WELCOME

FCIA Presentation: Firestopping and the Building Codes May 2, 2013

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Chief Building Official
City and County of Broomfield

Agenda

- My background
- IBC definitions
- Firestopping history
- Firestopping inspections
- Construction issues

My Background

- 14 years residential and commercial construction
- 6 years plans analyst and inspector at City of Louisville
- 13 years plans analyst and inspector at City and County of Broomfield – promoted to Chief Building Official 2 ½ years ago

I'm a Code Geek

- Active member of the Colorado Chapter ICC Code Change Committee
- Authored 33 code change proposals for IBC and IRC - successful on 23
- Served on the ICC General Code Change Committee for 5 code change cycles
- Served on the ICC Fire Safety Code Change Committee for the past 3 code change cycles

2012 IBC Definitions

- Penetration firestop – a through-penetration firestop or membrane-penetration firestop

IBC Definitions

Through penetration firestop system

- An assemblage consisting of a fire-resistance-rated floor, floor-ceiling, or wall assembly,
- One or more penetrating items passing through the breaches in both sides of the assembly and the materials or devices, or both,
- Installed to resist the spread of fire through the assembly for a prescribed period of time

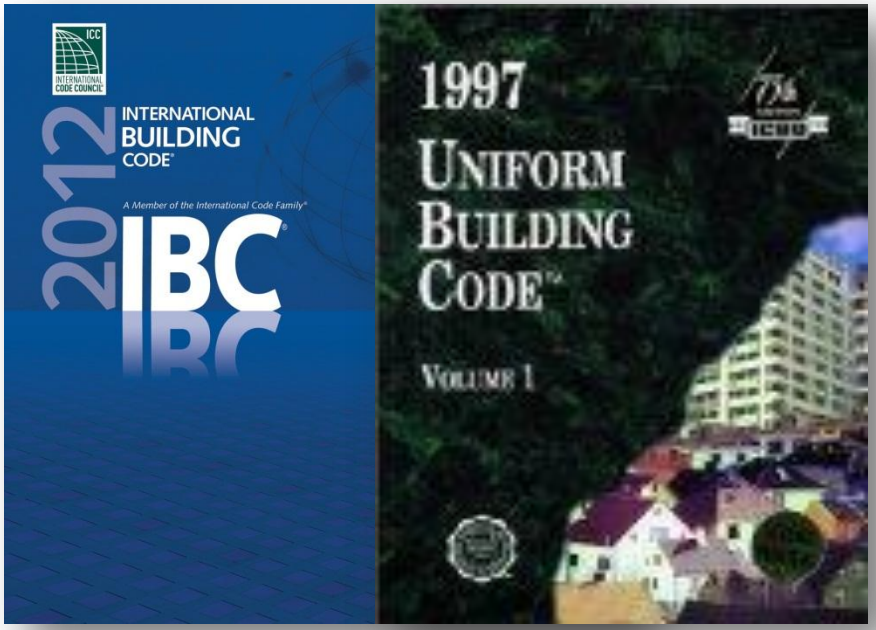
IBC Definitions

Membrane penetration firestop system

- An assemblage consisting of a fire-resistance-rated floor, floor-ceiling, or wall assembly,
- One or more penetrating items passing through the breach in one side of the assembly and the materials or devices, or both,
- Installed to resist the spread of fire through the assembly for a prescribed period of time

History of firestopping in the codes

- Uniform Building Code (UBC)
- International Building Code (IBC)



1982, 1985, 1988 UBC

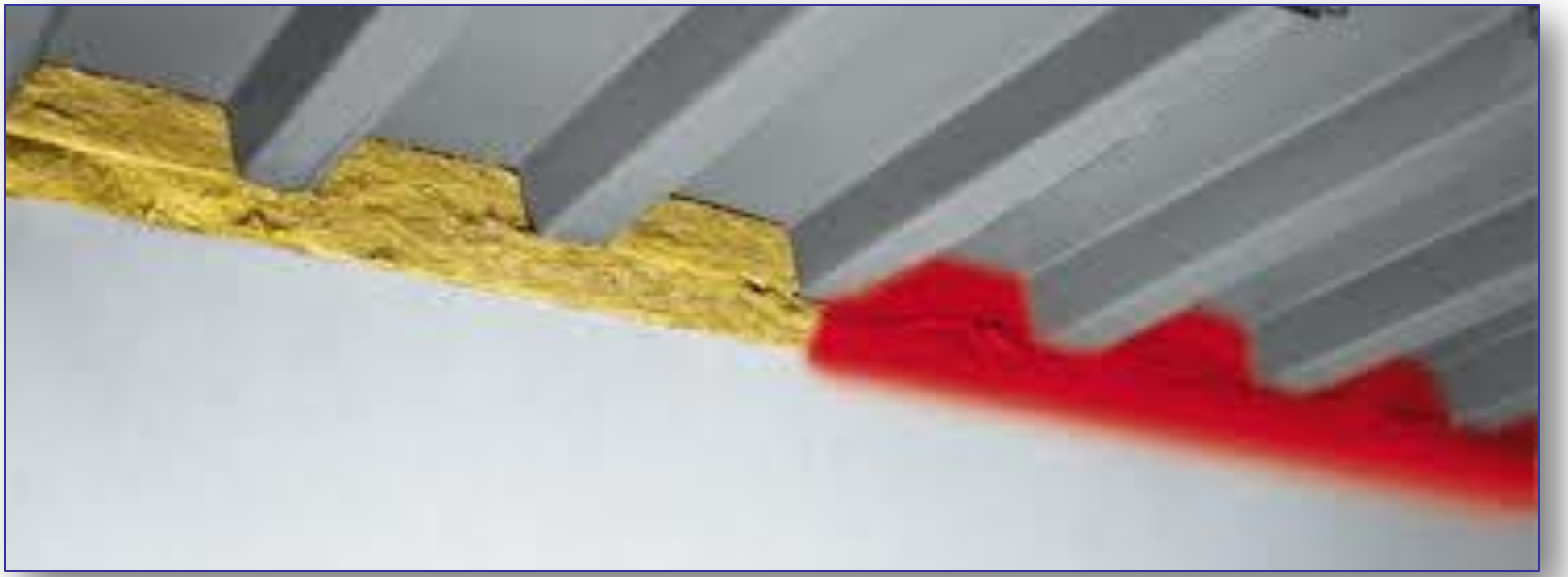
- Required penetrations to be firestopped
  - Required firestopping to be an approved material securely installed and capable of maintaining integrity when tested per UBC Standard 43-1
- UBC Standard 43-1 fire tests of building construction and materials based on standard methods of ASTM E119

1991 UBC

- Added definitions of F and T ratings
- Changed language from fire stop to fireblock
- Fireblocking is also used as basic requirement for combustible construction
- Added UBC Standard 43-6 Fire tests of through-penetration firestops
- Added new section for requirements of through-penetration firestops

1994 UBC

- Created consolidated new Chapter 7 – Fire-Resistant Materials and Construction – combined requirements from Chapters 43 and 17
- Construction joints in fire-resistive assemblies need to be protected with approved assembly to match fire rating of assembly and be tested in accordance with UBC Standard 7-1 – same as earlier version UBC Standard 43-1
- Changed language from fireblock back to firestops



1997 UBC

- Added definition of penetration firestop system
  - An assemblage of specific materials or products that are designed, tested and fire-resistive in accordance with UBC Standard 7-5 to resist, for a prescribed period of time, the passage of fire through penetrations
- Membrane and through penetrations of walls and floor ceilings or roof ceilings now require penetration firestop systems

1997 UBC

- Added section titled Fire-Resistive Joint Systems
- Need to be tested in accordance with UBC Standard 7-1

2000 IBC

- Penetrations need to have approved firestop system and be tested as per ASTM E814 and have F and T ratings
- Through-penetration fire stop systems installed and tested per ASTM E 814
- Fire-resistant joint systems tested per UL 2079

2003 IBC

- Through-penetration firestop systems tested in accordance with ASTM E814 or UL1479
- Fire-resistive joint systems can meet ASTM E1966 or UL 2079 testing

2006 IBC

- Added sections to require penetrations in smoke barriers and fire-rated joint systems in smoke barriers to be tested to UL 2079 for air leakage

2009 IBC

- Additional testing requirements added to section for penetrations in smoke barriers – adding allowable air leakage rates
- Fire-resistant joint systems and exterior walls – deleted the word “material” and now only allows approved joint system
- Added section on fire-rated floor systems intersecting with non-rated exterior curtain walls

2012 IBC

- Added definition and requirements for L ratings
  - Air leakage rating of a through penetration firestop system or fire-resistant joint system when tested per UL 1479 or UL2079 for smoke barriers
- Added exception to membrane penetration section
  - Allows horizontal membrane to be interrupted by double-wood top plate of fire-rated wall as long as penetrations are firestopped

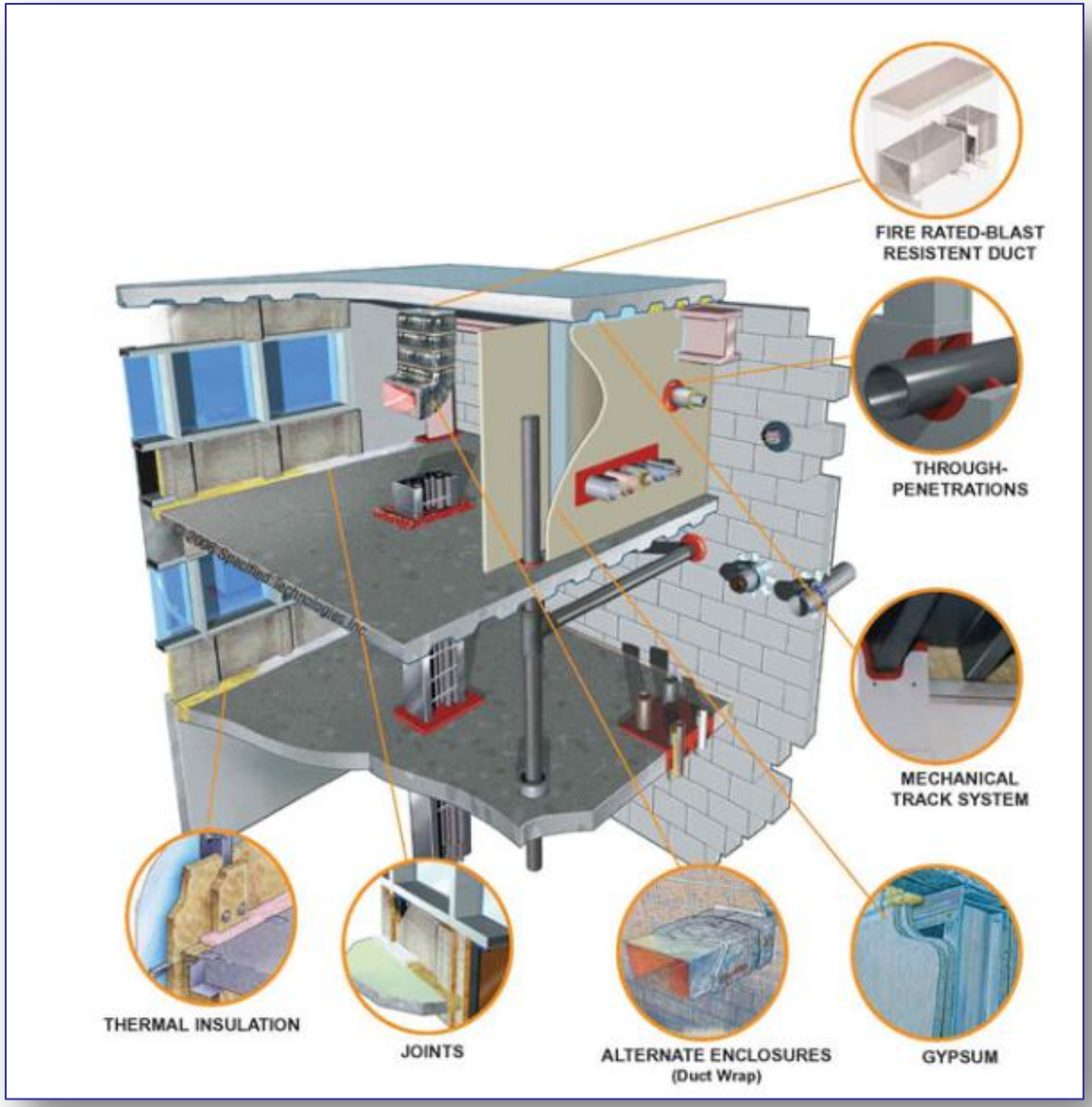
2012 IBC

- Added requirement for special inspection of firestop systems in high-rise buildings or buildings in risk category III or IV
  - Hospitals, large schools, fire, police stations, and so forth
  - No exception for small jobs
- Approved inspection agency in accordance with ASTM E2174 for firestops and ASTM E2393 for fire-resistant joint systems

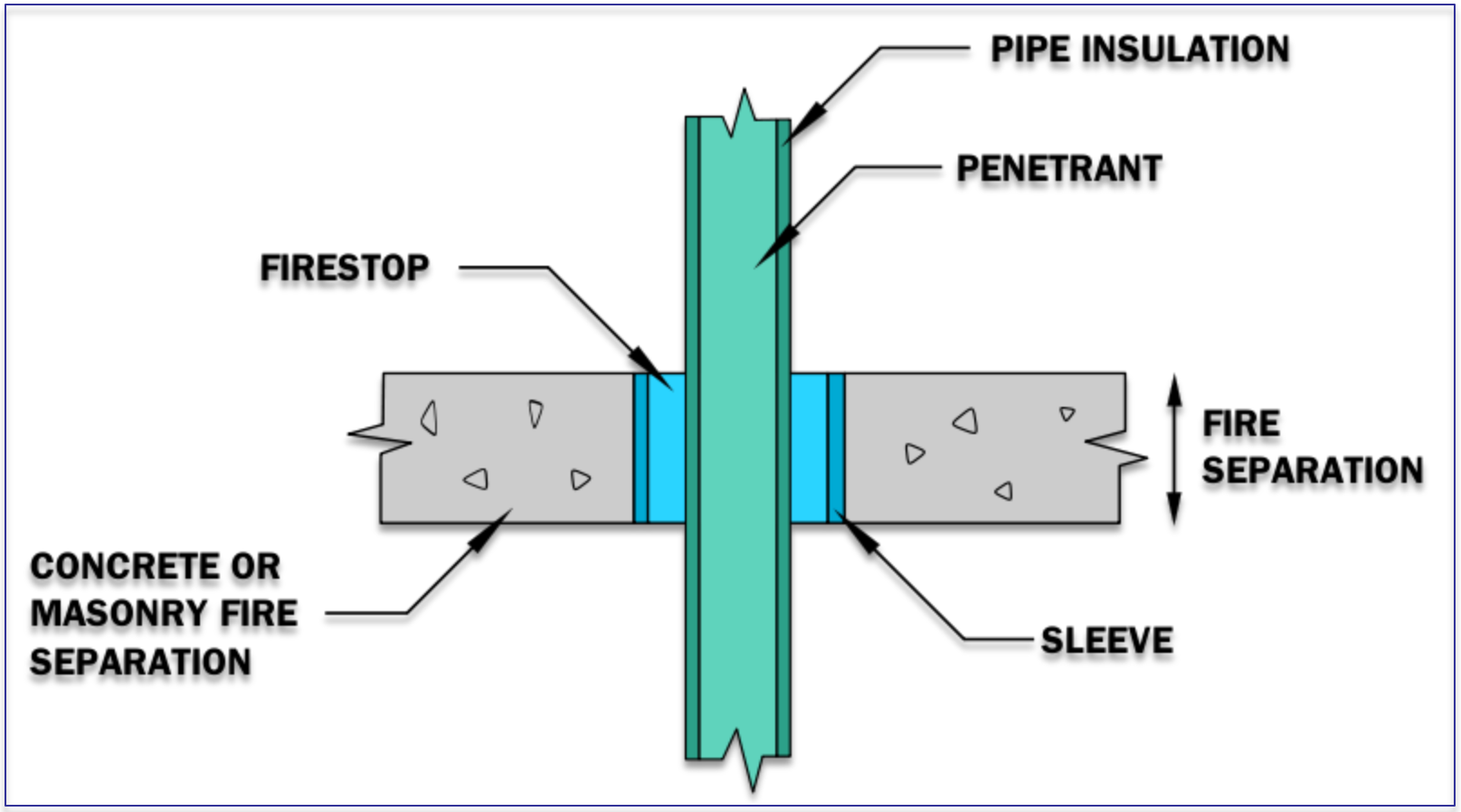
2012 IBC

- Added requirement for F rating for joint systems at fire-rated floors and exterior curtain walls
- Added exception on how to deal with vision glass in exterior curtain walls that extend to floor level

Importance of requiring annular space inspections


FIRE RATED-BLAST RESISTENT DUCT
THROUGH-PENETRATIONS
MECHANICAL TRACK SYSTEM
THERMAL INSULATION
JOINTS
ALTERNATE ENCLOSURES (Duct Wrap)
GYPSUM


Illegal pipe penetration "firestops" made of stuffed rockwool. Rockwool is OK to use as packing to then hold a firestop product, as a component in a bounded system that follows a certification listing. On its own, however, whether it has a good flamespread rating or not, it has no back-up as a stand-alone firestop. On its own, it provides no impediment to smoke migration and can be expected to be dislodged in a real fire.
This one "looks" OK.


PIPE INSULATION
PENETRANT
FIRESTOP
FIRE SEPARATION
CONCRETE OR MASONRY FIRE SEPARATION
SLEEVE

Inspections

City & County of Broomfield inspection process

- Firestop submittal
- Firestop installation contractors
- Annular space inspections

Type VA versus Type IIA construction and firestopping issues

Questions

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