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# Changes in the 2020 National Model Codes (Part 1)

Codes Canada

National Research Council of Canada

# Presentation outline

- ▶ Important Changes in the NFC 2020
- ▶ Penetrations and Continuity of Fire Separations in the NBC 2020
- ▶ Safety Glazing in the NBC 2020

# 1. Important Changes in the NFC 2020

National Fire Code 2020

# Important changes in the NFC 2020

- Water-miscible liquid mixtures
- Application of CSA B139 Series:19, "Installation Code for Oil-Burning Equipment"
- Consolidation of Fire Safety Plan requirements

# Water-miscible liquid mixtures

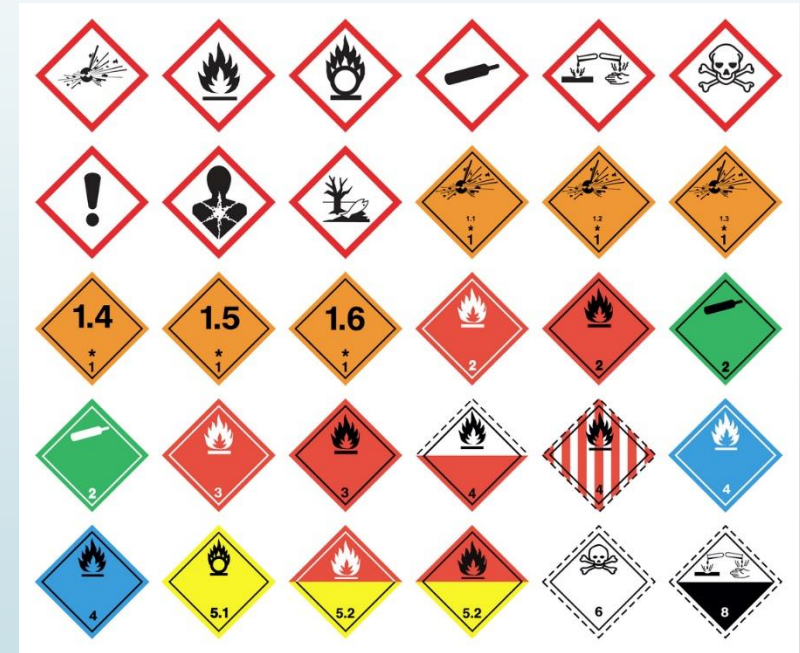
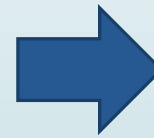


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# Water-miscible liquid mixtures

## ► Classification



# Water-miscible liquid mixtures





# Application of CSA B139 Series

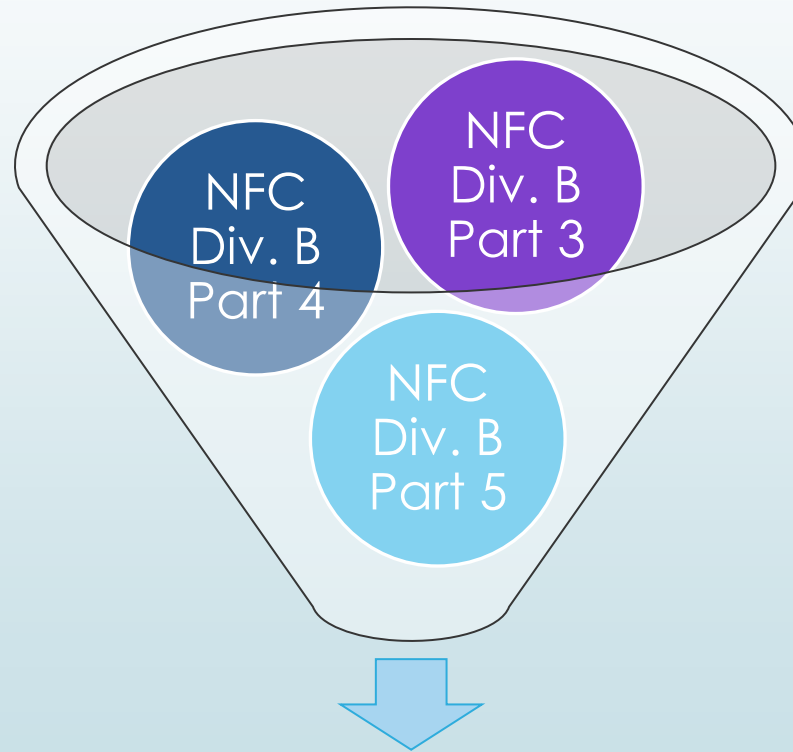
CSA B139 Series, “Installation Code for Oil-Burning Equipment”

- ▶ Storage tank capacity
  - > 2 500 L NFC 2020
  - < 2 500 L CSA B139 Series





# Consolidation of fire safety plan requirements



NFC 2020, Div. B, Section 2.8.

# 2. Penetrations and Continuity of Fire Separations

National Building Code 2020

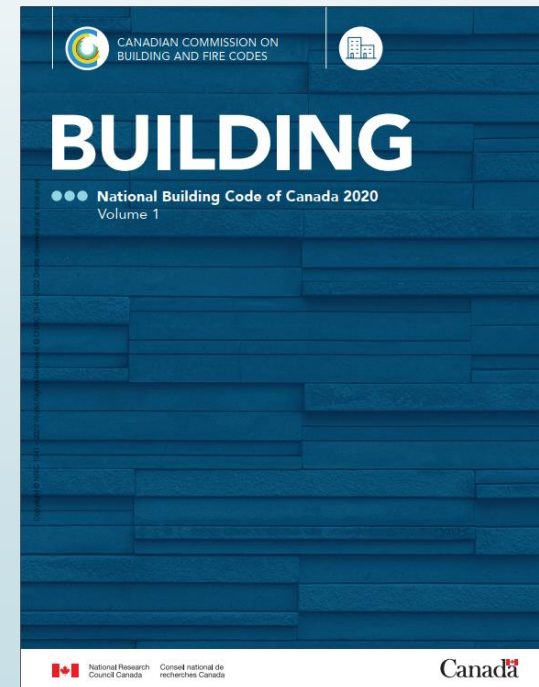
# Outline

- ▶ What are “penetrations”?
  - ▶ Fire separations and penetrations
  - ▶ Firestop and cast in place
- ▶ Important changes
  - ▶ Transition between combustible and noncombustible piping
  - ▶ 50 Pa pressure differential
  - ▶ Horizontal fire separations
  - ▶ Outlet boxes
  - ▶ Service equipment penetrations
  - ▶ Other important changes in Part 9
  - ▶ Continuity of fire separations

What are “penetrations”?

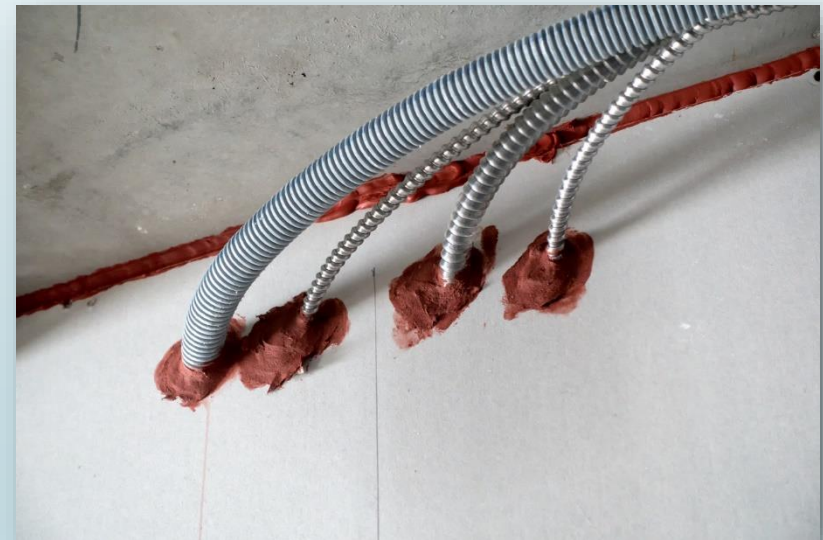
# Fire separations and penetrations

- ▶ **Fire separation** → a construction assembly that acts as a barrier against the spread of fire
- ▶ Penetration sources
  - ▶ Building services
  - ▶ **Structural element (NEW)**
- ▶ Penetration types
  - ▶ Membrane
  - ▶ Through-penetration



# Firestop

- ▶ Tested to CAN/ULC-S115, "Standard Method of Fire Tests of Firestop Systems"
  - ▶ F rating
  - ▶ Not less than the required fire-resistance rating of the fire separation





# Cast in place

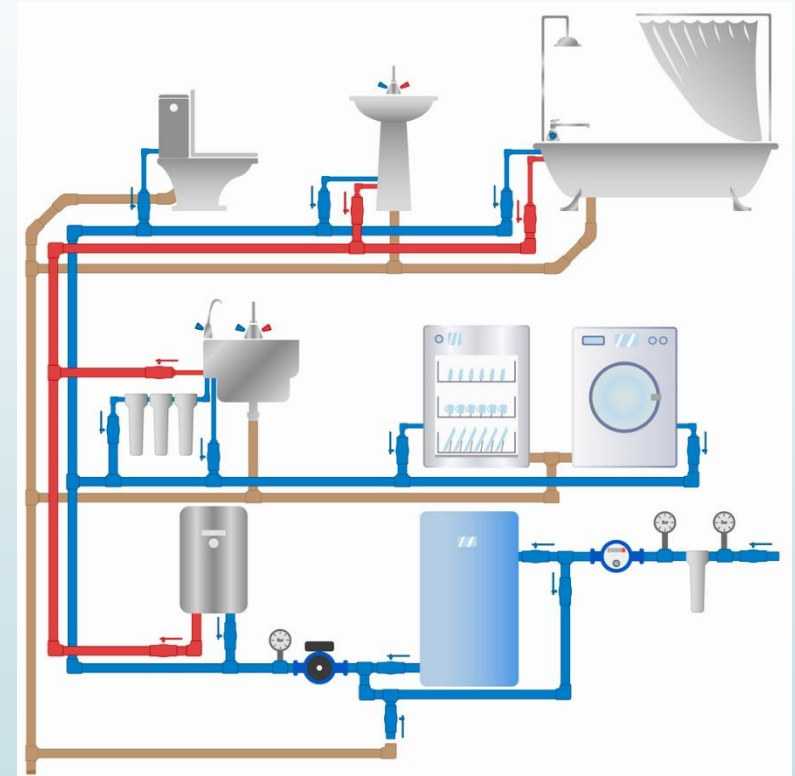
- ✓ Steel
- ✓ Ferrous
- ✓ Copper
- ✓ Concrete
- ✓ Masonry



# Important changes

# Transition combustible ↔ noncombustible piping

- ▶ Combustible branches within a fire compartment
- ▶ On one side of a horizontal fire separation



# Transition combustible ↔ noncombustible piping



- Sealed by a firestop
- F rating
- Pressure differential of 50 Pa
- Higher pressure on the exposed side

# 50 Pa pressure differential



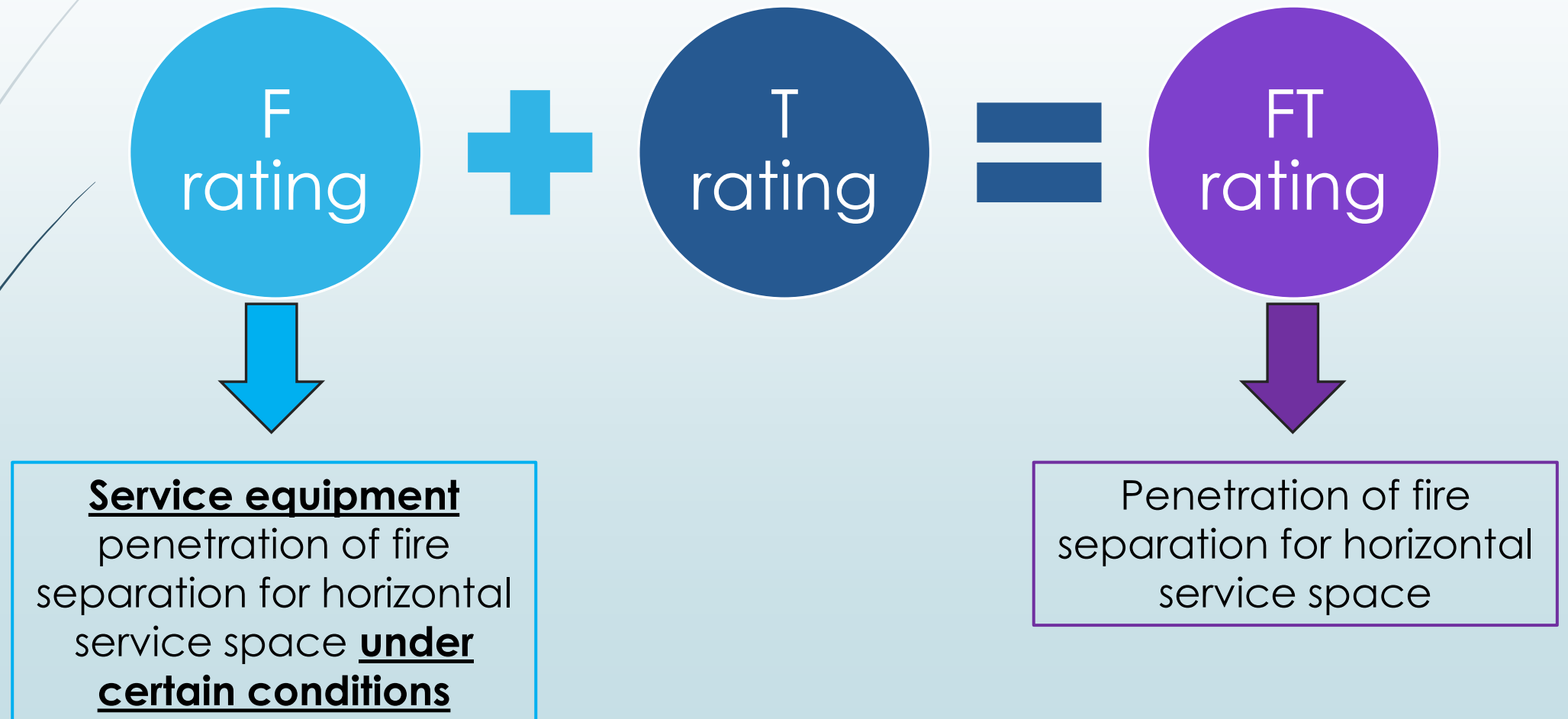
## ► Before

- Misapplied research
- Overly onerous

## ► Now

- Removed from Part 9
- Limited to Part 3 buildings above 3 storeys in building height

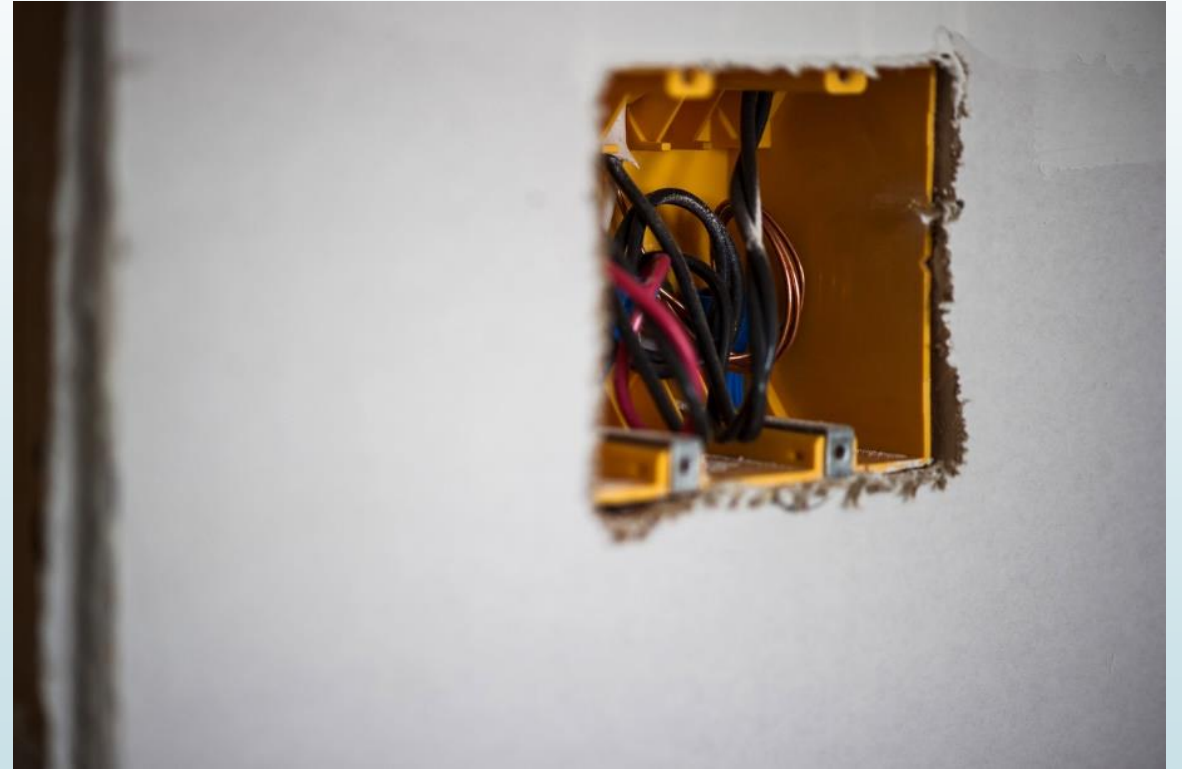
# Horizontal fire separations





# Combustible outlet boxes

- ▶ Firestopped
- ▶ FT rating



# Outlet boxes

- ▶ On opposite sides of a vertical fire separation
- ▶ Horizontal distance  $\geq 600$  mm
  - ▶ Fire block
  - ▶ Firestop with FT rating



# Service equipment penetrations

## Deleted

- ▶ Totally enclosed non-metallic raceways, optical fibre cables, electrical wires and cables with combustible insulation, jackets or sheathes
- ▶ Overall diameter (single or grouped) is not more than 25 mm

## Deleted

- ▶ Single conductor metal sheathed cables with combustible jacketting
- ▶ More than 25 mm in overall diameter
- ▶ Cables are not grouped
- ▶ Spaced a minimum of 300 mm apart

# Other important changes in Part 9

- ▶ Cast in place
  - ▶ Steel
  - ▶ Ferrous
  - ▶ Copper
  - ▶ Concrete
  - ▶ Masonry
- ▶ F rating when tested to CAN/ULC-S115, "Standard Method of Fire Tests of Firestop Systems"



# Other important changes in Part 9

## General requirements for penetrations of fire separations

Piping penetrations



Combustible piping

Penetrations by outlet boxes or service equipment in concealed spaces



Exemption provided for small ones

Penetrations by raceways, sprinklers and fire dampers



Totally enclosed raceways



# Continuity of fire separations



# Continuity of fire separations

Fire separation abutting another fire separation, a floor, a ceiling or a roof

- FT rating
- Tested to CAN/ULC-S115, "Standard Method of Fire Tests of Firestop Systems"

Horizontal joints between a floor and an exterior wall

- F rating
- Tested to ASTM E2307, "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-storey Test Apparatus"

# Continuity of fire separation

- ▶ Exemption for closely fitted joints between
  - ▶ Ceilings and walls
  - ▶ Floors and walls
  - ▶ Walls at corners





# 3. Safety Glazing

National Building Code 2020

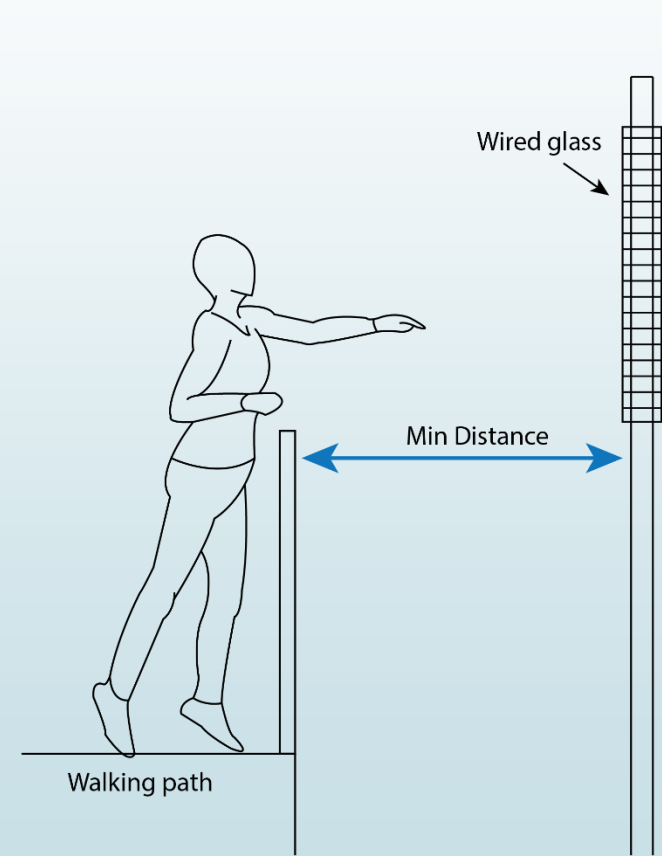
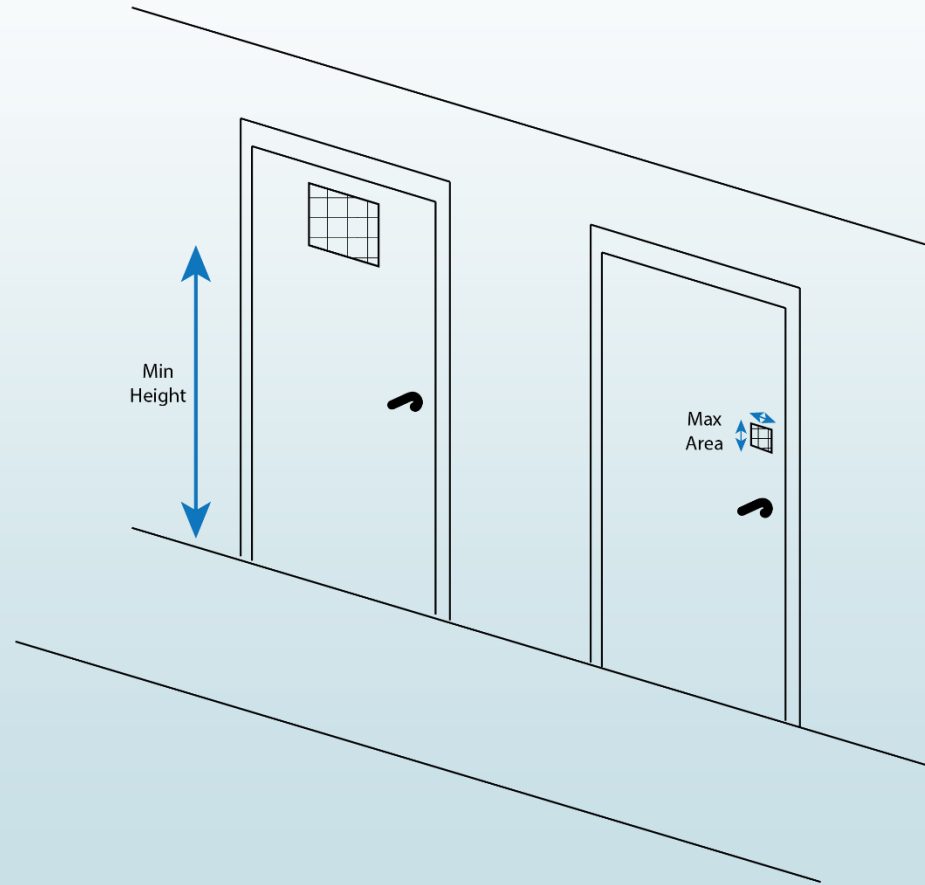
# History

- ▶ NBC 2015:
  - ▶ Safety glass - CAN/CGSB-12.1-M90, “Tempered or Laminated Safety Glass”
  - ▶ Wired glass - CAN/CGSB-12.11-M90, “Wired Safety Glass”
  
- ▶ NBC 2020:
  - ▶ Safety glazing - CAN/CGSB-12.1-2017, “Safety Glazing”
  - ▶ Wired glass - CAN/CGSB-12.11-M90, “Wired Safety Glass”

# The problem



# Main changes



# Reduced injury severity



► CAN/CGSB-12.1-2017, "Safety Glazing"



# What is next?

- ▶ Reference standards
- ▶ Loading
- ▶ Terminology





Thank you!