

Appeal Board Decision #1682

What Does This Mean to Us?

BCBEC March 24, 2011



MORRISON HERSHFIELD

Appeal Board Decision #1682

- “It is the determination of the Board that both Articles 3.1.5.5. and 3.1.5.12. apply to combustible insulation in non-load-bearing exterior wall assemblies and the insulation must conform to the provisions of both Articles”
- This is contrary to BOABC interpretation 98-0012 and raises many questions about the allowability of many common construction practices.

Aggravating Factors

- BCAB considers wording, not intent
- Wording of relevant code Articles is awkward
- In BC, interpretation of code is left to individual Authorities Having Jurisdiction
- We no longer have a mechanism for creating and enforcing a common code interpretation that considers code intent and logic (we may be getting this).

Article 3.1.5.1

- Except as permitted by Sentences [\(2\)](#) to [\(4\)](#) and Articles [3.1.5.2.](#) to [3.1.5.21.](#), [3.1.13.4.](#) and [3.2.2.16.](#), a [building](#) or part of a [building](#) required to be of [noncombustible construction](#) shall be constructed with [noncombustible](#) materials.
- Some of the relevant exceptions include:
 - Minor Combustible Components
 - Combustible Glazing
 - Nailing Elements
 - Combustible Millwork
 - Combustible Interior Finishes
 - **Combustible Insulation and its Protection**
 - Combustible Ducts
 - Combustible Piping Materials
 - Combustible Plumbing Fixtures
 - Wires and Cables
 - Non-metallic Raceways

Article 3.1.5.12

- Permits the use of **combustible insulations** provided that they are protected from the inside by a “thermal barrier”
- Type of thermal barrier depends on type and Flame Spread Rating of the insulation (example)
 - a) 12.7 mm gypsum board, mechanically fastened independent of the insulation and with all joints either backed or taped and filled,
 - b) lath and plaster, mechanically fastened independent of the insulation,
 - c) masonry or concrete not less than 25 mm thick, or
 - d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, to a defined temperature rise

Article 3.2.8.3

- Addresses protection of foamed plastic insulations from the exterior.
- Applies to all buildings > 3 storeys including combustible construction.
- Required Protection
 - a) concrete or masonry not less than 25 mm thick, or
 - b) noncombustible material that complies with the criteria for testing and the conditions of acceptance stated in Sentence (2) when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials.”

Article 3.1.5.5

- Added to NBC in 1990 code cycle to permit the use of **combustible claddings** such as EIFS in non load bearing exterior walls.
- Title changed in 1995 NBC to *Combustible Components for Exterior Walls*.
- Allows the use of wall assemblies with combustible components where the **assembly** is tested to CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies.”
- does not provide alternatives or exceptions to this test.

CAN/ULC S134



- Test of an **assembly**, not a test done on insulation
- In this test where the exterior of wall assembly is exposed to heat and flame through a “window” opening
- Flame spread in and on wall must be no more than 5m above the opening
- Heat flux on wall must meet defined limits.
- Typically done on proprietary panel systems such as EIFS, IMP, composite panels etc.
- Currently no book of tested “architectural” assemblies

What is extent and scope of BCAB ruling?

- When is a S134 test required?
 - When a cladding system is not “non-combustible”
 - When combustible insulation not protected on the outside?
 - If there is combustible insulation anywhere else in a wall?
 - If there are other combustible components permitted by subsection 3.1.5.
 - What about in load bearing walls?

BEP Commitments

- Control of heat, air, vapour and precipitation
- Energy requirements of part 10
- We use a lot of combustible materials to meet these goals

SCHEDULE D

COMMITMENT FOR BUILDING ENVELOPE PROFESSIONAL REVIEW

- Notes:
1. This letter to be submitted prior to issuance of a *building permit*.
 2. This letter is endorsed by the Architectural Institute of British Columbia and the Association of Professional Engineers and Geoscientists of BC.
 3. In this letter the words in *italics* have the same meaning as in the British Columbia Building Code.

To: _____
Name of registered professional signing for 'Architectural' items of Schedule B-1 and B-2 letters (Print)

Address (Print) _____

RE: _____
Address of Project (Print)

The undersigned Building Envelope Professional as defined herein has been retained with respect to the above referenced project, and gives a commitment of responsibility for Building Envelope Professional design review and enhanced *field review* for components and assemblies outlined as acceptable solutions in Sections 5.4, 5.5 and 5.6 in Part 5 of Division B, of the British Columbia Building Code, and as the Building Envelope Professional in their professional discretion considers to be necessary, for the project designed by,



ASHRAE STANDARD

Energy Standard for Buildings Except Low-Rise Residential Buildings

I-P Edition

See Appendix F for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, the IESNA Board of Directors, and the American National Standards Institute.

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ISSN 1041-2336

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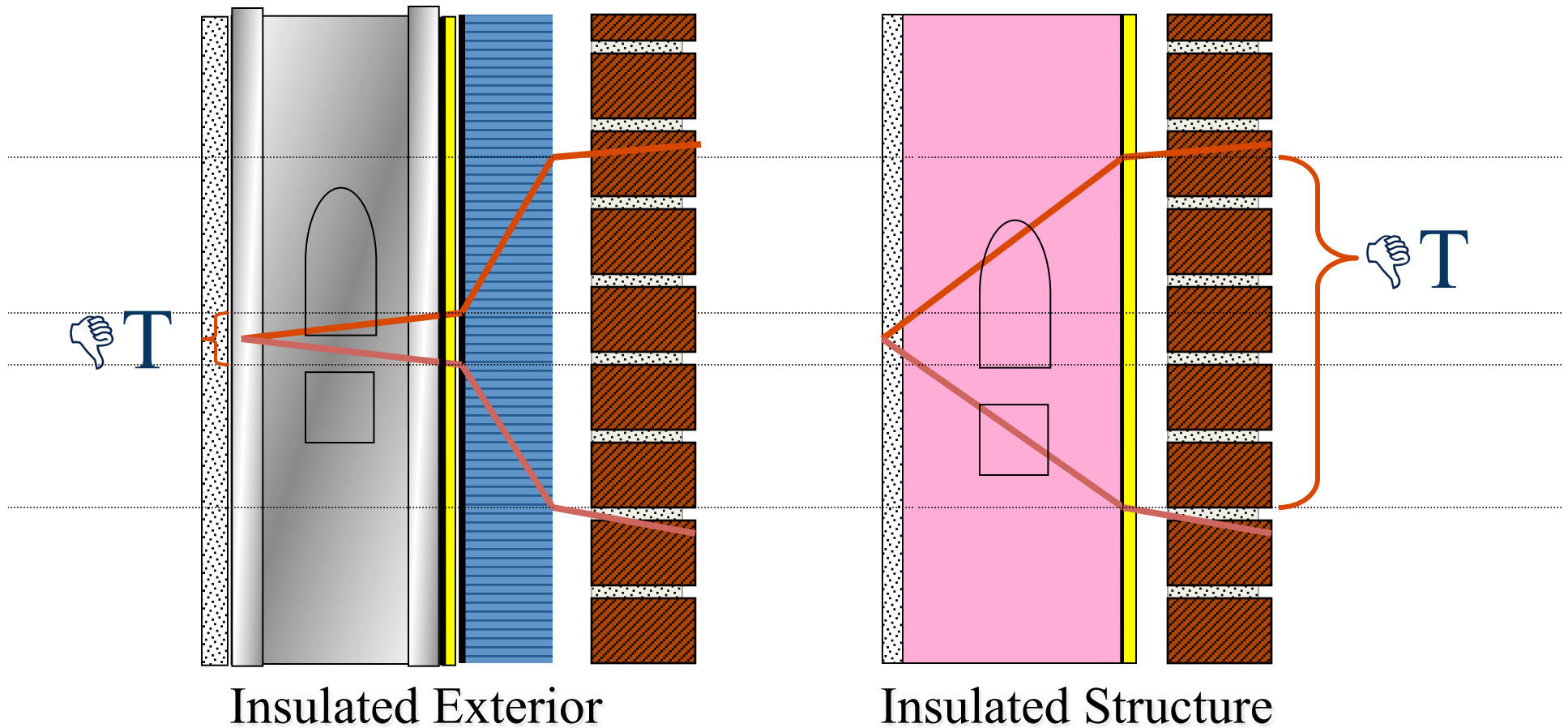
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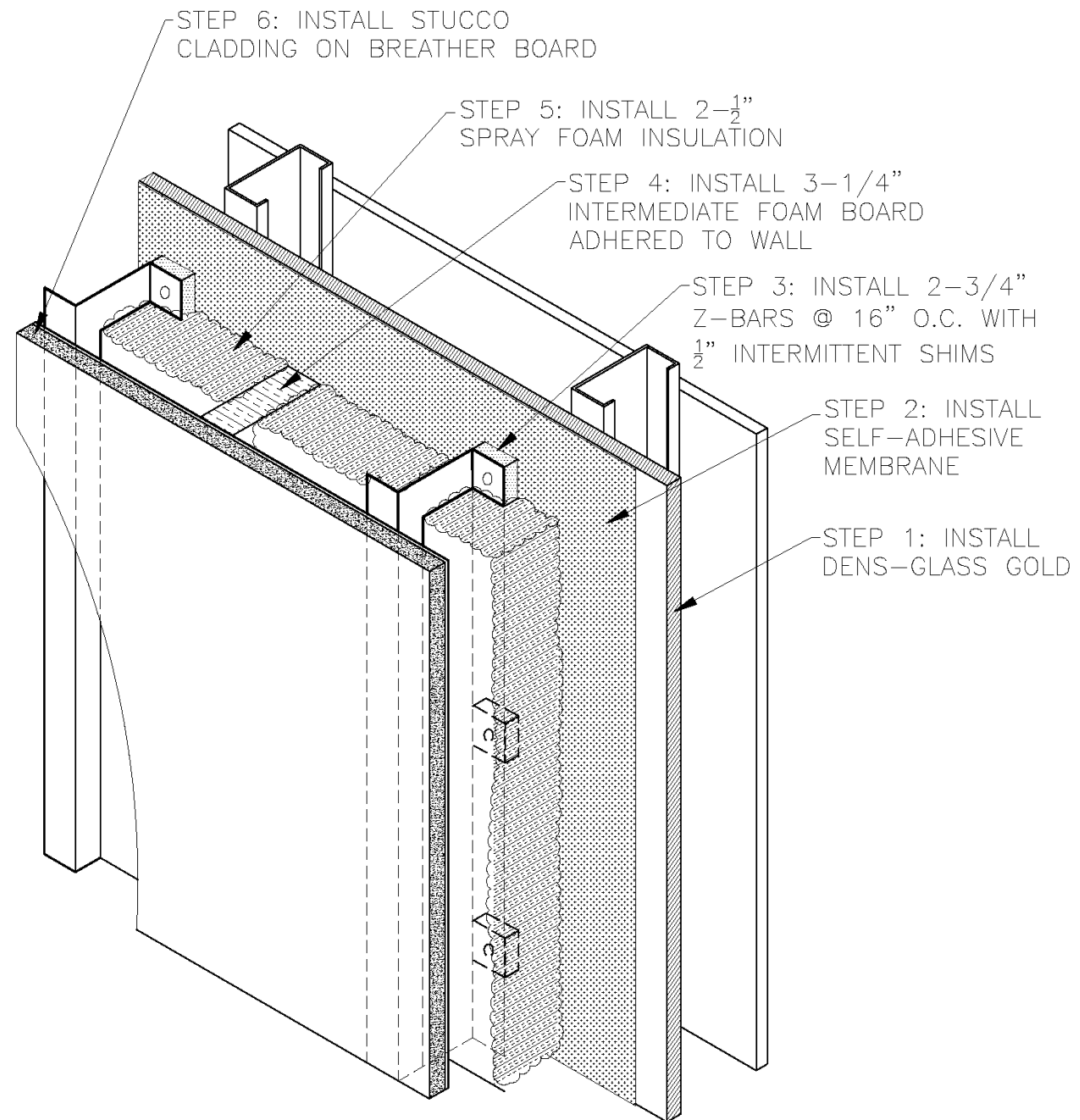


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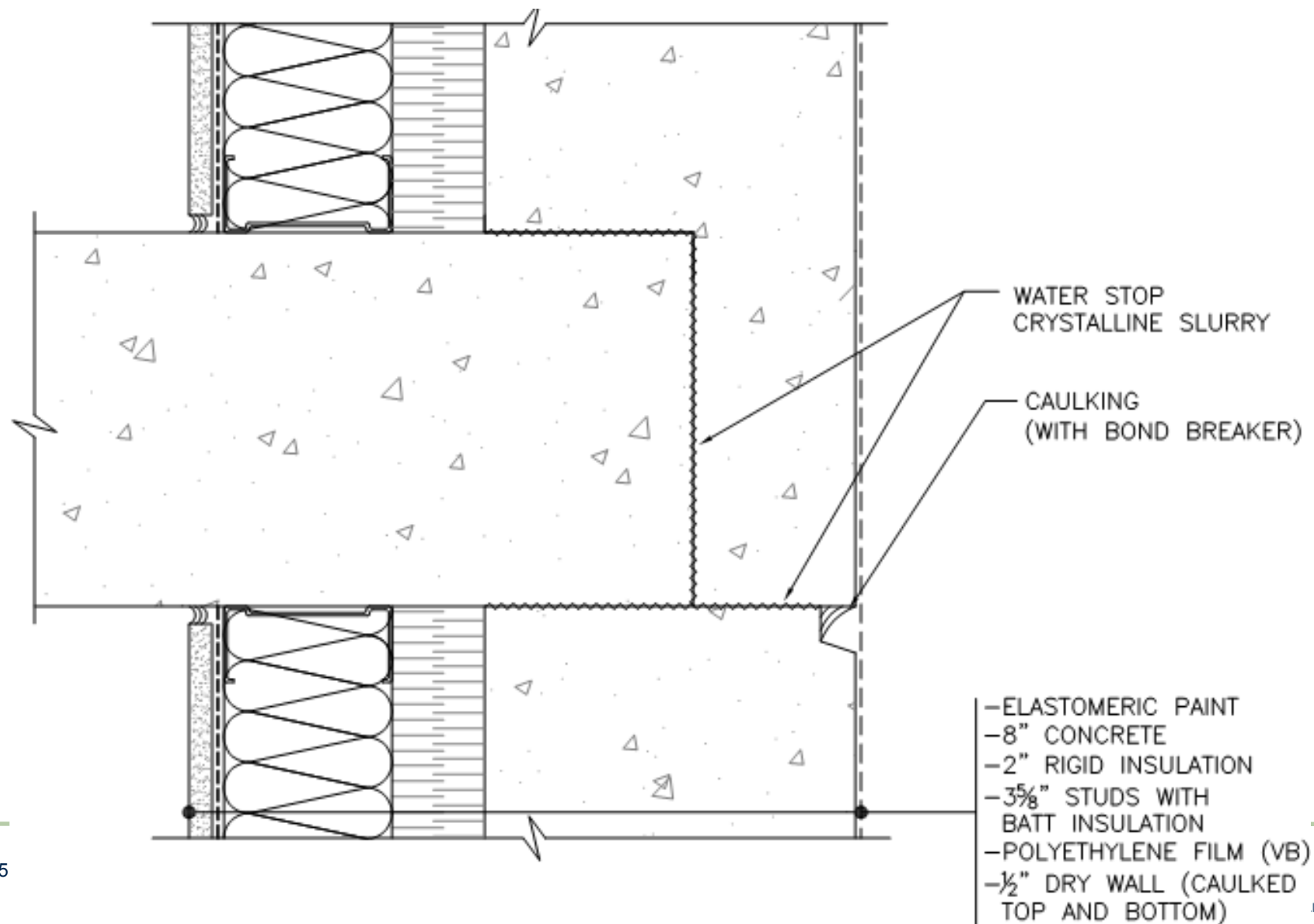
Thermal Gradient













Insulation Added to Window Wall Backpan





**But article 3.1.5.5 is entitled
“Combustible Components”
not
“Combustible Insulation”**

3.1.5.2 Minor Combustible Components

- paint
- mastics and caulking materials, **including foamed plastic air sealants**, applied to provide a seal between the major components of exterior wall construction,
- fire stop materials tubing for pneumatic controls provided it has an outside diameter of not more than 10 mm,
- adhesives, [vapour barriers](#) and sheathing papers,
- electrical outlet and junction boxes,
- wood blocking within wall assemblies intended for the attachment of handrails, fixtures, and similar items mounted on the surface of the wall, and
- similar minor components

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- Combustible vertical glazing
 - Combustible window sashes and frames
 - Wood nailing elements for the attachment of interior finishes
 - Combustible millwork, including interior trim, doors and door frames, show windows together with their frames, aprons and backing, handrails, shelves, cabinets and counters,
 - Combustible interior wall finishes
 - Gypsum board with a tightly adhering paper

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- combustible ducts, including plenums and duct connectors
 - Combustible duct linings, duct coverings, duct insulation, vibration isolation connectors, duct tape, pipe insulation and pipe coverings
 - combustible piping and tubing and associated adhesives
 - Combustible sprinkler piping
 - Combustible plumbing fixtures, including wall and ceiling enclosures that form part of the plumbing fixture
 - optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes

What are not mentioned

- Self-adhesive bituminous membranes used for air, vapour and water protection
- Spray applied membranes used for air, vapour or water protection

Where do we go from here?

- We need a set of rules that is
 - Rational and practical
 - Consistent across AHJs
 - Allows the safe use of material we rely on
- Options
 - Code change (BCBC/ NBC)
 - Explanation of intent to AHJs
 - Acceptance of 3.2.3.8 in lieu of S134 (as per Ontario)

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