BE MORE RIGID FOR CLADDING ATTACHMENT**



Use Z-girt ...  
Is it done?

---

## THE CASCADIA CLIP

---

- Essentially a “**thermal washer**”
- Universal solution for almost **any cladding** (up to around 30 psf)
- For **non-combustible construction**



# TESTING & EVALUATION

*A manufacturer's tale of bringing  
innovation to the market*

CASCADIA CLIP™  
FIBERGLASS  
THERMAL SPACER  
CASCADIA WINDOWS.COM  
PATENT PENDING

CASCADIA CLIP™  
GLASS  
SPACER  
CASCADIA WINDOWS.COM  
PATENT PENDING





## ANALYSIS AND TESTING – FIRE PERFORMANCE

---

### ENGINEERING ANALYSIS – FIRE PERFORMANCE:

Spacer is acceptable for use in:

**A WALL REQUIRED TO BE BUILT OF NON-COMBUSTIBLE CONSTRUCTION INCLUDING PERMITTED COMBUSTIBLE CLADDINGS (METAL COMPOSITE MATERIALS) ALSO, IN COMBUSTIBLE CONSTRUCTION (OBVIOUSLY)**

Maintains the two code (and common sense) objectives, which are:

**CANNOT ALTER INTENDED FIRE PERFORMANCE OF NON-COMBUSTIBLE WALL CLADDING MUST STAY-IN-PLACE EVEN IF THE COMPONENT IS DAMAGED**

No.1 is clear by analysis, and can be further supported by testing

No.2 is clear by observation – direct fastening

---

## CANADIAN CODE EVALUATION / COMPLIANCE

---

### BURNABY

- Code appeal process
- BC Building and Safety Standards Branch – published approval



## CANADIAN CODE EVALUATION

---



Building Code Consultants Ltd



**B.R. Thorson Consulting Ltd.**

*Consulting Structural Engineer • Building Code Consultant*

769 Roslyn Blvd, North Vancouver, B.C. V7G 1P4

Tel. 604-929-8520 Fax 604-929-8530 Cell 604-290-6569

WORKS WITH ANY CLADDING TYPE



# MINOR COMBUSTIBLE COMPONENT

---

## Building Code Appeal Board

c/o Building and Safety Standards Branch

PO Box 9844 Stn Prov Govt

Victoria BC V8W 9T2



IAPMO

---

**“IT’S A WASHER”  
OH YEAH... GREAT!**



## CODE COMPLIANCE: IAPMO-UES REPORT

---

THIRD PARTY CERTIFICATION OF THE CASCADIA CLIP

APPROVES CLIP FOR USE IN IBC TYPES I, II, III, IV, AND V CONSTRUCTION

ICC-ES EQUIVALENT

LOOKS AT SEVERAL DIFFERENT ASPECTS OF DESIGN

ONLY CLIP SYSTEM WITH A NATIONALLY RECOGNIZED THIRD PARTY CODE COMPLIANCE REPORT





## **FIRE PERFORMANCE - TESTING**

---

# **NFPA 285 TEST FIRE PROPAGATION IN EXTERIOR WALL FULL-ASSEMBLY TEST**

---



## FIRE PERFORMANCE - TESTING

---



## FIRE PERFORMANCE – NFPA 285 RESULTS

---

### SOLID PASS WITH MCM PANELS





## FIRE PERFORMANCE – NFPA 285 RESULTS

---

### SOLID PASS WITH MCM PANELS



FOR FIRE PERFORMANCE

---

**CONCLUSION:  
THE CLIP DOES...  
NOTHING  
AND THEREFORE  
CHANGES NOTHING.**





## INTERTEK LISTING WITH ROXUL

ROXUL Inc.  
Design No. RI/MFF 30-01  
Mineral Wool Insulation  
CAVITYROCK and COMFORTBOARD 110  
NFPA 285 – Meets Conditions of Acceptance

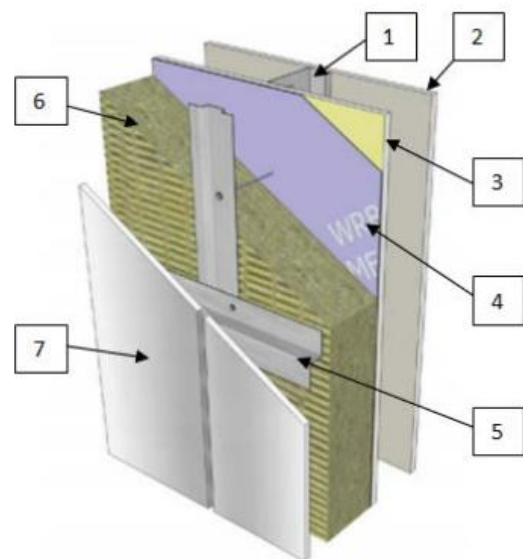


Figure 1: Construction with COMFORTBOARD 110

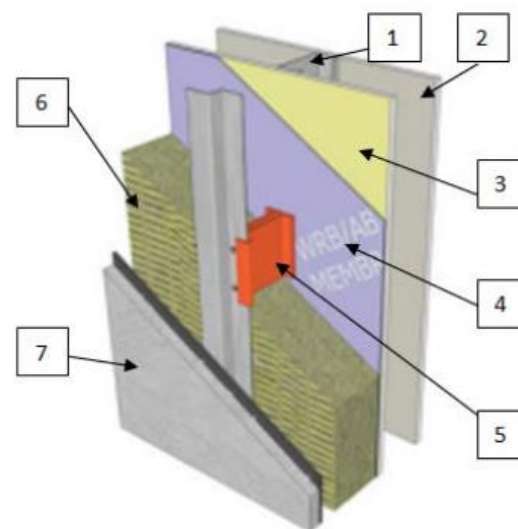


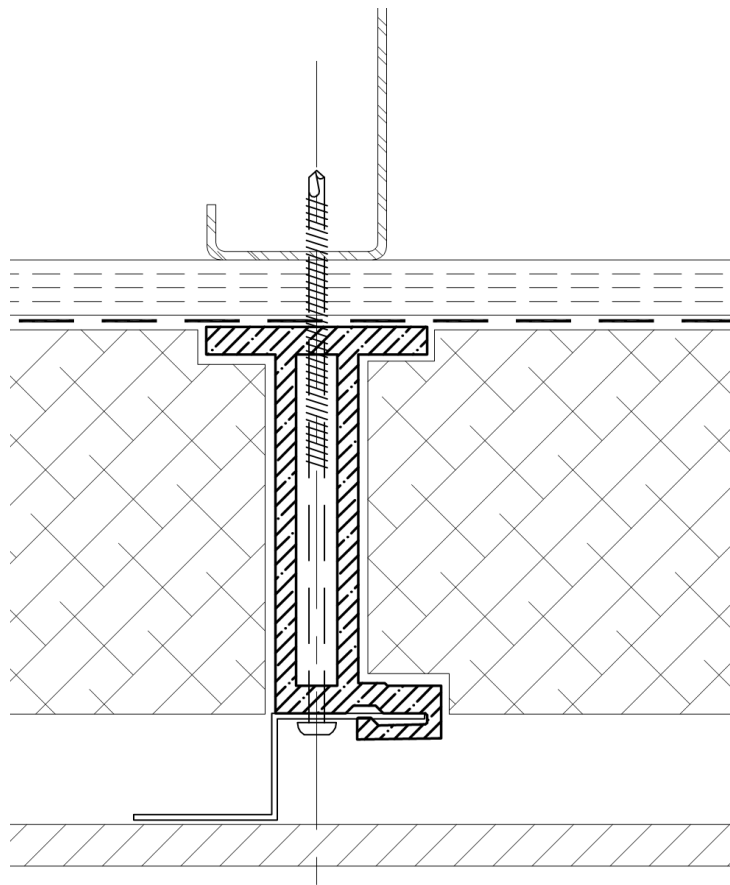
Figure 2: Construction with CAVITYROCK



Valued Quality. Delivered.

## A LENS TO JUDGE

---



Noncombustible Construction

# **COMBUSTIBLE WINDOW FRAMES & SASHES**



## Combustible Window Frames and Sashes [3.1.5.4.(5)]

5) **Combustible** window sashes and frames are permitted in a building required to be of **noncombustible** construction provided

- a) each window in an exterior wall face is an individual unit separated by noncombustible wall construction from every other opening in the wall,
- b) windows in exterior walls in contiguous storeys are separated by not less than 1 m of noncombustible construction, and
- c) the aggregate area of openings in an exterior wall face of a fire compartment is not more than 40% of the area of the wall face.

LMDG Comment: No restriction on building height or sprinkler protection...?

## Problems with [3.1.5.4.(5)]

- Individual unit separation..... no parameters provided except non-combustible construction,
- Vertical separation (1 m) to limit exposure to window frame above by non-combustible construction
- the area of opening is restricted to 40%, intent is unclear
  - no reference to suppression (building height, sprinklered, etc.)
  - no reference to combustibility of material (flames spread rating, performance criteria)
  - no reference to thermal barrier
  - no refer to spread to adjacent building

# Why 40%? response from NRC:

## Your question:

Why is the aggregate areas of openings in an exterior wall face of a fire compartment restricted to not more than 40% of the area of the wall face, as opposed to 50% or 60%?

## Codes Canada response:

Based on our archived information, there is no available rationale behind the selection of the 40% stated in Clause 3.1.5.4.(5)(c) of Division B of the National Building Code (NBC).

The 40% referenced in Clause 3.1.5.4.(5)(c) of Division B was introduced in the NBC 1965. The wording of the provision has been modified since NBC 1965, however, the 40% limitation has been retained.

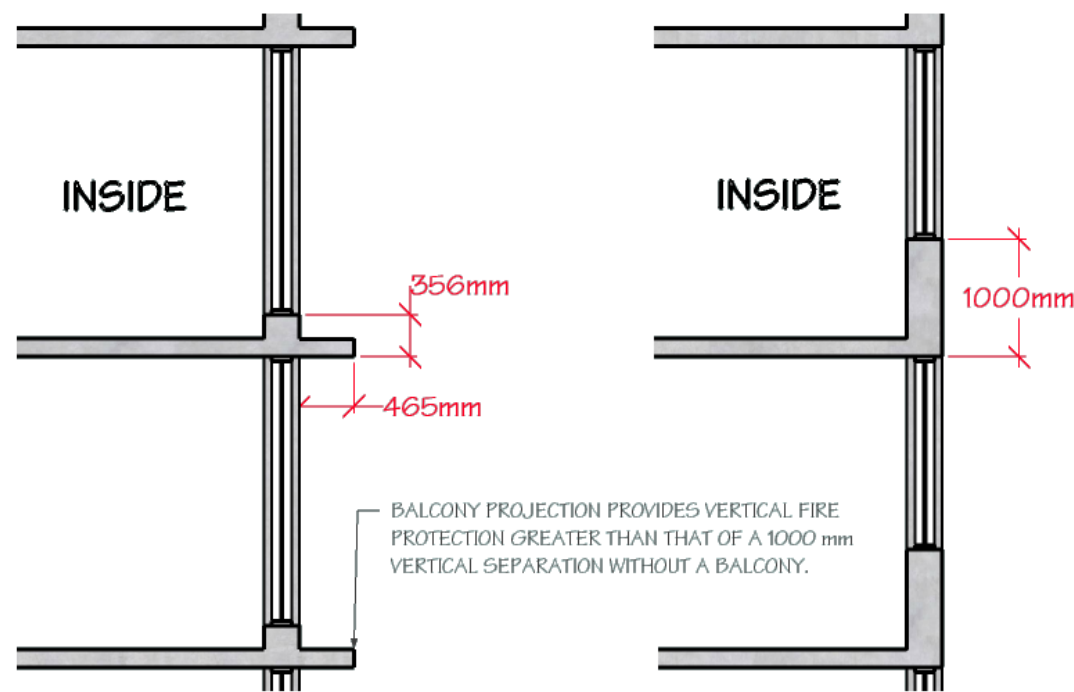
The original proposed revision modifying the provisions of the NBC 1960 was based on 30% of the area of the wall face. It is speculated that the original value of 30% was based in part on a traditional “punch hole” exterior wall treatment where 25% of the exterior wall has openings. However, after discussion by the Standing Committee on Use and Egress regarding this provision, the percentage of openings was increased to 40%. Unfortunately, information on the discussion is not available.



# 1 m vertical Separation

## Examples that do not meet 3.1.5.4.(5)

### PROPOSED FIBERGLASS WINDOW FRAMES vs TYPICAL CODE CONFORMING COMBUSTIBLE WINDOW FRAMES



# Intent and Objective

- F02 – to limit the severity and effects of fire or explosions
- OP1.2/OS1.2 – limit probability that as a result of the use of combustible window frames:
  - the building will be exposed to unacceptable risk of damage due to fire,
  - a person will be exposed to unacceptable risk of injury due to fire, and
  - what risks? due to spread of fire via frame or collapse of frame causing damage or injury.
- Opportunity to address via alternative solution

**COMBUSTIBLE  
WINDOWS IN  
NON-COMBUSTIBLE  
CONSTRUCTION**





## THE CODE ISSUE

---

**BUILDING CODE SENTENCE 3.1.5.4.(5) (FROM BCBC, VBBL, AND NBC) LIMITS THE USE OF COMBUSTIBLE WINDOWS IN BUILDINGS THAT ARE REQUIRED TO BE BUILT OF NON-COMBUSTIBLE CONSTRUCTION; IT CONTAINS THREE REQUIREMENTS:**

- each window in an exterior wall face is an individual unit separated by noncombustible wall construction from every other opening in the wall,
  - windows in exterior walls in contiguous storeys are separated by not less than 1 m of noncombustible construction, and
  - the aggregate area of openings in an exterior wall face of a fire compartment is not more than 40% of the area of the wall face.
-



## WHAT DOES THAT MEAN?

---



## WHERE ELSE?

---



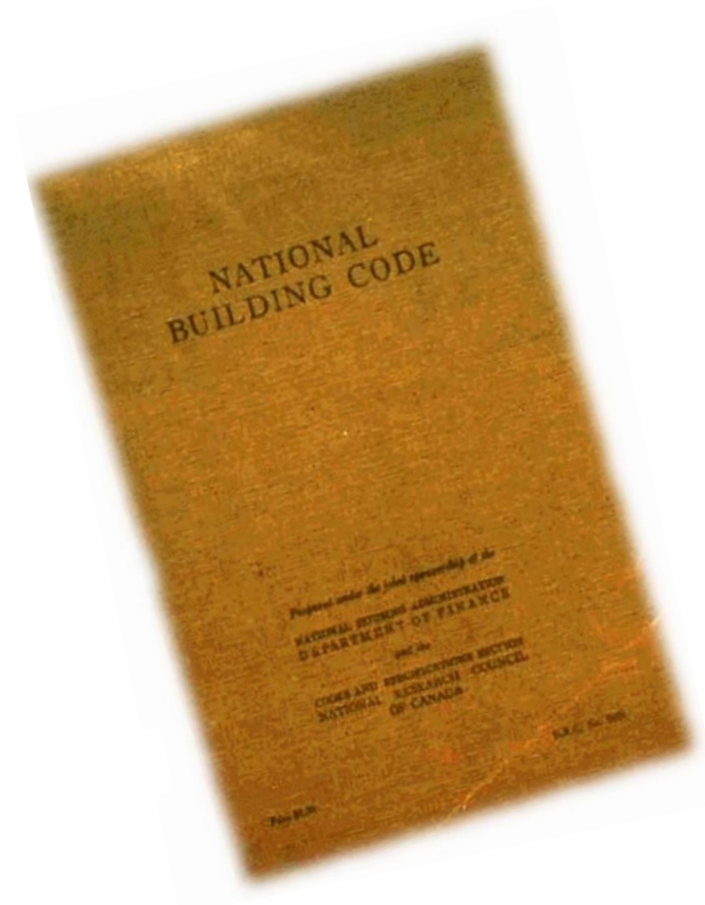
CANADA

**THIS IS A SITUATION THAT  
DOES NOT EXIST IN OTHER ADVANCED WESTERN  
COUNTRIES.**

**NON-METAL WINDOWS ARE COMMON IN TALL  
BUILDINGS DUE TO ECONOMY AND ENERGY  
EFFICIENCY.**

## SO, WHY?

---



**BUT, WHAT ABOUT...**

---





## WHY IS THIS CLAUSE SO RESTRICTIVE?

---

**CLASSIFICATION OF WINDOW FRAMING MATERIALS ON THE BASIS OF “COMBUSTIBILITY” IS PROBLEMATIC.**

**IT DOES NOT DISTINGUISH :**

- Does a material ignite readily?
- Does fire spread or diminish?
- Does it represent a lot of fuel vs. a little bit.





RESTRICTIVE...

---

**NO OTHER WESTERN JURISDICTION  
CLASSIFIES THE FIRE PERFORMANCE OF  
WINDOW FRAMING MATERIALS ON  
CRITERIA AS NARROW AS CAN/ULC-S114.**

---

## WHAT ABOUT THERMAL BREAKS IN ALUMINUM?

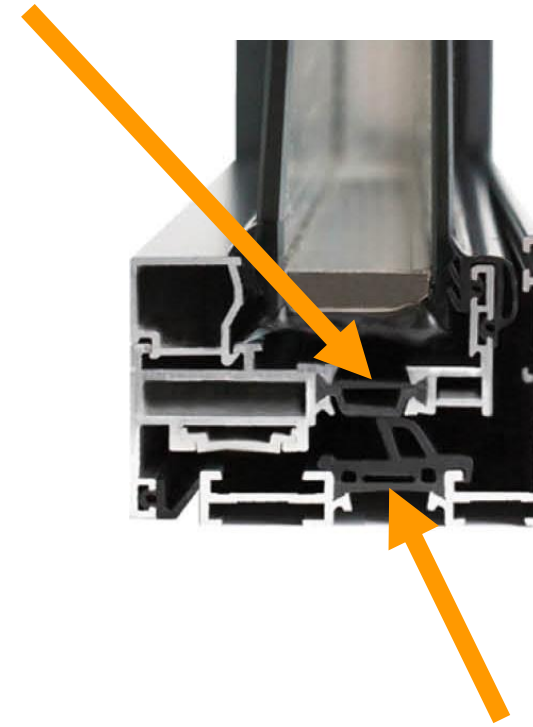
---

**FOR SEVERAL DECADES, CODE REQUIRES THERMAL BREAKS IN METAL WINDOWS**

**ALL THERMAL BREAK MATERIALS ARE COMBUSTIBLE**

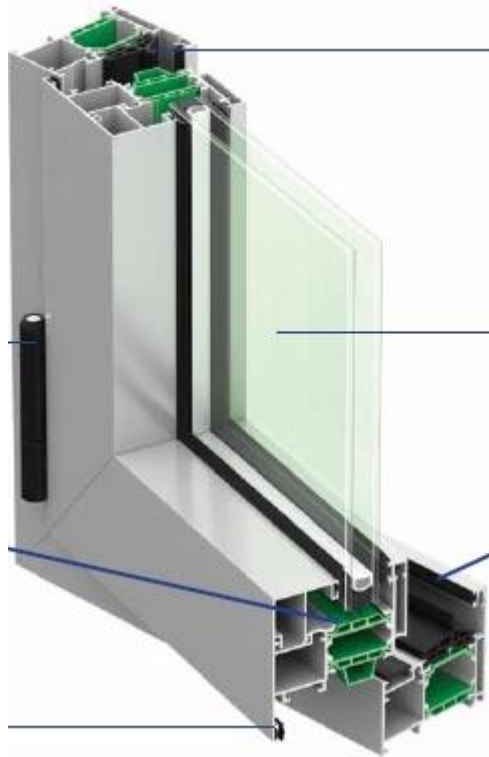
- All incapable of passing CAN/ULC-S114

**ON THE BASIS OF THIS CODE-REQUIRED TEST, ALL WINDOW FRAMING SYSTEMS IN USE TODAY ARE COMBUSTIBLE.**



## CAN YOU SPOT THE CODE-COMPLIANT WINDOW?

---





## IS THIS A REAL PROBLEM?

---

Sophisticated products need a more sophisticated evaluation criteria

The most energy efficient fenestration products in Canada today are wholly framed of PVC and Fiberglass

Causes diminishing effectiveness for energy conservation programs

Need to modernize the code



## EXPLORING A CODE CHANGE

---

**NATIONAL RESEARCH CANADA HAS PARTNERED WITH 10 WINDOW MANUFACTURERS TO STUDY COMBUSTIBLE WINDOWS.**

- Lots of fire testing
- Including S134... three storey high
- Successful, positive results



No specimen burning;  
just the test fuel.

## S134 TESTING - FIBERGLASS

---





## S134 TESTING - FIBERGLASS





## FIBERGLASS & ALUMINUM

---

**BOTH PASSED**  
**BOTH SAFE**

**NRC-CMRC**



**TEST 4 ALUMINUM**



**TEST 5 FR  
FIBERGLASS**

## WHAT DOES THIS MEAN?

---

**intertek**

Total Quality. Assured.

Issue Date: November 2, 2017

Michael Bousfield  
Cascadia Windows Ltd.  
#101 – 5350B 27<sup>th</sup> Street  
Langley, BC V4W 0C1

### Overall Results (Performance Criteria #1 and #2)

CAN/ULC-S134 RESULTS	MEASURED	MAXIMUM ALLOWED	MET PERFORMANCE CRITERIA?
Peak heat flux (one minute avg.)	26.15	35 kW/m <sup>2</sup>	Yes
Maximum flame spread (height above opening)	3.5 m	5.0 m	Yes

## WHAT DOES THIS MEAN?

IN CANADA:  
LMDG COMFORTABLE PREPARING  
ALTERNATE SOLUTION REPORTS FOR  
WINDOW WALL TYPE CONFIGURATIONS  
OF THE CASCADIA PRODUCT, BASED ON  
THIS TEST  
2 PAGES & DONE

**LMDG**  
Building Code Consultants Ltd

**FIRE PROTECTION & LIFE SAFETY SOLUTIONS**  
VANCOUVER OFFICE  
4th Floor, 780 Beatty Street  
Vancouver, BC, Canada V6B 2M1  
T 604 682 7146  
F 604 682 7149  
www.LMDG.com

November 15, 2018

City of Vancouver  
Planning and Development Services  
515 West 10th Avenue  
Vancouver, BC  
V5Z 4A8

Attention: Building Policy Branch

Dear Sir/Madam:

RE: **GENERIC ALTERNATIVE SOLUTION: COMBUSTIBLE WINDOW FRAMES**  
HEATHER PLACE—BP-2017-00511 (BU 465779)  
733 WEST 14TH AVENUE, VANCOUVER, BC Our File: 13-272A (17-331A)

It is desired to utilize fiberglass (combustible) window frames to improve the energy efficiency of the exterior walls at MVHC Heather Place (Project) to be located at 733 West 14th Avenue in Vancouver, BC. While the building permit was issued under the Vancouver Building By-law 2014 (VBBL), it is proposed to provide a generic alternative solution for the combustible window frames based on the provisions of the National Building Code of Canada 2020 (NBC). While the VBBL permits up to 40% of an exterior wall to have combustible window frames separated by noncombustible construction that are separated by not less than 1 m in contiguous storeys, the NBC will allow combustible window frames without these restrictions.

It is proposed to permit Cascadia fiberglass window frames with the fire retardant as noted in **Attachment No. 1** to this report for the Project, as permitted by the proposed changes to the NBC, with the additional safety provided by the confirmation that these windows have been tested to CAN/ULC-S134.

The proposed change to the NBC (copy included as **Attachment No. 2** to this letter) will permit combustible window frames and sashes in noncombustible buildings. While there are no additional requirements proposed for the NBC relative to combustible windows for the Project, the proposed window frames have been tested to CAN/ULC-S134. This is the currently prescribed test to permit combustible cladding on noncombustible buildings. The provision of testing of the window frames is consistent with the current requirement for noncombustible construction on the exterior of a building.

VIA COURIER

Page 2 13-272A (17-331A)  
November 15, 2018

City of Vancouver BC


Project have been tested to meet the requirements of **Attachment No. 1** to this letter):

spread more than 5 m above the opening. It is more than 35 kW/m<sup>2</sup> measured at

the VBBL requirements for combustible window frames in Article 3.1.5.5, and pose no greater risk than the proposed to permit the use of Cascadia fiberglass window frames on a solution basis.

signing in the space provided below and

information that you require at this time. If you do not hesitate to contact our office.

  
Michael J. van Blokland, P.Eng., CP

# TIMELINE – ROAD TO THE NEW NORMAL

---

## BEFORE THE RESEARCH AND TESTING

### ALTERNATE SOLUTIONS

Varying success, depending on jurisdiction give-and-take approach on technical items

## AFTER THE S134 TEST

### ALTERNATE SOLUTIONS BECOME STANDARDIZED FOR SOME SUPPLIERS

Should be more widely/easily accepted

## THE CODE-CHANGE IS NOW ACCEPTED FOR THE UPCOMING 2020 NBC

### ALTERNATE SOLUTIONS (AS) REFERENCE FUTURE CODE CONFORMANCE AND SUCCESSFUL TEST

Documents have become “cookie-cutter”

## AFTER NBC 2020 ADOPTION IN PROVINCES

CANADA CATCHES UP TO THE REST OF THE WORLD

WE ARE  
HERE NOW!





## THE NEW NORMAL

---

3.1.5.4.(5) *COMBUSTIBLE* WINDOW SASHES AND FRAMES ARE PERMITTED IN A *BUILDING* REQUIRED TO BE OF *NONCOMBUSTIBLE CONSTRUCTION* PROVIDED **THEY ARE VERTICALLY NON-CONTIGUOUS BETWEEN STORIES.**



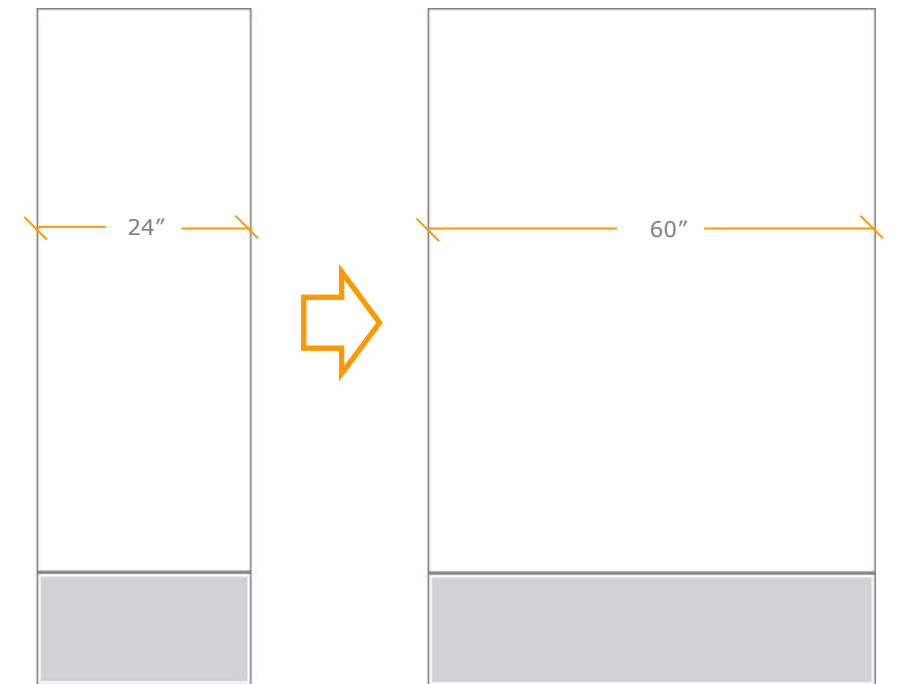
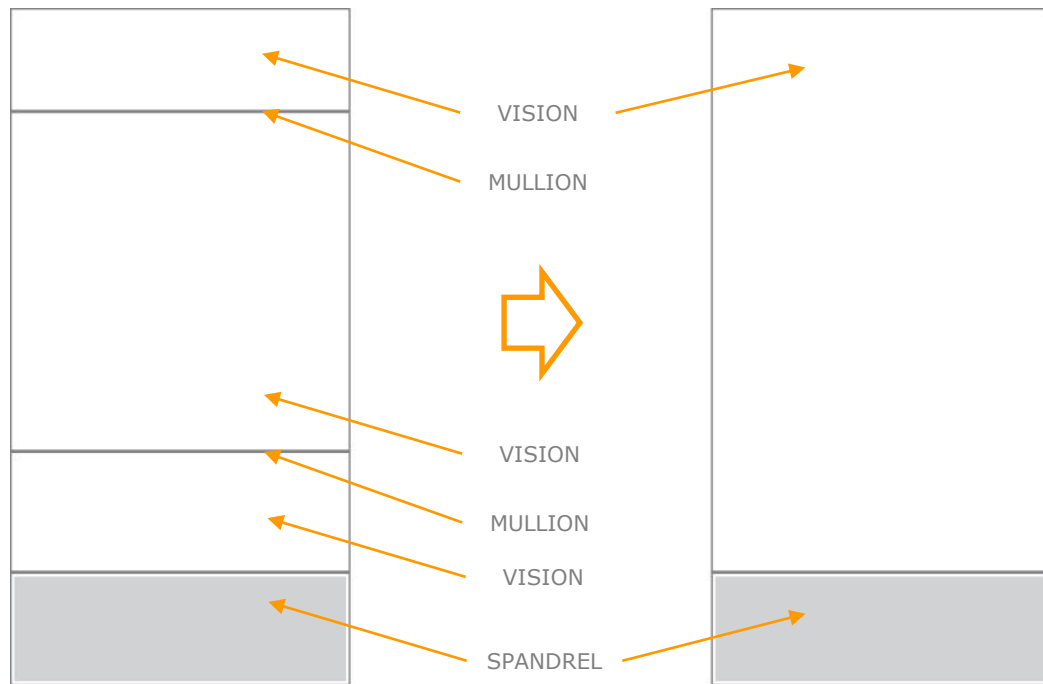


# COMMON QUESTIONS



## COMMON QUESTIONS

Cost savings options when designing window configurations?





## COMMON QUESTIONS

---

What color options exist for fiberglass windows?

- Unlimited custom color options
- 10 standard colors
- AAMA 625 performance
- Dual color frames available
- Non-toxic, waterborne paint manufactured in North America

### STANDARD WINDOW COLORS

Update 2020

 200 CASCADIA BLACK	 872 COMMERCIAL BROWN	 310 LIGHT GREY	 335 SLATE GREY	 303 ANTHRACITE
 173 CLAY	 341 CHAMPAGNE	 591 WINEBERRY	 511 LIGHTHOUSE RED	 102 RAINWARE WHITE



## COMMON QUESTIONS

---

What's the relative cost compared to aluminum & vinyl windows?



PHOTO CREDIT: EUROLINE WINDOWS

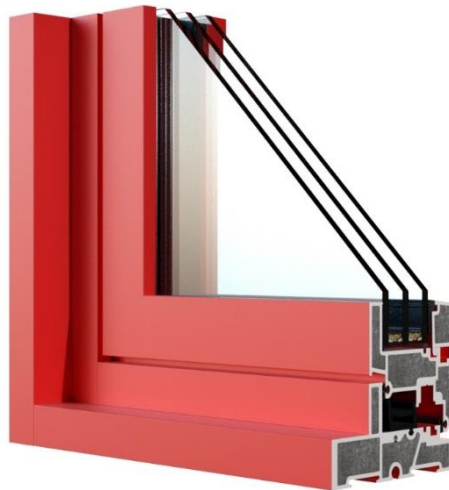


PHOTO CREDIT: CASCADIA WINDOWS & DOORS



PHOTO CREDIT: GLO EUROPEAN WINDOWS



# ABOUT CASCADIA WINDOWS & DOORS





## OUR PRODUCTS

---

# FIBERGLASS PUNCH WINDOWS & DOORS



## OUR PRODUCTS

---

# FIBERGLASS STRIP WINDOWS





## OUR PRODUCTS

---

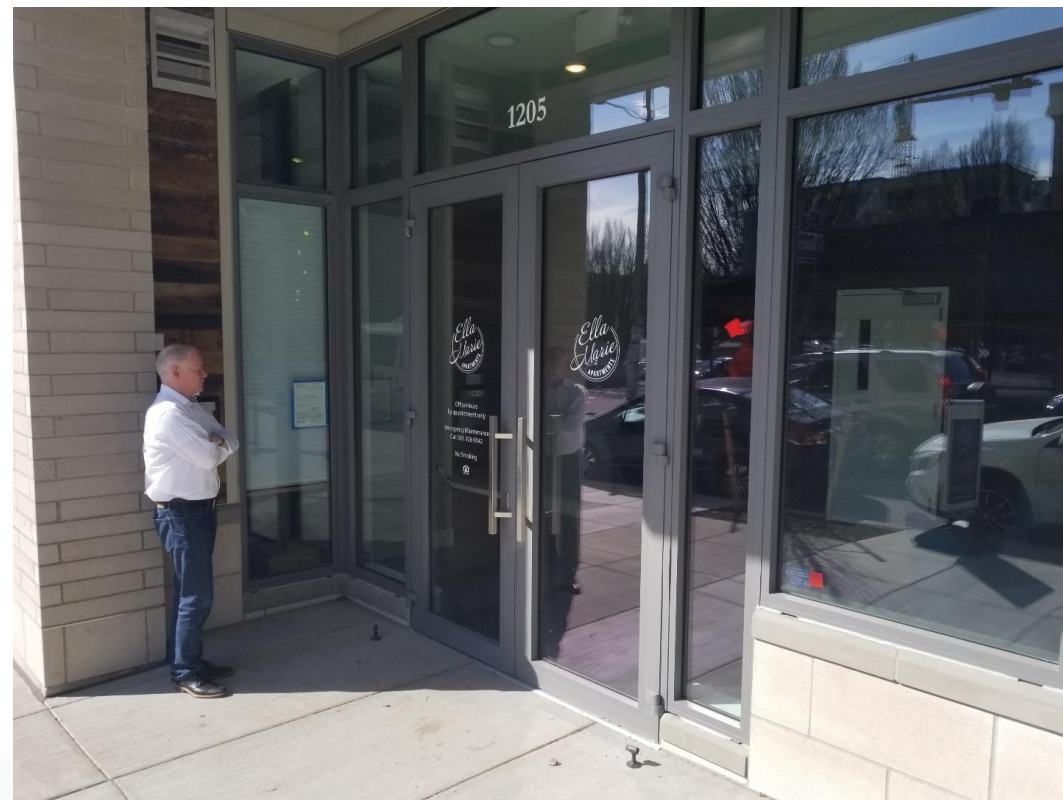
## FIBERGLASS STOREFRONT GLAZING



## OUR PRODUCTS

---

# FIBERGLASS STOREFRONT DOORS





## OUR PRODUCTS

---

## FIBERGLASS WINDOW WALL



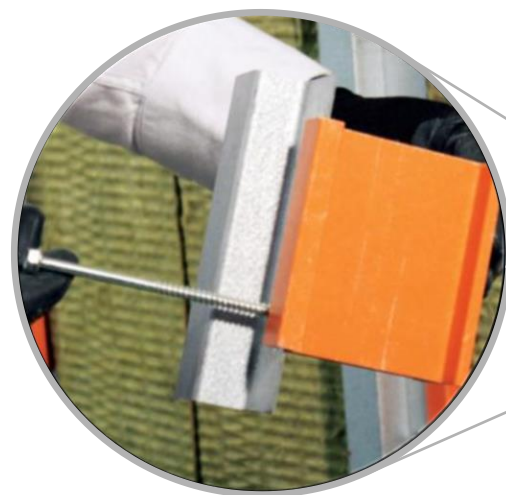


## OUR PRODUCTS

---



# FIBERGLASS THERMAL SPACER – CASCADIA CLIP®



## KEY TAKE-AWAYS

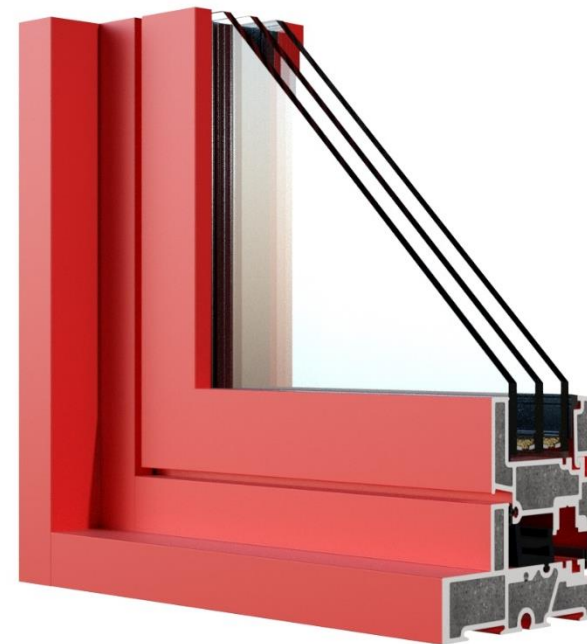
---

**GREAT FIBERGLASS WINDOWS CAN MAKE BIG BUILDINGS LESS EXPENSIVE TO BUILD**

**YOU CAN USE FIBERGLASS WINDOWS ON BIG BUILDINGS**

**FIBERGLASS WINDOWS CAN DRAMATICALLY IMPROVE A BUILDING'S THERMAL PERFORMANCE, AND REDUCE ENERGY NEEDS**

**CASCADIA'S PRICING AND LEAD TIMES HAVE NEVER BEEN BETTER**







# CASCADIA

WINDOWS & DOORS

[CASCADIAWINDOWS.COM](https://cascadiawindows.com)