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

Tim Pate
Chief Building Official
City and County of Broomfield
• My background
• IBC definitions
• Firestopping history
• Firestopping inspections
• Construction issues
• 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
• 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
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
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 firestoppers
- Added new section for requirements of through-penetration firestoppers
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
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 flame spread 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.
City & County of Broomfield inspection process

- Firestop submittal
- Firestop installation contractors
- Annular space inspections
Type VA versus Type IIA construction and firestopping issues
Tim Pate
Chief Building Official
City and County of Broomfield
tpate@broomfield.org
Office: 303-438-6373