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Canada

CODES CANADA

Canadian Regulation and Firestop

National Building Code 2020

30 September 2020

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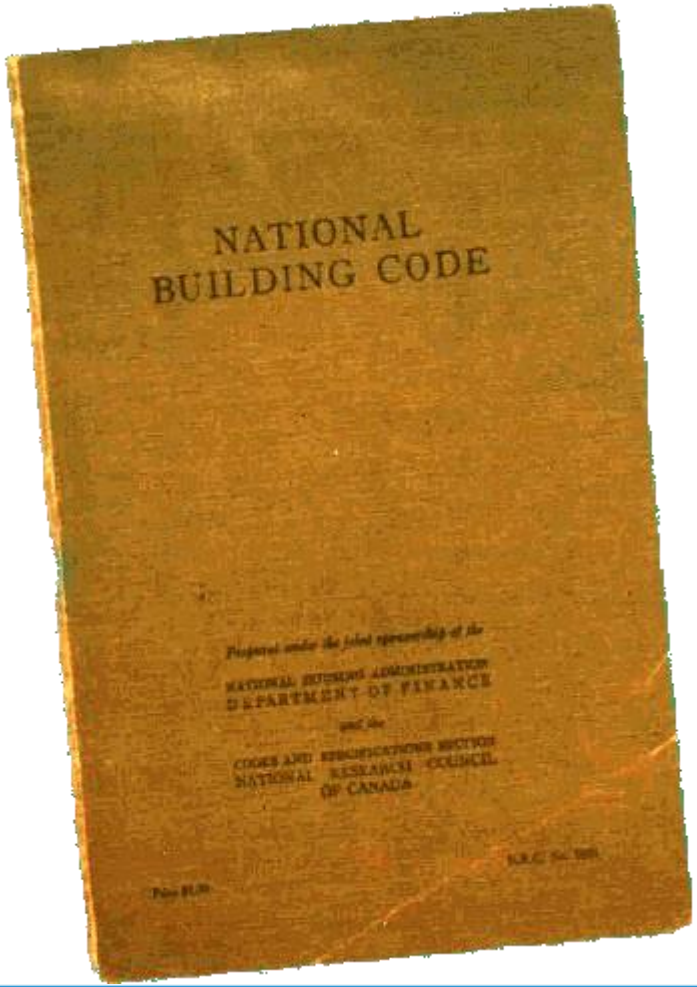
Outline

- National Model Codes
- Codes development system
- Firestop requirements
- Summary of changes
- Outstanding issues

History!

- 1937
- First edition of the National Building Code: 1941

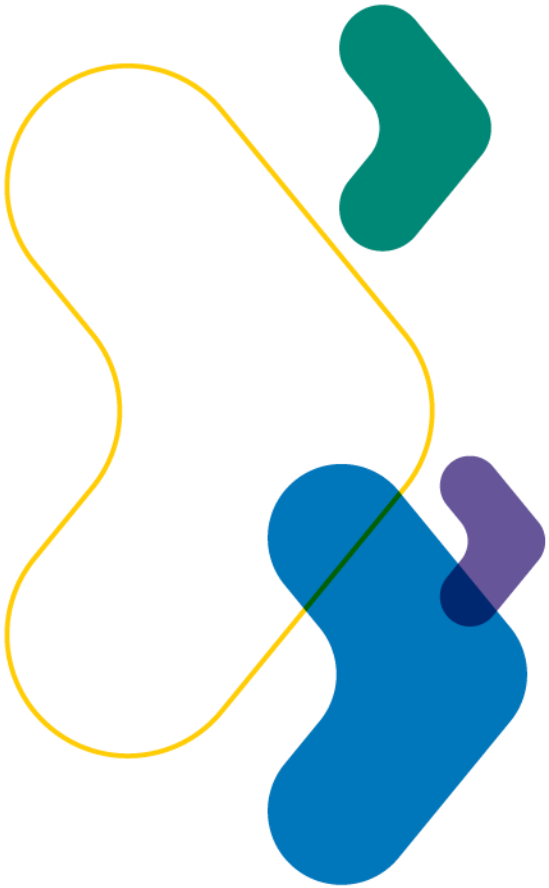


Today's codes & guides

- 50+ Codes published since 1941
- 2015 latest editions of 4 codes
- Paper and electronic format ($$$), **free web access**
- 3 Guides, supplements and commentaries
  - Structural Commentaries (User's Guide–NBC 2015: Part 4 of Division B)
  - Illustrated User's Guide–Part 9 NBC 2015, Housing and Small Buildings
  - User's Guide–National Energy Code of Canada for Buildings 2015 and 2017
- Codes seminar videos (**free web access**) and handbook

National collaboration

- Over 80 years of collaboration and partnership between
  - Provinces and Territories
  - National Research Council (NRC)
- Canadian Commission on Building and Fire Codes (CCBFC)
  - Provincial/Territorial Policy Advisory Committee on Codes (PTPACC)

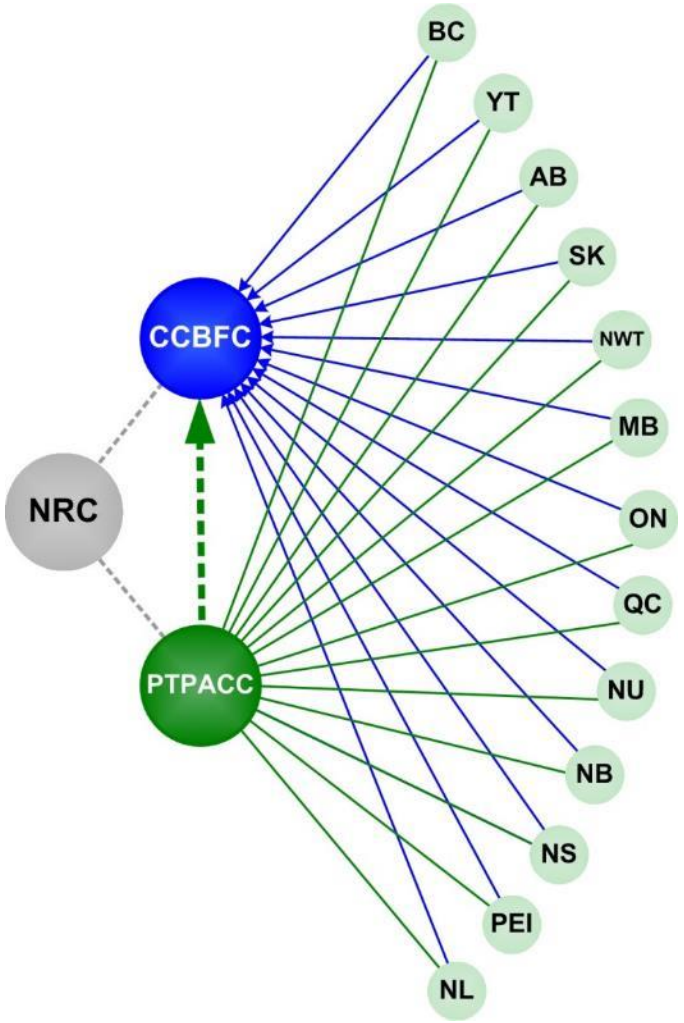


The coordination

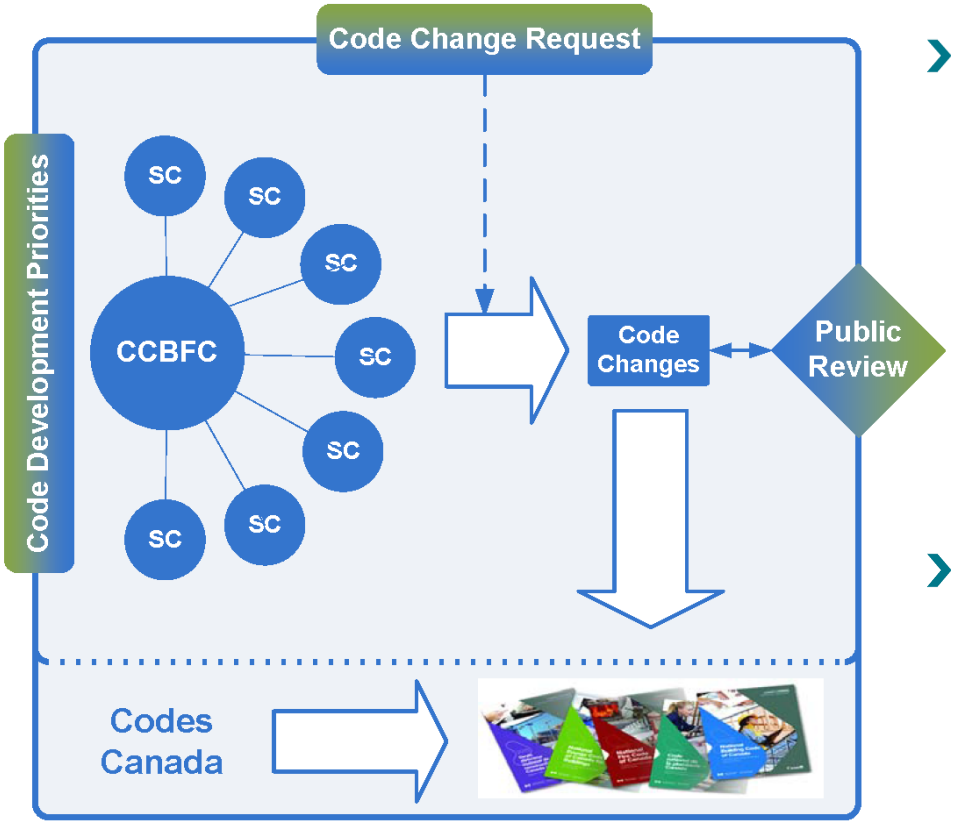
- **Independence**
- **Balance**
- **Consensus**

- Expertise
- Evidence
- Neutrality

- **Legislative authority**
- **Policy goals**

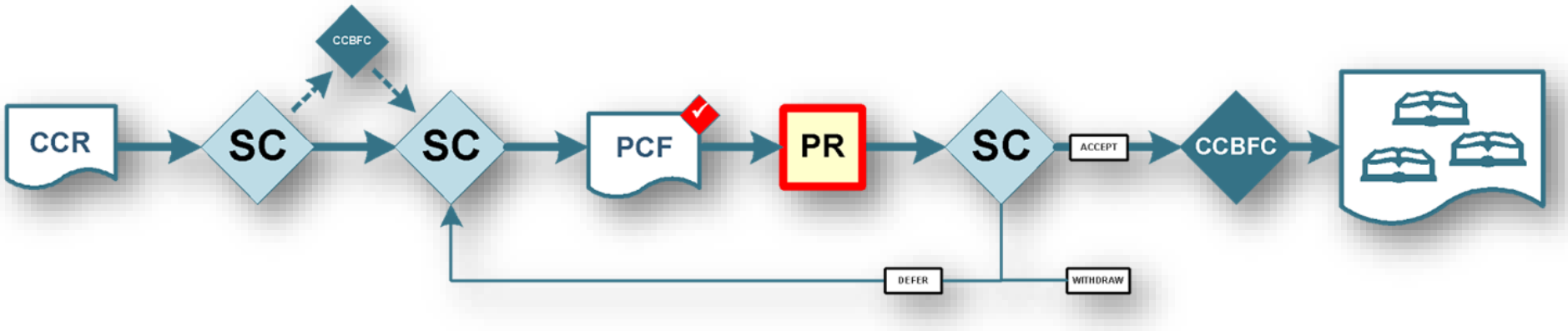


Entry points



- Entry points for code users
  - Submit requests
  - Submit comments
  - Participate in meetings
- Additional entry point for Provinces and Territories
  - Advise CCBFC

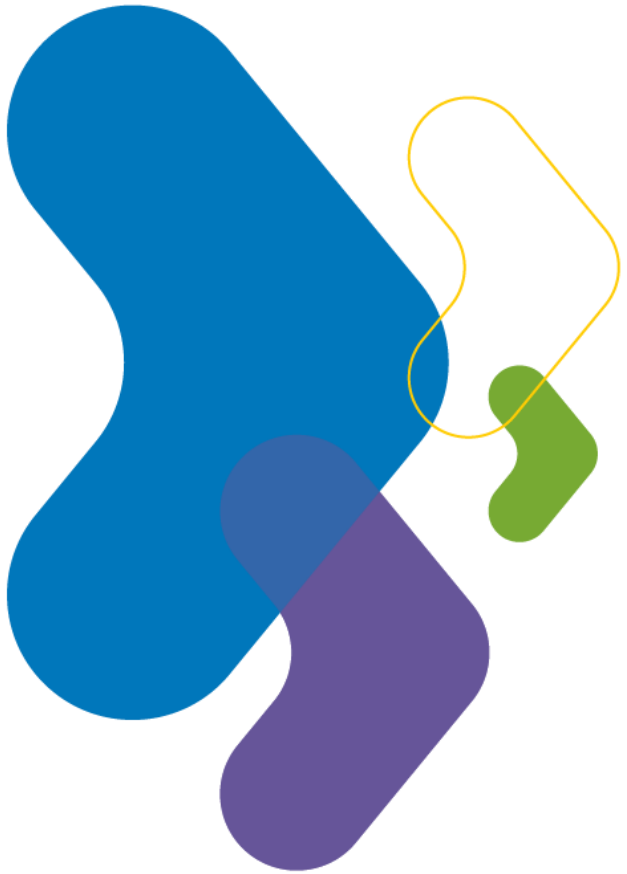
How to participate



- CCR: code change request
- SC: standing committee
- PCF: proposed change form
- PR: public review

Consensus-based decision making

- Substantial agreement of members
- All opinions are considered and weighed



SMART regulation

A requirement must

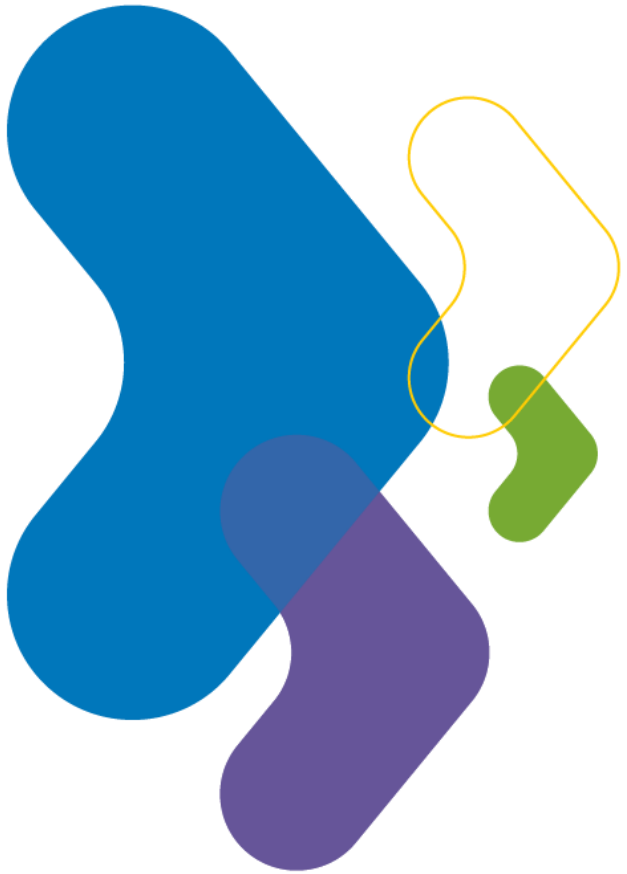
- Be within the scope of the code (objectives) 
- Identify a minimum acceptable solution 
- Address issues that need to be regulated 
- Be enforceable/measurable (at the time of construction) 
- Satisfy an impact analysis 

National Model Code structure

- Division A
  - Objectives, application (legislative)
- Division B
  - Acceptable solutions (technical)
  - For example–NBC includes
    - Parts 3 to 8 for large buildings (fire protection, structural design, envelope, HVAC, plumbing)
    - Part 9 for housing and small buildings
  - Alternative solutions
- Division C – Administrative requirements

Applicable objectives

- Safety
- Health
- Accessibility
- Protection of buildings
- Environment



How to understand the objectives

- An objective of the National Model Code is to *limit the probability* that
- As a result of the design… or construction of the building
- A person in or adjacent to the building…
- An unacceptable risk of… something happening!

How to read the objectives

3.1.9.1. Fire Stops

1) (…) penetrations of a *fire separation* or a membrane forming part of an assembly required to have a *fire-resistance rating* shall be

a) sealed by a fire stop (…) or

b) cast in place

3.1.9.1.(1) Fire Stops

[F03-OS1.2] [F04-OS1.3]
[F03-OP1.2] [F04-OP1.3]

F03 To retard the effects of fire on areas beyond its point of origin.
F04 To retard failure or collapse due to the effects of fire.

OS1.2 – fire or explosion impacting areas beyond its point of origin
OS1.3 – collapse of physical elements due to a fire or explosion

A brief history of firestopping

- NBC 1960
- The term *fire-stop* is used for the first time

- There is no requirement confirming **how** to do it!

- NBC 1970
- *Fire stop* becomes a defined term

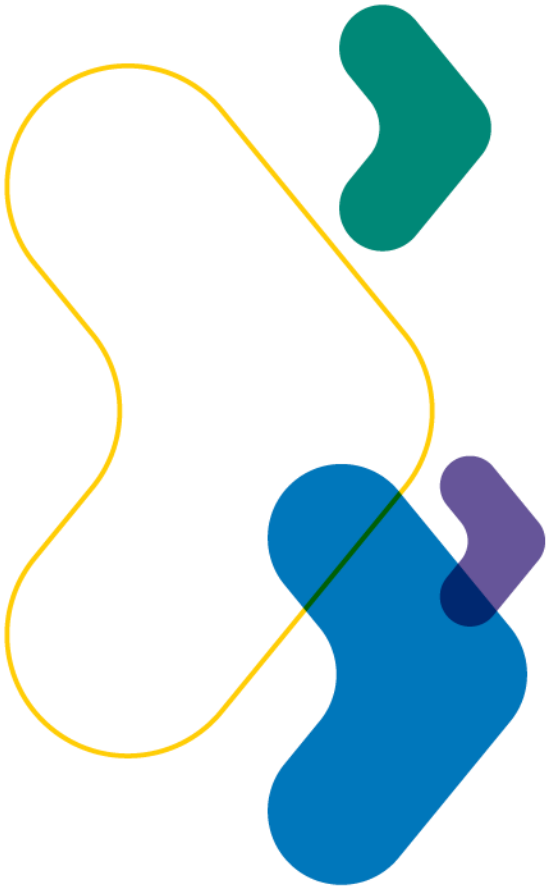
- *"…draft-tight barrier within or between construction assemblies that acts to retard the passage of smoke and flame."*

- Subsection on fire stopping requirements

A brief history of firestopping

- NBC 1980
- Clarification added where firestopping is required

- NBC 1985
- Major overhaul of the requirements; but, with minor revisions



A brief history of firestopping

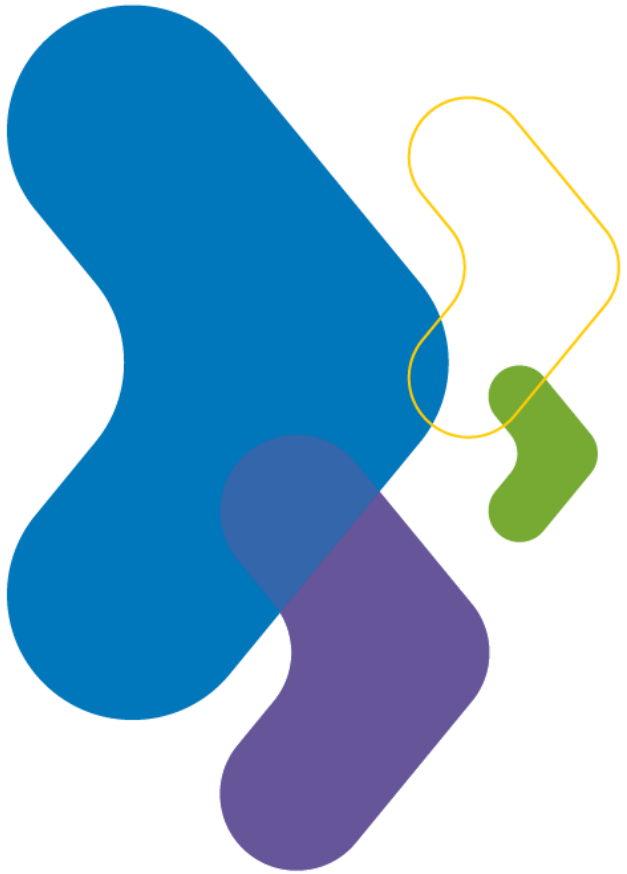
- NBC 1990
- All types of penetration in fire separation are identified
- Introduction of a Canadian standard to determine the F rating of the firestopping material in compliance with:

  - fire-protection rating of a closure
  - fire-resistance rating of an assembly

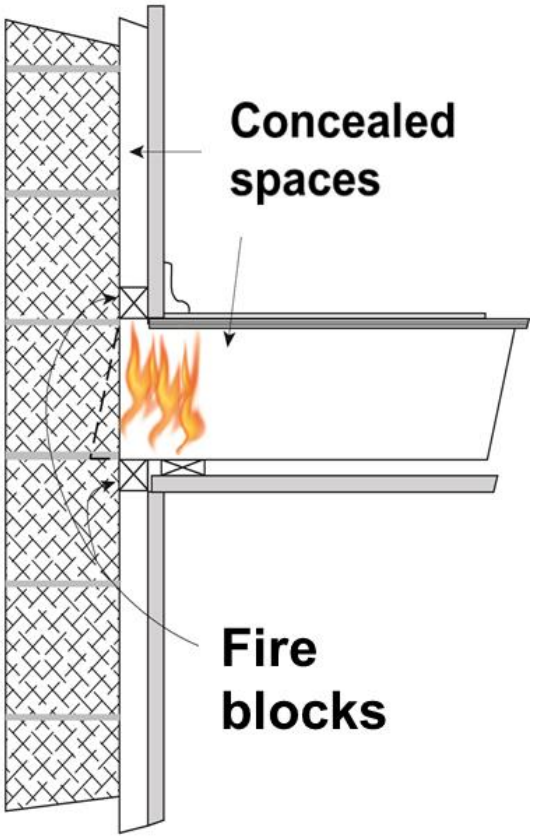
A brief history of firestopping

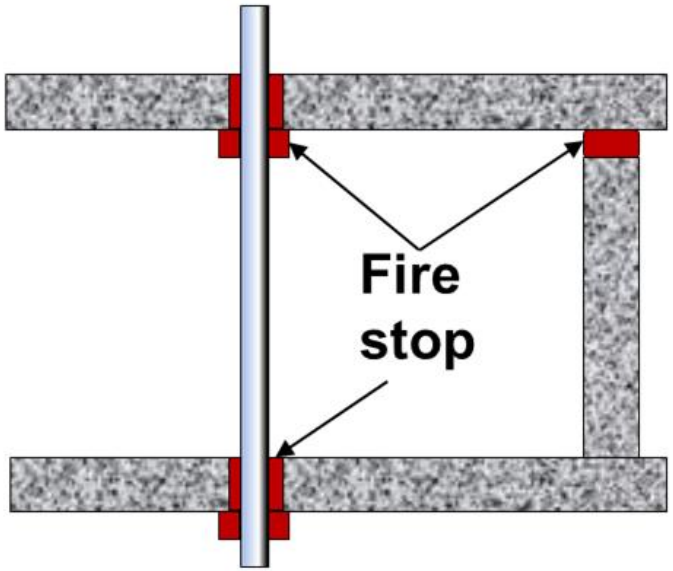
- NBC 1995→2010
- NBC 2010

  - New definitions
  - New ratings
  - Clarification of applications



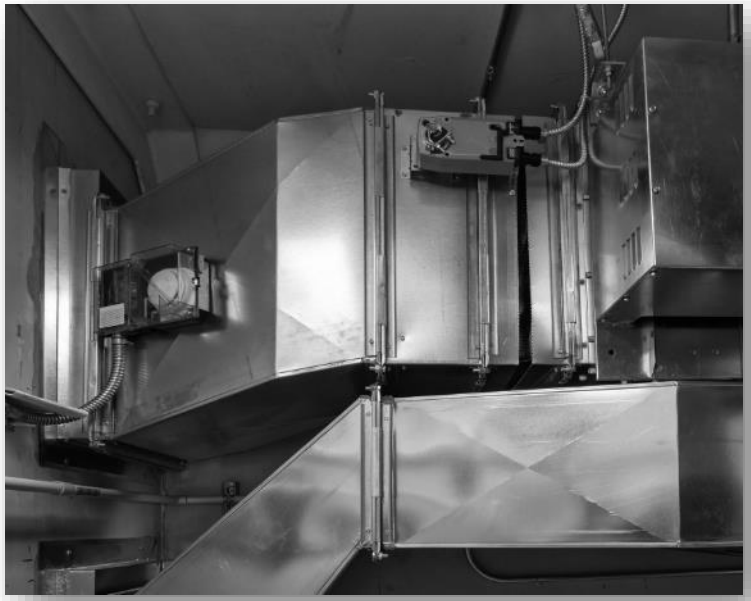
New definitions (2010)





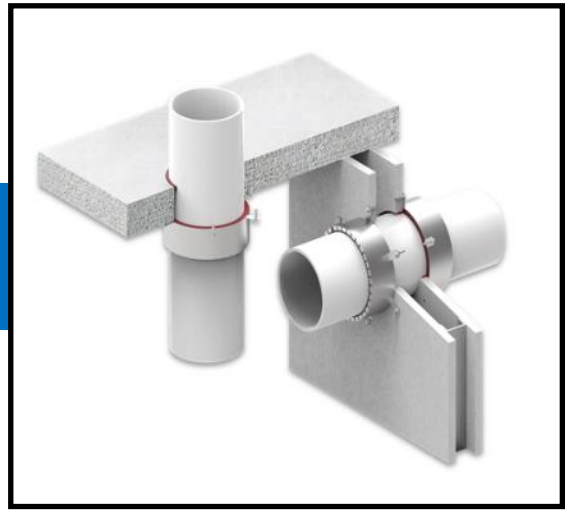
Rating of firestop (2010)

- CAN/ULC-S115, “Standard Method of Fire Tests of Firestop Systems”

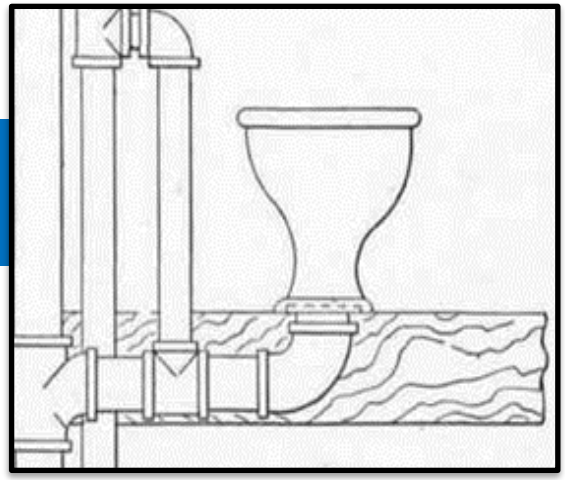


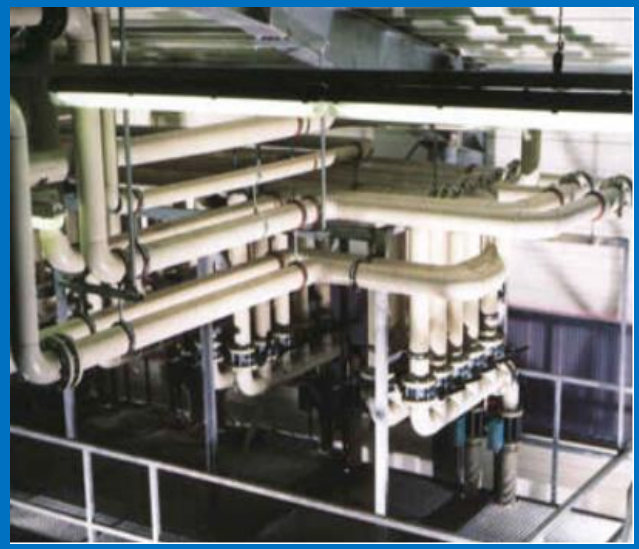
Applications clarification (2010)

Water distribution



Water closet





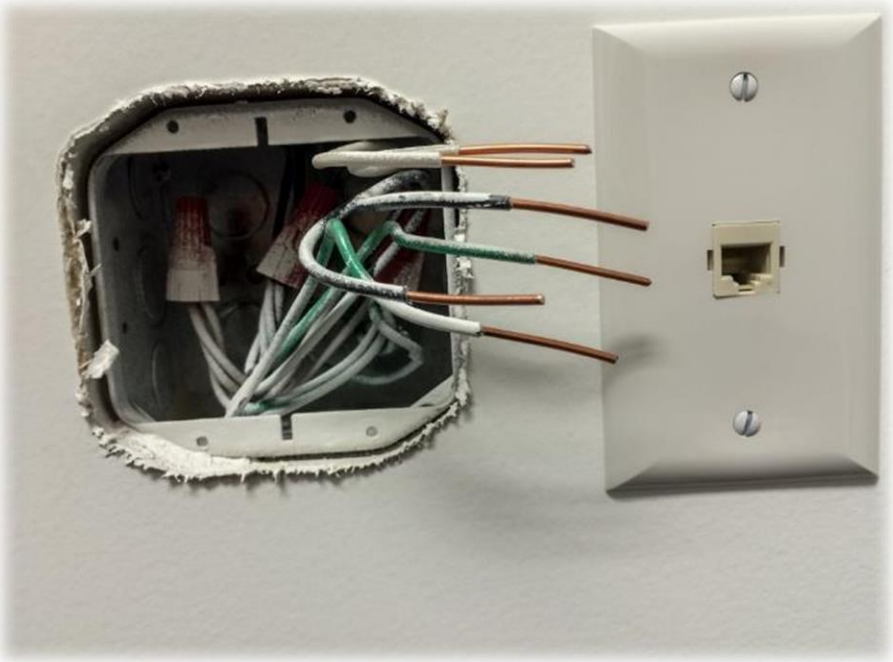
Polypropylene pipes

Summary–2010 Changes

- New definitions for firestop and fire block
- Qualification of penetration protection requirements
- Relaxations for penetrations in fire separations

Electrical outlet boxes (2015)

- CAN/ULC-S112.2, “Standard Method of Fire Test of Ceiling Firestop Flap Assemblies”



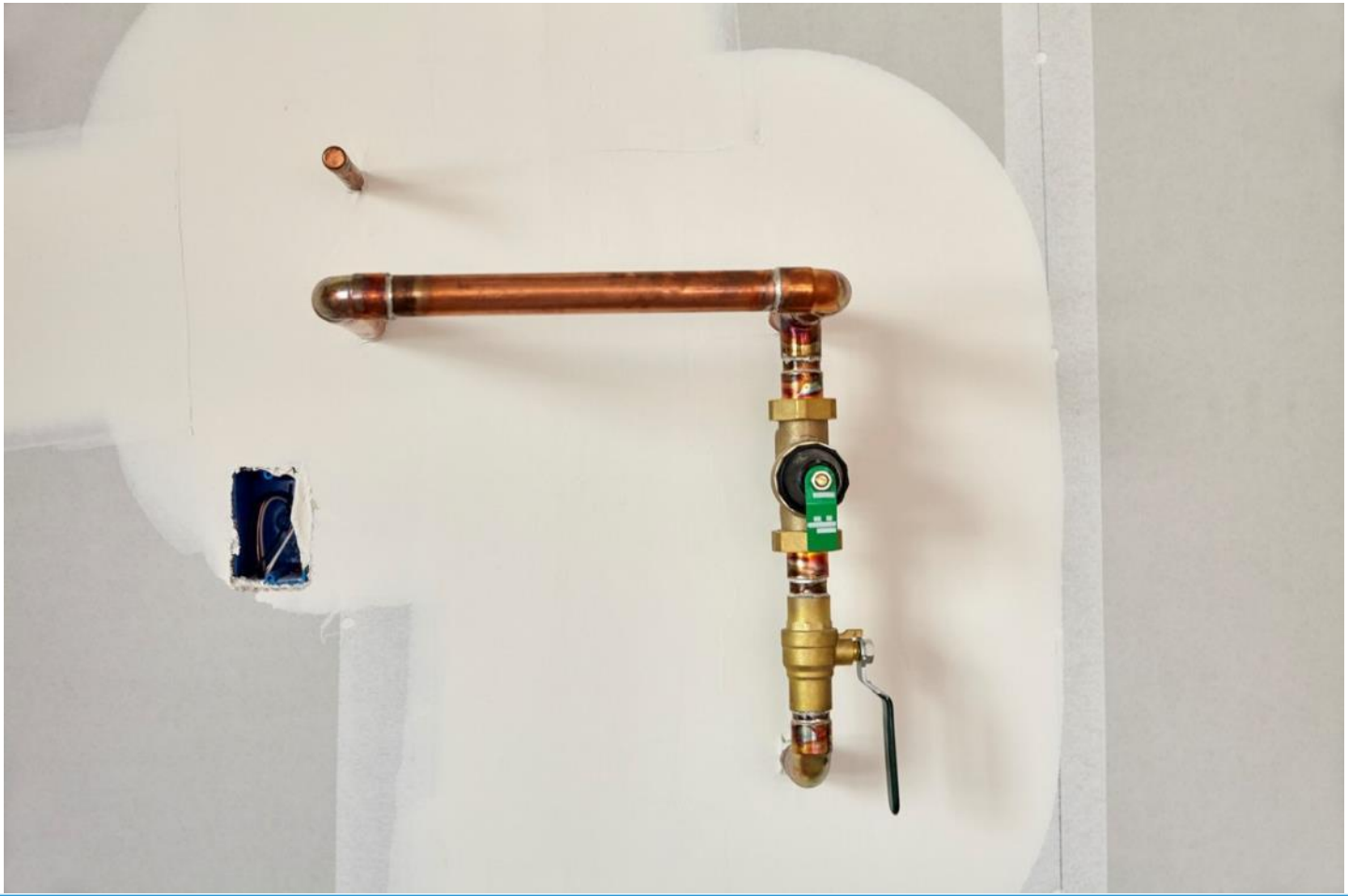
Fire block (2015)

- Qualification of fire block materials:
  - ASTM D5456, “Evaluation of Structural Composite Lumber Products”
- Midrise combustible construction and horizontal concealed spaces

Summary–2015 Changes

- Clarification for the protection of outlet boxes
- New standard for the design requirement of firestop flaps
- New wood products accepted as fire block materials
- Fire block required in horizontal concealed spaces for 5- and 6-storey combustible buildings

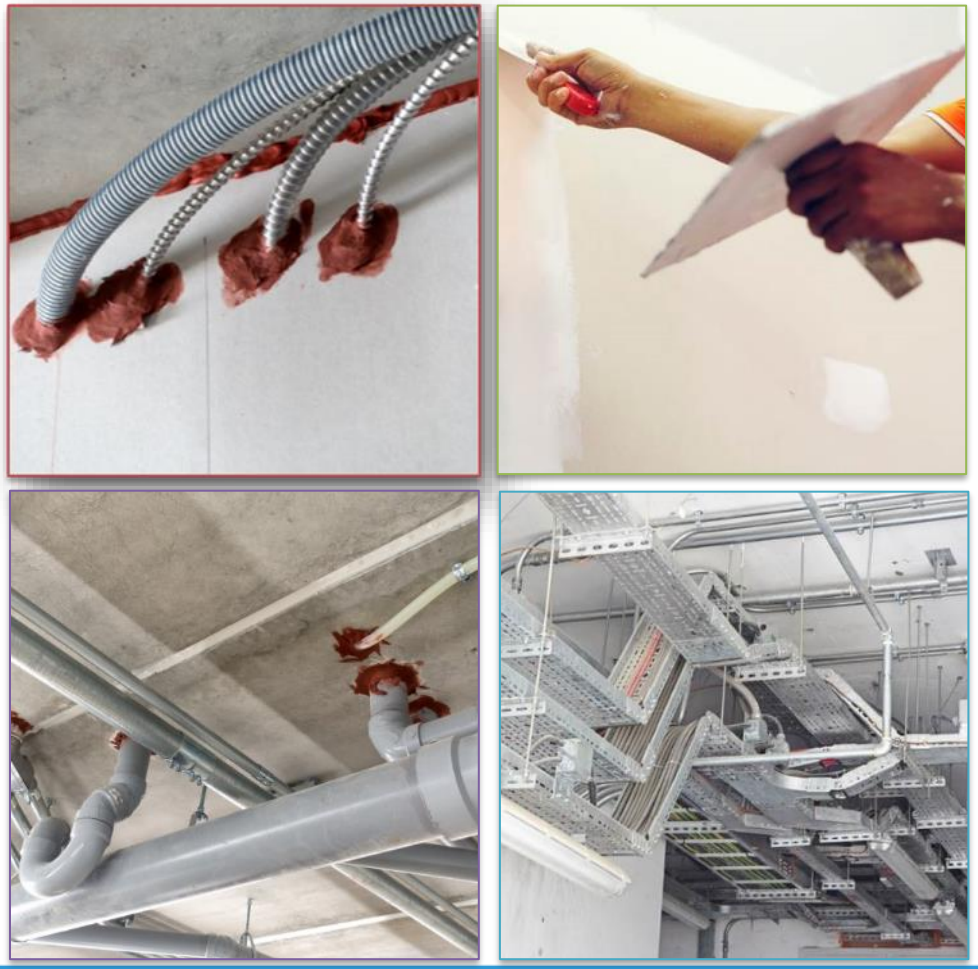
Combustible piping penetrations (2020)



Damage to fire-rated elements

- National Fire Code
- Firestop

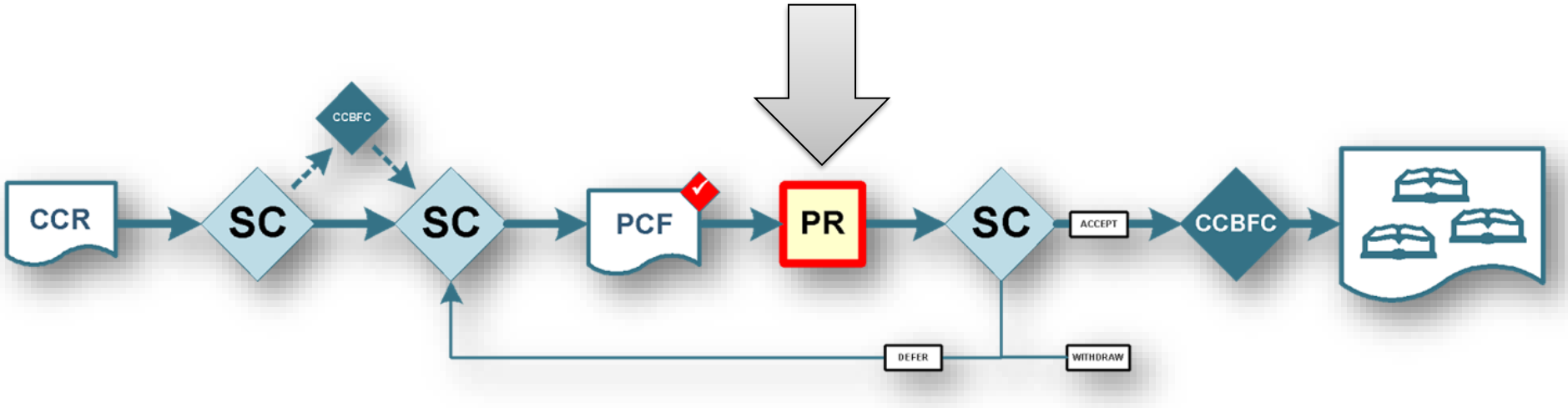
Penetrations (2020)



Summary–2020 Changes

- Clarification for combustible piping penetration
- Maintain the integrity of a fire separation
- Clarification of application
- Consistency between Parts 3 & 9

Where are we now?



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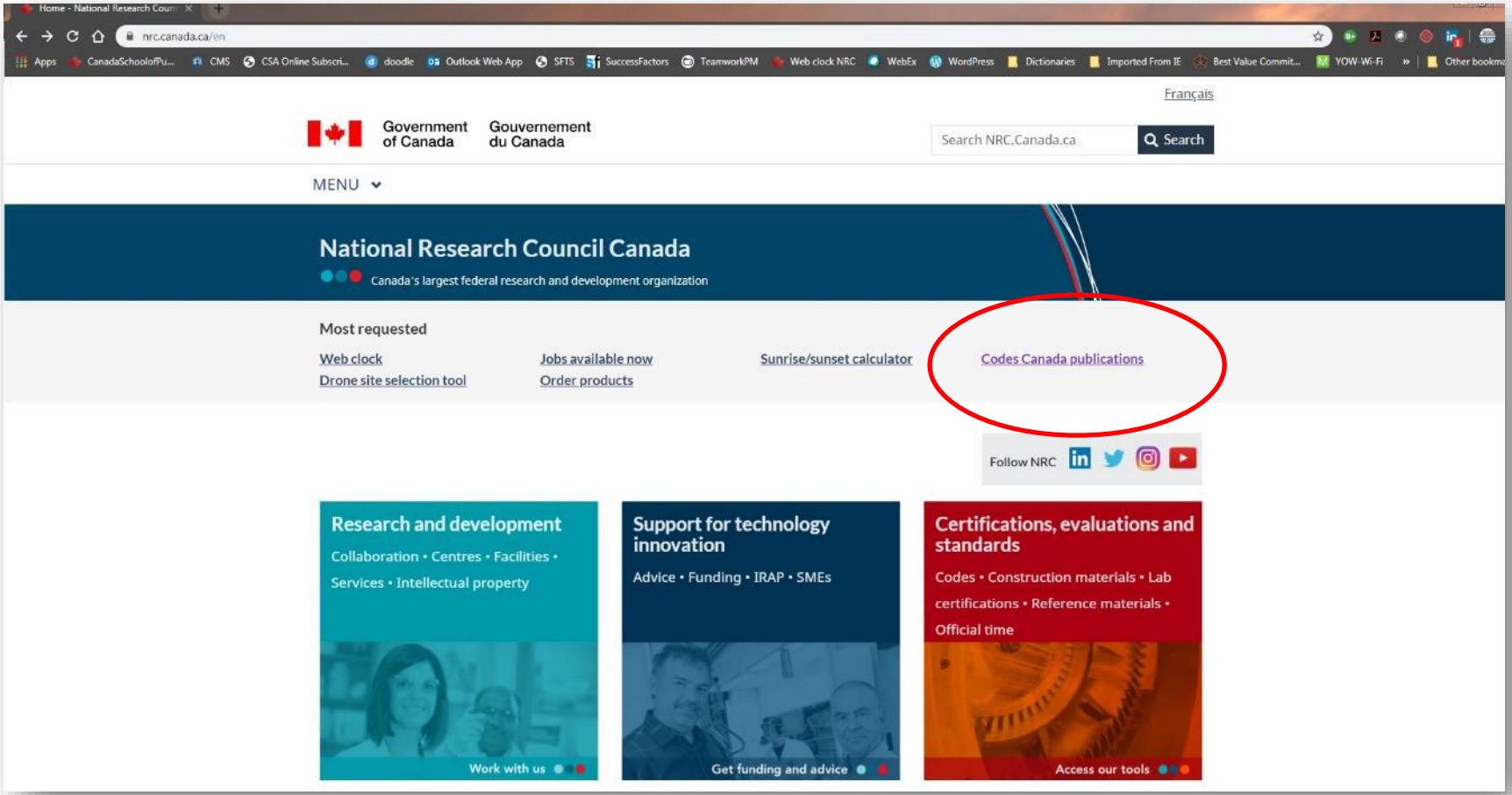
Summary–2020 Outstanding changes

- Harmonization between Parts 3 and 9
- Added clarification of applications and intents

Key messages

- Over 80 years of collaboration & partnership
- Many external points of contact
- Provinces/Territories choose to adopt the National Model Codes
- Harmonized codes across the country
- Penetrations in fire separation

https://nrc.canada.ca/en



Thank you!

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