

Reaching a consensus on transitions between non-combustible and combustible piping!



Agenda

- Introduction
- Transitions
 - Code Allowance
 - Flame & Smoke
 - Exceptions
 - Certification/Listings - Identifying Code compliant products
- Building Types and Requirements
 - Firestopping
- Interpretations

Transitions

Appeal Board Decision #1566

It is the determination of the Board that transition cement can only be used to join an ABS drainage system to a PVC drainage system. It is not intended that it be used to join components throughout a drainage system. The ASTM standard for transition cement (ASTM D3138) referenced in the CSA standards for ABS and PVC pipe and fittings clearly states that it is only intended to be used for, "for example, joining an ABS building drain to a PVC sewer system. The intention was not to create a specification for an all purpose ABS-PVC solvent cement that would be used for mixing of ABS and PVC piping materials."

2.2.5.11. Transition Solvent Cement

(See A-2.2.5.10. to 2.2.5.12. in Appendix A.)

2) Intent Statement Transition solvent cement shall only be used for joining an ABS drainage system to a PVC drainage system.

Transitions

2.3.3.6. Dissimilar Materials

1) Adaptors, connectors or mechanical joints used to join dissimilar materials shall be designed to accommodate the required transition.

2.2.10.4. Mechanical Couplings

2) Intent Statement Mechanical couplings for non-pressure applications shall conform to CAN/CSA-B602, “Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe.”

BCAB #1567 June 19, 2002

Re: Firestopping of DWV System, Sentence 3.1.9.4.(4)

Project Description

The project in question is a new 100 unit seniors housing project. It is proposed to use ProSet P-90 firestop pipe where the trap arms project off the stacks through the gypsum board membrane of the fire separation walls.

Appeal Board Decision #1567

It is the determination of the Board that the ProSet P-90 used at the penetration of the gypsum board in the vertical fire separation conforms to the requirements of Sentence 3.1.9.4.(3). The Board considers the cast iron stack to be a separate concern that must conform to applicable requirements for penetrations by noncombustible DWV pipes.

CONTENTS

3.1.12. Flame-Spread Rating and Smoke Developed Classification

3.1.12.1. Determination of Ratings

i 2) The *flame-spread rating* and smoke developed classification of a material or assembly shall be determined on the basis of not less than three tests conducted in conformance with [CAN/ULC-S102.2, "Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies,"](#) if the material or assembly

- a) is designed for use in a relatively horizontal position with only its top surface exposed to air,
- b) cannot be tested in conformance with [Sentence \(1\)](#) without the use of supporting material that is not representative of the intended installation, or
- c) is thermoplastic.

Steiner Tunnel

Control Samples

- **Asbestos Board (FS = 0, SD = 0)**
- **Red Oak (FS = 100, SD = 100)**

1.3.1.2. Applicable Editions

1)Where documents are referenced in this Code, they shall be the editions designated in Table 1.3.1.2.

Referenced Editions of Documents and Standards
have been updated

ULC

CAN/ULC-S102.2-10

Test for Surface
Burning Characteristics
of Flooring, Floor
Coverings, and
Miscellaneous
Materials and
Assemblies

3.1.5.21.(1)

3.1.12.1.(1)

3.2.2.50.(3)

Note: CAN/ULC-S102.2-10 is now a requirement of this code.



24 foot Steiner Tunnel



Ipex Fitting Compound - Bottom of Tunnel

CAN/ULC-S102.2M

BTLIC.R19959 Plastic Materials

[Page Bottom](#)

Plastic Materials

[See General Information for Plastic Materials](#)

IPEX INC

R19959

SUITE 101
3 PLACE DU COMMERCE
ILE DES SOEURS
VERDUN, QC H3E 1H7 CANADA

PVC compounds S607 or G, S907 or M or J, System 636 PVC Pipe Compound, System 636 CPVC Pipe, S1007, H01 or L and ZEX-P1 in flat sheets intended for extrusion into electrical conduits, pipes, electrical ducts, or other shapes. PVC E04 in flat sheet intended for fittings of various sizes and shapes. PVC Drain-Waste-Vent (DWV) designated LSA-01, CPVC Corzan TempRite pipe material tested in flat sheets.

Polyphenylsulphone Radel R-5100 in flat sheets intended for extrusion into fittings of various sizes and shapes.

Aquarise pipe compound, in flat sheets intended for extrusion into pipes of various sizes and shapes.

Aquarise fitting compound, in flat sheets intended for extrusion into fittings of various sizes and shapes.

Listed as to surface burning characteristics in accordance with CAN/ULC-S102.2 as indicated.

Material Details	Classification or Rating	
	Flame Spread	Smoke Developed
Compound S607* or G		
- 2.5 mm thick	10	225
- 7.5 mm thick	10	300
Compound S1007 or B		
- 2.0 mm thick	10	250
- 16.0 mm thick	10	355
- 45.0 mm thick	35	300
Compound ZEX-P1		
- max 19.0 mm thick	0	10
Compound Radel R-5100		
- 1.8 mm to 7.0 mm thick	0	5
Aquarise Pipe Compound		
3.8 - 8.0 mm thick	0	30



Mechanical Systems Easy Spec

Use of Piping as per 2012 BC Building Code

PRODUCT	Size Range	Standards	CBC & GAS CODE Reference	Flame & Smoke Listing	Flame Spread 25 or Less	Smoke Development 50 or Less	Applications	DRAINAGE SYSTEM		
								Above-ground Inside Building	Under-ground Inside Building	Building Sewer
System 15® DWV Pipe	1-1/2"-24"	CAN/CSA-B181.2,CANULC-S102.2-10	2.2.5.10 2.2.5.12	BTLIC, R19959 - Plastic Materials	10-26	300-355	DWV, STORM & RAIN WATER LINES	P (c)(6)	P	P
System XFR® DWV Pipe	1-1/2"-12"	CAN/CSA-B181.2,CANULC-S102.2-10	2.2.5.10 2.2.5.12	Intertek Certification	0	45	DWV, STORM & RAIN WATER LINES	P (c)(6)	P	P
ABS DWV Pipe	1-1/4"-6"	CAN/CSA-B181.1	2.2.5.10 2.2.5.12		165-230	500	DWV, STORM & RAIN WATER LINES	P (c)(12)	P (c)(12)	P (c)(12)
ABS DWV Cell Core Pipe	1-1/2"-8"	ASTM F 628	2.2.5.10		165-230	500	DWV, STORM & RAIN WATER LINES	P (c)(12)	P (c)(12)	P (c)(12)
AQUARISE® Pipe & Fittings	1/2"-4"	CAN/CSA-B137.6, NSF 61,CANULC-S102.2-10	2.2.5.9	BTLIC, R19959 - Plastic Materials	0	25-30	D H&C & RECIRC: WATER LINES	N	N	N
CORZAN CPVC Pipe & Fittings	1/2"-16"	CAN/CSA-B137.6, NSF 61,CANULC-S102.2-10	2.2.5.9	BTLIC, R19959 - Plastic Materials	0-10	25	D H&C WATER, HEATING & INDUSTRIAL LINES	N	N	N
PVC Building Sewer & Drain Pipe, PS> 320 kPa	3"-8"	CAN/CSA-B182.1	2.2.5.10				BUILDING SEWER, PRE-SEPTIC FIELDS & DRAINAGE	N	P	P
Ring-Tite® Gasketed Sewer Pipe, SDR 28-35	4"-42"	CAN/CSA-B182.2	2.2.5.10				BUILDING SEWER PIPE, UNDERGROUND VENTILATION & DRAINAGE	N	P	P
Ultra-Rib™ Pipe	8"-24"	CAN/CSA-B182.4	2.2.5.10(1)(f)				BUILDING SEWER PIPE, UNDERGROUND VENTILATION & DRAINAGE	N	P	P
Xirtec® 140 Sch 40 PVC Pressure Pipe & Fittings	1/2"-24"	CAN/CSA-B137.3, NSF 61,CANULC-S102.2-10	2.2.5.8(2)	BTLIC, R19959 - Plastic Materials	10-26	300-355	POTABLE COLD WATER PRESSURE PIPE, PROCESS PIPE, POOL, IRRIGATION	N/P (c)(6)	N/P (c)(6)	N (c)(6)
Xirtec® 140 Sch 80 PVC Pressure Pipe & Fittings	1/2"-24"	CAN/CSA-B137.3, NSF 61,CANULC-S102.2-10	2.2.5.8(2)	BTLIC, R19959 - Plastic Materials	10-26	300-355	POTABLE COLD WATER PRESSURE PIPE, PROCESS PIPE, POOL, IRRIGATION	N/P (c)(6)	N/P (c)(6)	N (c)(6)
Polyethylene Series 160 With Compression Fittings	1/2"-2"	CAN/CSA-B137.1	2.2.5.5		80-150	450	COLD WATER SERVICE TUBING	N	N	N
Q-Line® Water Service Pipe PE/AL/PE	1/2"-1"	CAN/CSA-B137.9, NSF61	2.2.5.13				COLD WATER SERVICE TUBING	N	N	N
Blue 904® Water Service Tubing PEX/AL/PEX	1/2"-2"	CAN/CSA-B137.10, NSF61	2.2.5.14				COLD WATER SERVICE TUBING	N	N	N
System 636® PVC Venting	1-1/2"-4"	ULC-S636	B149.1-10 Clause 8.10.4	BTLIC, R19959 - Plastic Materials	10-26	300-355	Category IV appliance Type BH vent or special venting system	N	N	N
System 636® CPVC Venting	1-1/2"-8"	ULC-S636	B149.1-10 Clause 8.10.4	BTLIC, R19959 - Plastic Materials	0-10	25	Category IV appliance Type BH vent or special venting system	N	N	N
BlazeMaster® CPVC Pipe and Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	1-1/2"-3"	NFPA 13, D, R, UL C1821, NSF61, FM	2.2.5.12(2)	VIM/TC-EX3820 -	5	5-15	Fire Sprinkler Systems & ULC Rated Potable Water	N	N	N
PP for Distilled or Dialyzed Water for Labs Enpure®	1/2"-12"	CAN/CSA-B181.3, CANULC-S102.2-10	2.2.5.15		26	100-150 (c)(4)	D H&C WATER, HEATING & INDUSTRIAL LINES	N	N	N
FR Polypropylene Acid Waste Enfil® Labline®	1/2"-4"	ASTM D 4101	3.1.5.16(3)		80 (c)(3)	450 (c)(3)	INDUSTRIAL LINES FOR LABORATORIES	N	N	N
Plenumline Polypropylene Acid Waste	1-1/2"-12"	CAN/CSA-B181.3, CANULC-S102.2-10	2.2.8.1		80 (c)(3)	450 (c)(3)	Laboratory Drainage Systems	P (c)(12)	P	P (c)(12)
Cross-linked Polyethylene PEX Pressure Pipe	1-1/2"-4"	CAN/CSA-B181.3, CANULC-S102.2-10	2.2.8.1	BTLIC, R19959 - Plastic, Pipe and	10	10	Laboratory Drainage Systems	P (c)(6)	P	P (c)(6)
	1/2"-3"	CAN/CSA-B137.5, NSF 61,CANULC-S102.2-10	2.2.5.7		5-26	20-50	D H&C & RECIRC: WATER LINES	N	N	N

Notes:

- (1) Where fire stops are pierced by pipes, the integrity of the fire stop must be maintained.
- (2) Cold water only.
- (3) Gasketed joints required.
- (4) Permitted only for water service pipe.
- (5) Combustible piping in noncombustible construction is subject to the requirements of Sentence 3.1.5.16.(1).
- (6) Combustible piping that penetrates a fire separation is subject to the requirements in Articles 3.1.9.1., 9.10.9.6. and 9.10.9.7.
- (7) Not permitted in hot water systems.
- (8) Not to exceed design temperature and design pressure stated in Sentence 2.2.5.9.(2).

ABS

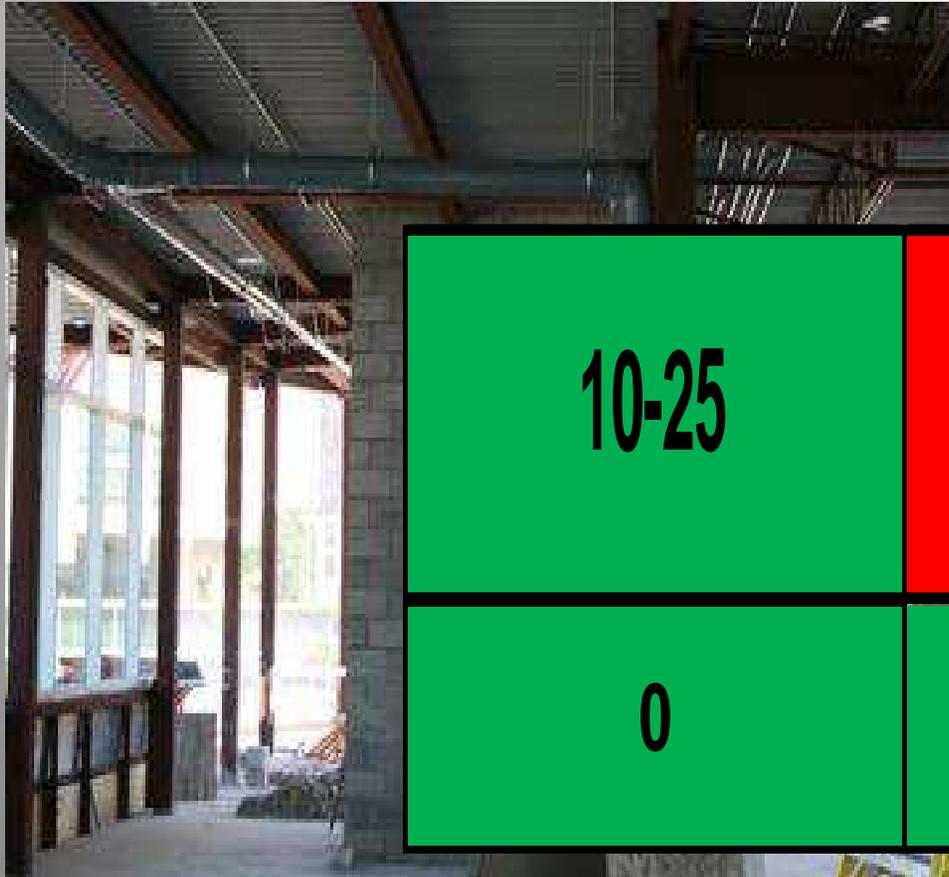


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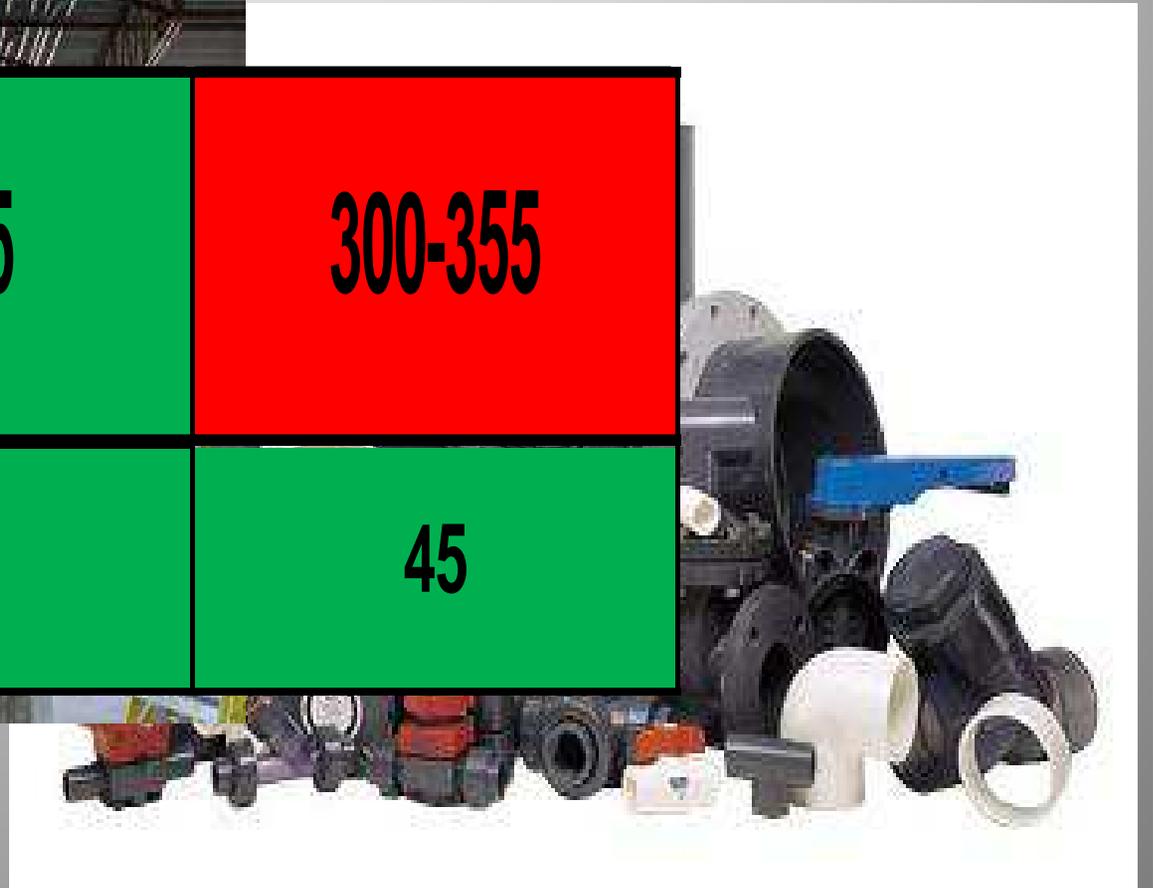
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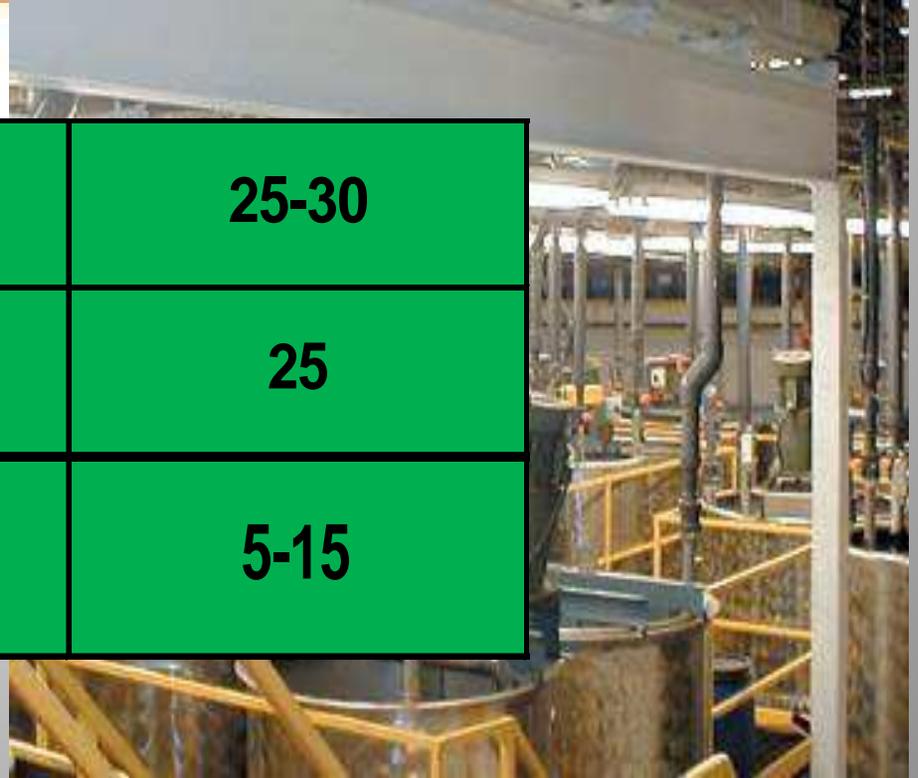
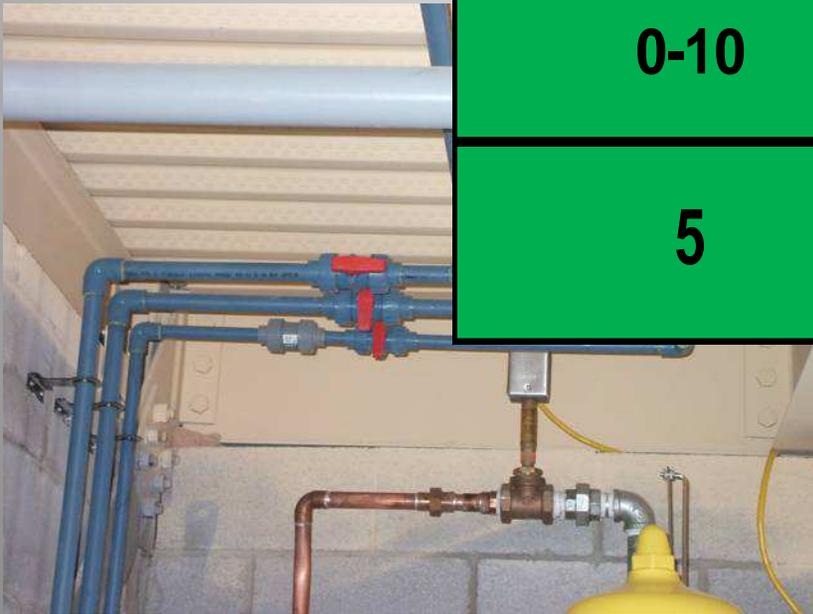
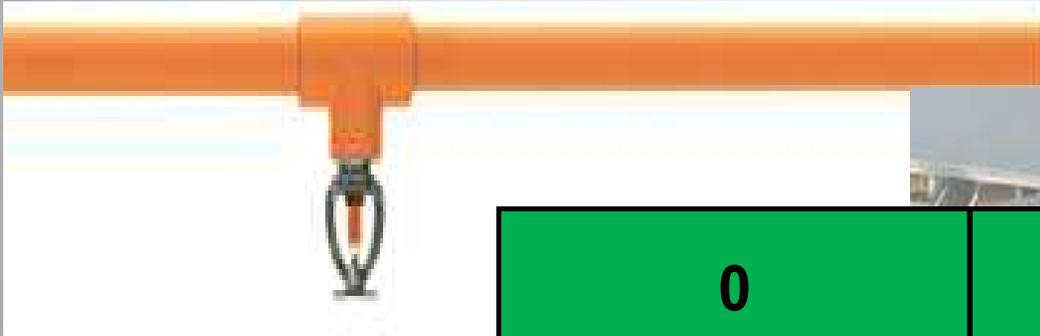
PVC



10-25	300-355
0	45



CPVC



0	25-30
0-10	25
5	5-15

Polyethylene Cross Linked Piping



5-25

20-50



POLYPROPYLENE & Polyvinylidene Fluoride.



PP Flame & Smoke

Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	25	100-150⁽¹⁴⁾
PP for Distilled or Dialized Water for Labs Enpure®	80⁽¹³⁾	450⁽¹³⁾
FR Polypropylene Acid Waste Enfeild®Labline®	80⁽¹³⁾	450⁽¹³⁾
Plenumline Polypropylene Acid Waste	10	10

(13) Combustible piping in noncombustible construction is subject to the requirements of Sentence 3.1.5.16.(3).

(14) May require Tested Wrapping to meet Flame & Smoke

THE SEQUENCE OF COMPLIANCE FOR COMBUSTIBLE PIPE



BRITISH COLUMBIA CODES | 2012

CONTENTS

3.1.5.16. Combustible Piping Materials

- i** 1) Except as permitted by [Clause 3.1.5.2.\(1\)\(d\)](#) and [Sentences \(2\) and \(3\)](#), *combustible* piping and tubing and associated adhesives are permitted to be used in a *building* required to be of *noncombustible construction* provided that, except when concealed in a wall or concrete floor slab, they
- a) have a *flame-spread rating* not more than 25, and
 - b) if used in a *building* described in [Subsection 3.2.6.](#), have a smoke developed classification not more than 50.

3.1.5.16. Combustible Piping Materials

-  3) Polypropylene pipes and fittings are permitted to be used for drain, waste and vent piping for the conveyance of highly corrosive materials and for piping used to distribute distilled or dialyzed water in laboratory and hospital facilities in a *building* required to be of *noncombustible construction*, provided
- a) the *building* is *sprinklered* throughout,
 - b) the piping is not located in a vertical shaft, and
 - c) piping that penetrates a *fire separation* is sealed at the penetration by a *fire stop* that has an FT rating not less than the *fire-resistance rating* of the *fire separation* when subjected to the fire test method in [CAN/ULC-S115, "Fire Tests of Firestop Systems,"](#) <with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side.>

CONTENTS

3.1.9.4. Combustible Piping Penetrations

- i** **1)** *Combustible* sprinkler piping is permitted to penetrate a *fire separation* provided the *fire compartments* on each side of the *fire separation* are *sprinklered*.
- i** **2)** *Combustible* water distribution piping is permitted to penetrate a *fire separation* that is required to have a *fire-resistance rating* without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the piping is protected at the penetration with a *fire stop* in conformance with Sentence (4).>
- i** **4)** *Combustible* drain, waste and vent piping is permitted to penetrate a *fire separation* required to have a *fire-resistance rating* or a membrane that forms part of an assembly required to have a *fire-resistance rating*, provided
 - a) the piping is sealed at the penetration by a <*fire stop*> that has an F rating not less than the *fire-resistance rating* required for the *fire separation* when subjected to the fire test method in CAN/ULC-S115, "Fire Tests of Firestop Systems," with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side, and
 - b) the piping is not located in a <*vertical service space*>.
- i** **5)** *Combustible* drain, waste and vent piping is permitted on one side of a vertical *fire separation* provided it is not located in a <*vertical service space*>.
- i** **6)** <*Combustible* piping for central vacuum systems is permitted to penetrate a *fire separation* provided the installation conforms to the requirements that apply to *combustible* drain, waste and vent piping specified in Sentence (4).>

-  **1) Combustible** sprinkler piping is permitted to penetrate a *fire separation* provided the *fire compartments* on each side of the *fire separation* are *sprinklered*.

- i** 2) *Combustible* water distribution piping is permitted to penetrate a *fire separation* that is required to have a *fire-resistance rating* without being incorporated in the assembly at the time of testing as required by [Article 3.1.9.2.](#), provided the piping is **<**protected at the penetration with a *fire stop* in conformance with [Sentence \(4\).](#)**>**

- i** **4) Combustible drain, waste and vent piping is permitted to penetrate a *fire separation* required to have a *fire-resistance rating* or a membrane that forms part of an assembly required to have a *fire-resistance rating*, provided**
- a) the piping is sealed at the penetration by a **⟨*fire stop*⟩** that has an F rating not less than the *fire-resistance rating* required for the *fire separation* when subjected to the fire test method in [CAN/ULC-S115, "Fire Tests of Firestop Systems,"](#) with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side, and
 - b) the piping is not located in a **⟨*vertical service space*⟩**.

CONTENTS

3.2.6. ADDITIONAL REQUIREMENTS FOR HIGH BUILDINGS

(See Appendix B.)

3.2.6.1. Application

i 1) This Subsection applies to a *building*

- a) of Group A, D, E or F *major occupancy* classification that is more than
 - i) 36 m high, measured between *grade* and the floor level of the top *storey*, or
 - ii) 18 m high, measured between *grade* and the floor level of the top *storey*, and in which the cumulative or total *occupant load* on or above any *storey* above *grade*, other than the *first storey*, divided by 1.8 times the width in metres of all *exit stairs* at that *storey*, exceeds 300,
- b) containing a Group B *major occupancy* in which the floor level of the highest *storey* of that *major occupancy* is more than 18 m above *grade*,
- c) containing a *floor area* or part of a *floor area* located above the third *storey* designed or intended as a Group B, Division 2 ~~(or 3)~~ *occupancy*, or
- d) containing a Group C *major occupancy* whose floor level is more than 18 m above *grade*.

Combustible Piping Meeting Flame Spread Rating of \leq **25**

- Residential type buildings exceeding 18m from grade to the floor level of the top storey (approx. 7 stories)
 - Residential Tower
- Industrial/Commercial type buildings exceeding 36m from grade to the floor level of the top storey (approx. 11 stories)
 - Office Building “Except Vancouver”
- Institutional (Group B, Division 1) Major Occupancy type building exceeding 18 m (approx. 7 stories)
 - Prison
- Institutional (Group B, Division 2 & 3) Major Occupancy type buildings exceeding 3 stories
 - Care Homes and Hospitals

however.....

3.6.4.3. Plenum Requirements

- 1) A concealed space used as a *plenum* within a floor assembly or within a roof assembly need not conform to Sentence 3.1.5.15.(1) and Article 3.6.5.1., provided
 - a) all materials within the concealed space have a *flame-spread rating* not more than 25 and a smoke developed classification not more than 50, except for

Plenums

- Defined as enclosed ceiling spaces used for the transport of supply or return air
- Would have potential to rapidly spread smoke in the case of fire, thus the strict Smoke limit of ≤ 50



Combustible Piping Meeting Flame & Smoke Spread Rating \leq **25/50**

- is permitted to be used in residential type buildings of any height.
- is permitted to be used in industrial/commercial type buildings of any height.
- is permitted in institutional (Group B) occupancies of any height.
- is permitted in a floor or ceiling space used as an air plenum.

however.....

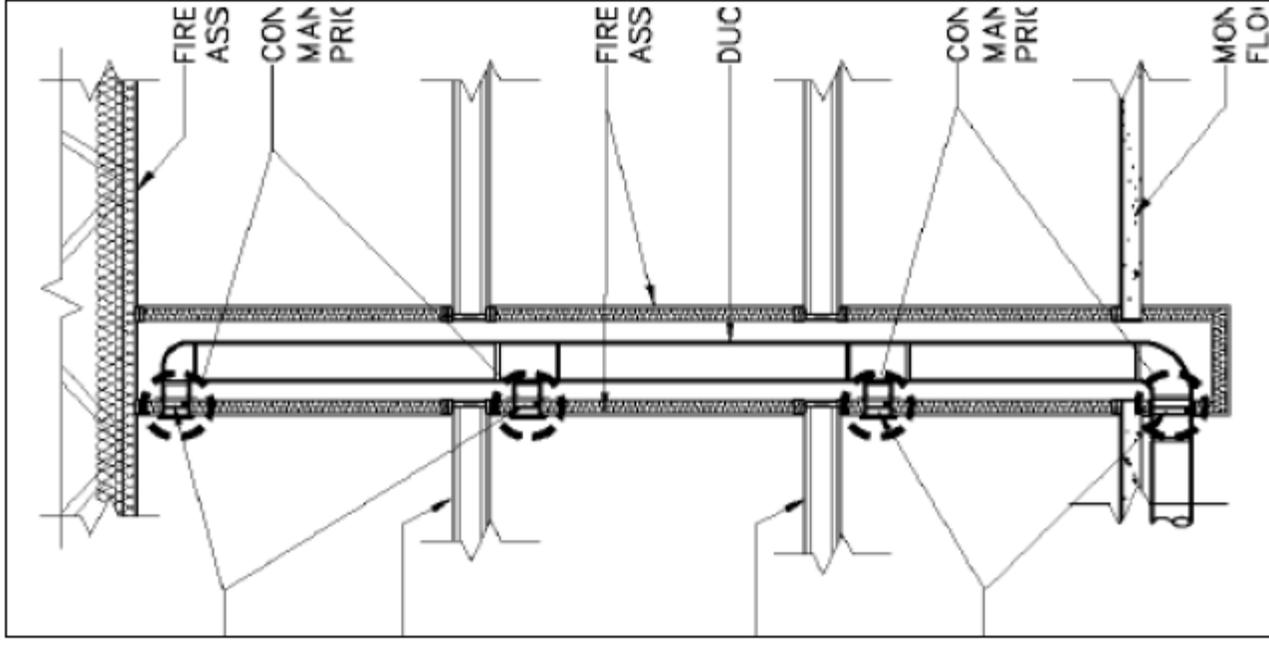
LIMITATION

b) the piping is not located in a *vertical service space*.

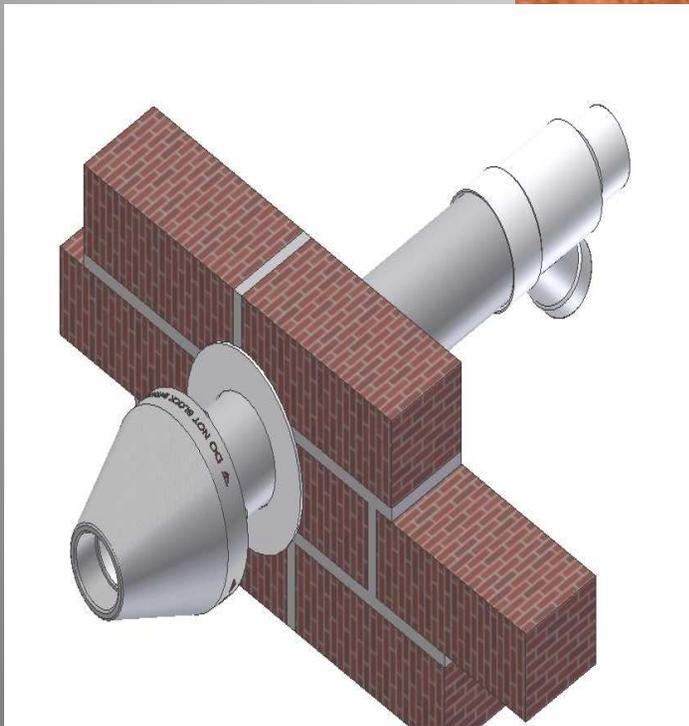
Vertical service space means a shaft oriented essentially vertically that is provided in a *building* to facilitate the installation of *building* services including mechanical, electrical and plumbing installations and facilities such as elevators, refuse chutes and linen chutes.

Vertical Service Spaces

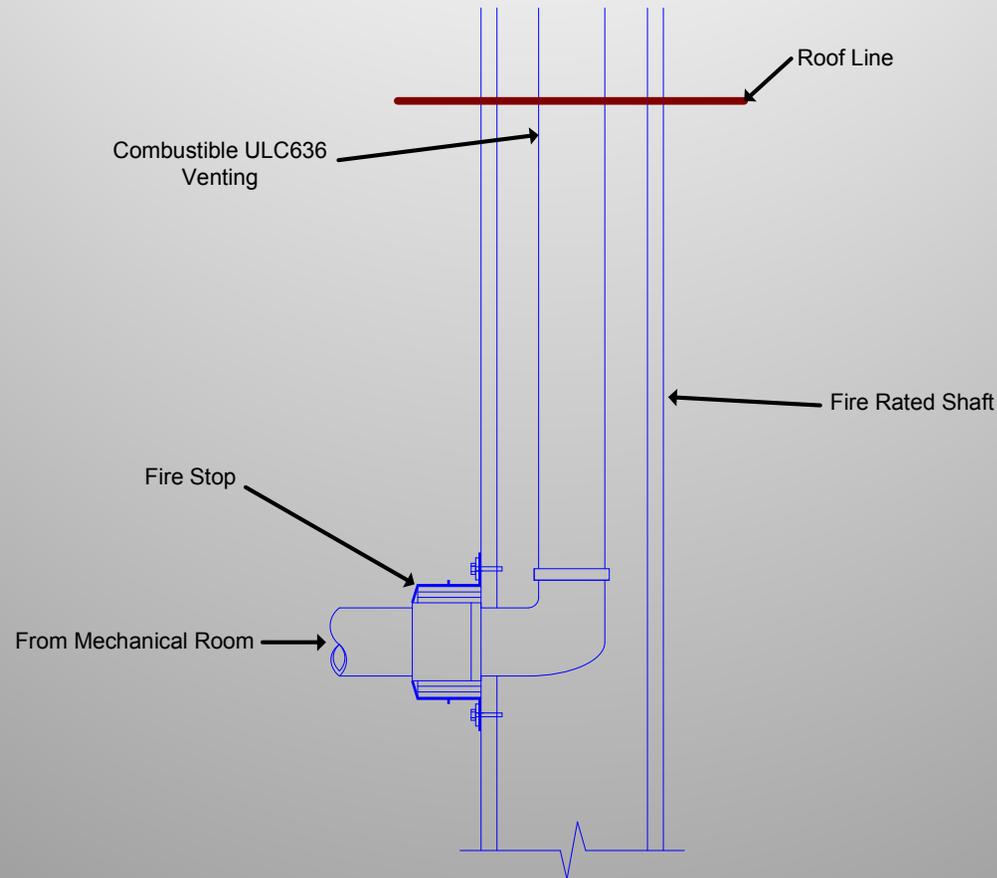
- No fire separations between floors
- No combustible pipe permitted regardless of FSR or SDC values



Plastic Venting



Combustible Piping in a Fire Rated Shaft or Chimney



Examples of Plastic Venting



10-25	300-355
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80	450
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5	5-15
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Division B

Acceptable Solutions

Part 1 — General

Section 1.2. Terms and Abbreviations

1.2.1. DEFINITIONS OF WORDS AND PHRASES

1.2.1.1. Non-defined Terms

- 1) Words and phrases used in Division B that are not included in the list of definitions in [Article 1.4.1.2. of Division A](#) shall have the meanings that are commonly assigned to them in the context in which they are used, taking into account the specialized use of terms by the various trades and professions to which the terminology applies.
- 2) Where objectives and functional statements are referred to in Division B, they shall be the objectives and functional statements described in [Parts 2 of Division A and 3 of Division A](#).
- 3) Where acceptable solutions are referred to in Division B, they shall be the provisions stated in [Parts 3 <to 10>](#).

1.2.1.2. Defined Terms

- 1) **The words and terms in italics in Division B shall have the meanings assigned to them in Article [1.4.1.2. of Division A](#).**

Combustible Plumbing Fixtures

3.1.5.17. Combustible Plumbing Fixtures

1) *Combustible* plumbing fixtures, including wall and ceiling enclosures that form part of the plumbing fixture, are permitted in a *building* required to be of *noncombustible construction* provided they are constructed of material having a *flame-spread rating* and smoke developed classification not more than that permitted for the wall surface of the room or space in which they are installed.

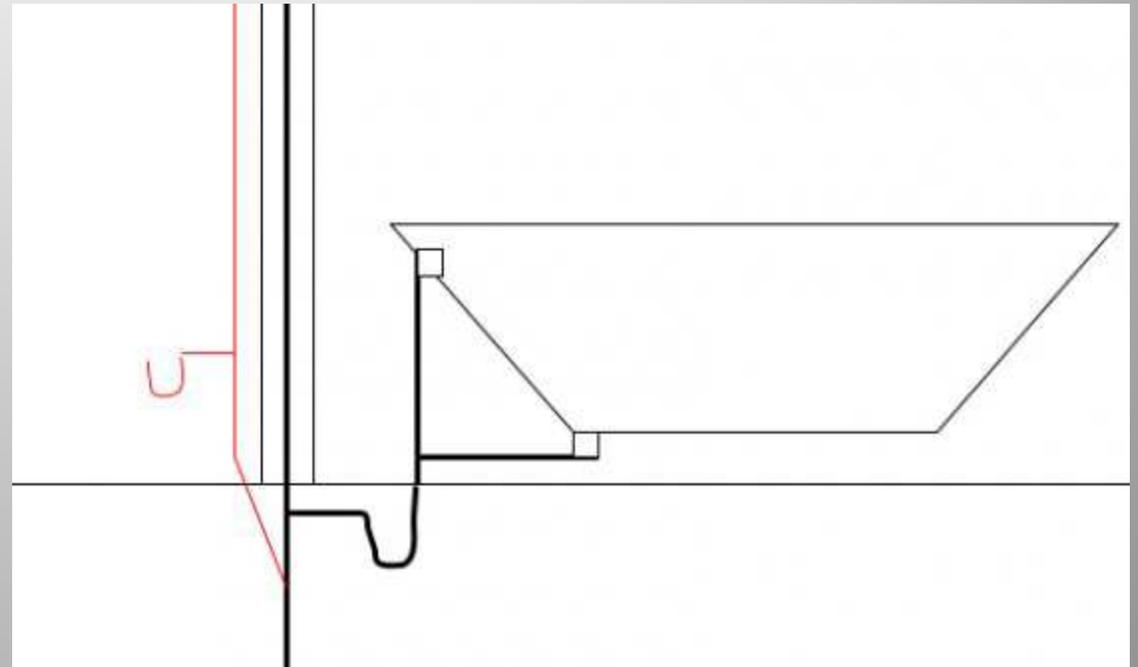
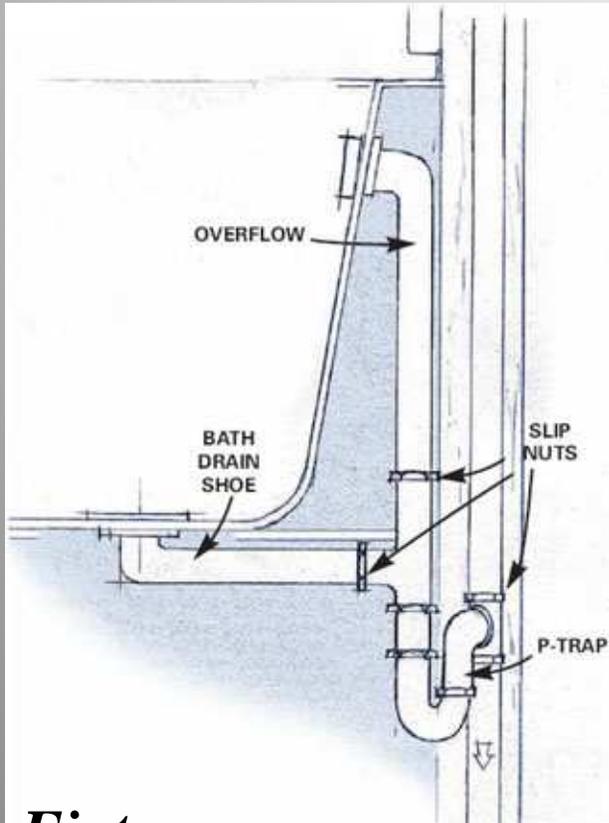
3.1.13.3. Bathrooms in Residential Suites

1) The flame-spread rating of interior wall and ceiling finishes for a bathroom within a suite of residential occupancy shall be not more than **200**.

Location or Element	Maximum <i>Flame-Spread Rating</i>				Maximum Smoke Developed Classification		
	Wall Surface	Ceiling Surface ⁽³⁾	Floor Surface	Floor Surface	Wall Surface	Ceiling Surface ⁽¹⁾	Floor Surface
<i>Exit</i> stairways, vestibules to <i>exit</i> stairs and lobbies described in Sentence 3.4.4.2.(2)	25	25	25	25	50	50	50
Corridors not within <i>suites</i>	⁽⁴⁾	⁽²⁾	300	300	100	50	500
◀Elevator cars▶	◀75▶	◀75▶	◀300▶	◀300▶	◀450▶	◀450▶	◀450▶
◀Elevator vestibules▶	25	25	300	300	100	100	300
<i>Service spaces</i> and <i>service rooms</i>	25	25	25	25	50	50	50
Other locations and elements	⁽²⁾	⁽²⁾	No Limit	No Limit	300	50	No Limit

What is a Fixture?

What is it's F&S Ratings



Fixture means a receptacle, appliance, apparatus or other device that discharges *sewage* or *clear-water waste*, and includes a floor drain.

Building Code Appeal Board

c/o Building and Safety Standards Branch

PO Box 9844 Stn Prov Govt

Victoria BC V8W 9T2

September 24, 2013

BCAB #1737

Re: ABS Bathtub Drain/Overflow Through Concrete Slab, Sentence 3.1.5.16.(1)

Project Description

The project in question is a residential hi-rise of noncombustible construction. The appeal involves a drain for an acrylic bathtub employing an ABS drain/overflow assembly passing through the eight inch concrete slab. The ABS assembly from the tub overflow and drain penetrates the slab through an assembly incorporating a cUL classified firestop device and then connects to the noncombustible trap directly below the slab with a combustible flexible coupling. Most of the ABS overflow/drain pipe assembly is exposed above the slab but concealed under the acrylic bathtub.

Appeal Board Decision #1737

It is the determination of the Board that the ABS drain/overflow assembly does not conform to the Code because it is neither part of the acrylic fixture nor concealed in the concrete floor slab.

Building Code Appeal Board

c/o Building and Safety Standards Branch
PO Box 9844 Strn Prov Govt
Victoria BC V8W 9T2

April 16, 2014

BCAB #1745

Re: Combustible Piping in Noncombustible Construction, Sentences 3.1.5.16.(1) & 3.1.5.17.(1)

Project Description

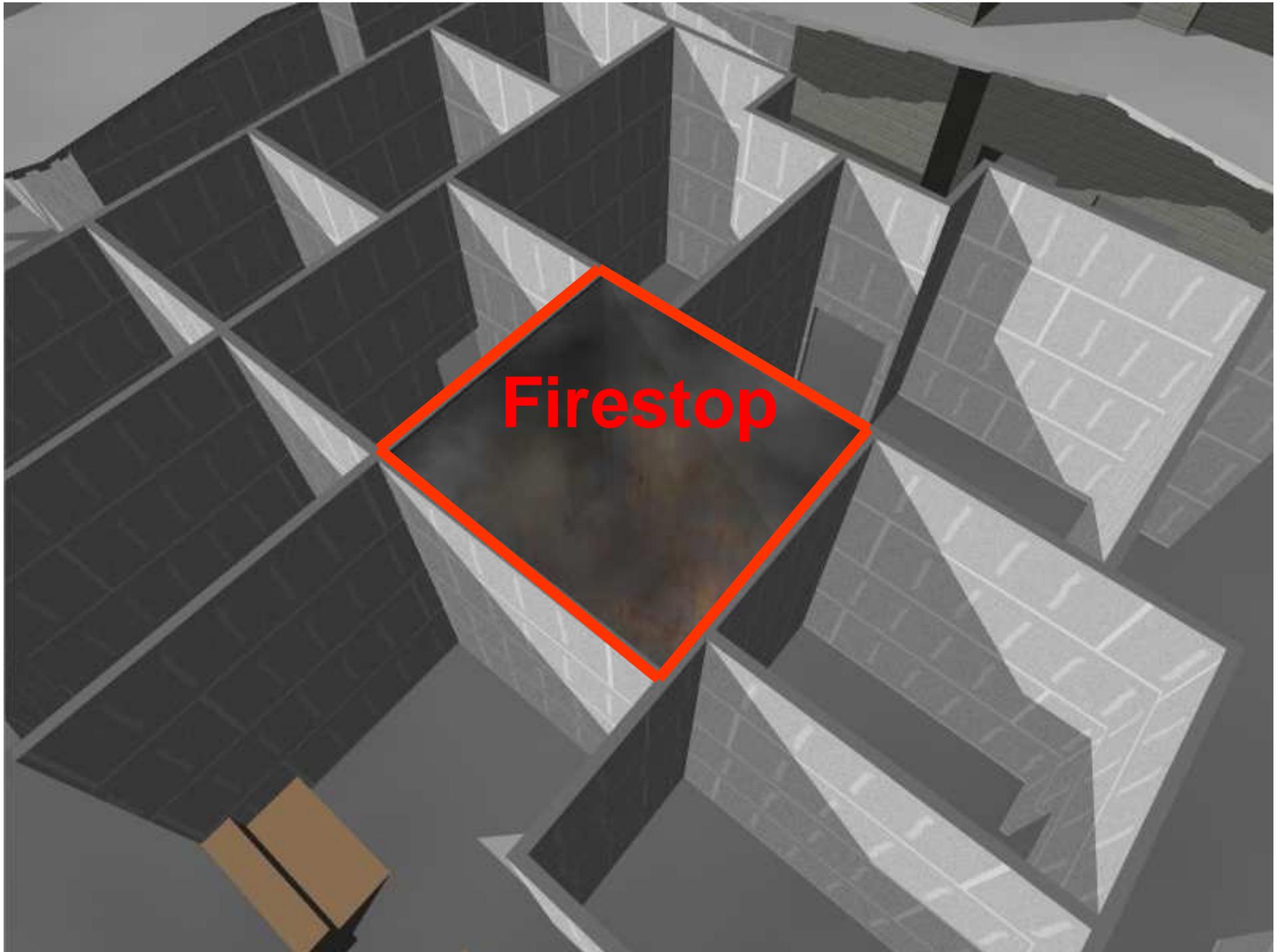
The project in question is a new mixed-use high-rise building with Group E mercantile use on the ground floor and Group C residential on the remaining storeys. In question is the use of combustible drainage piping in cabinets under the bathroom sinks.

Reason for Appeal

1. Sentence 3.1.5.16.(1) limits the flame spread rating and smoke developed classification of combustible piping to 25 and 50 respectively unless the piping is concealed in a wall or concrete floor slab.
2. Sentence 3.1.5.17.(1) permits combustible plumbing fixtures in noncombustible construction providing they have a flame spread rating and smoke developed classification not more than that permitted for the wall surface of the room in which they are located.

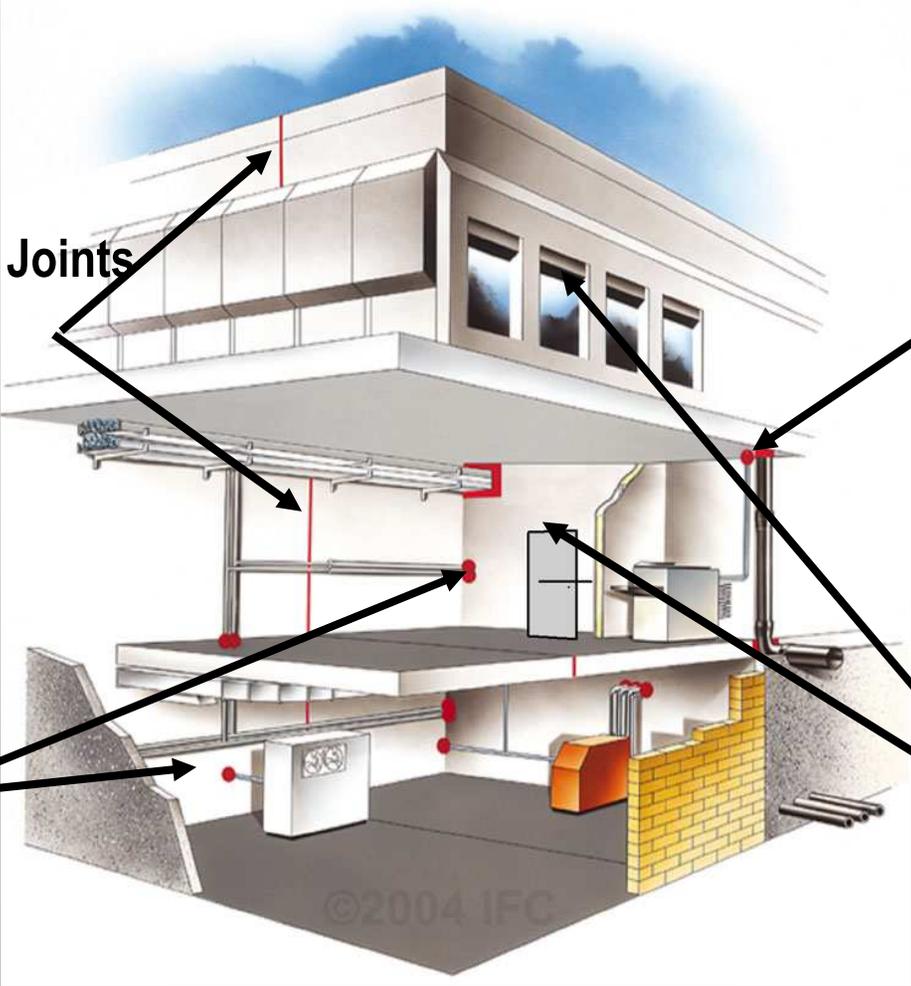
Appeal Board Decision #1745

It is the determination of the Board that the fixture outlet pipe, tailpiece adapter, P-trap and fixture arm are not part of the fixture and as they are not contained within a wall or concrete floor slab must meet the flame spread rating and smoke developed classification required by 3.1.5.16.(1).



Firestop

Areas that allow for fire/smoke spread



Unsealed/Open Joints

Unsealed Pipe Penetrations/Ducts

Unsealed Service Penetrations

Doors/Windows

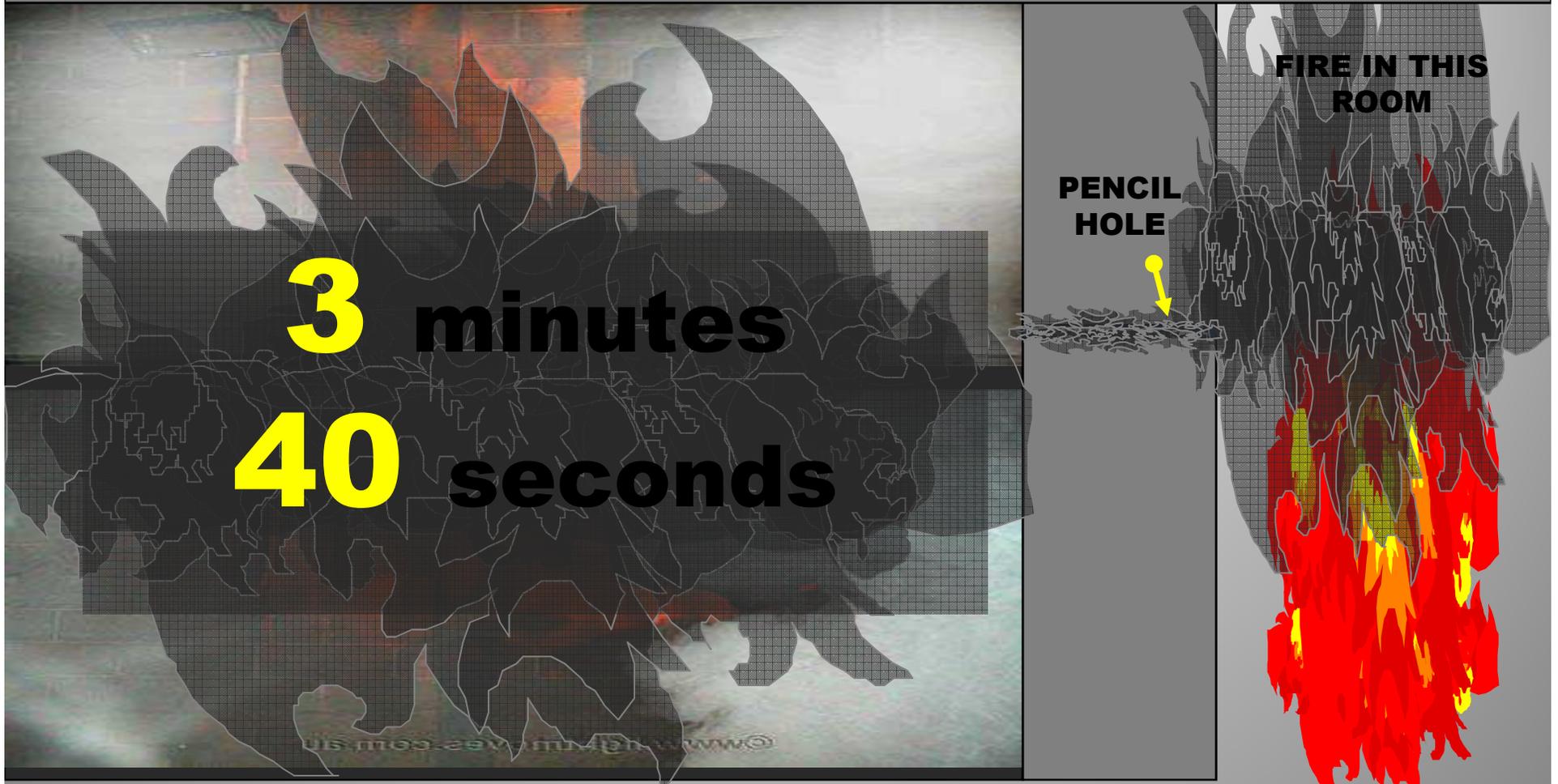
©2004 IFC

- **Fire Stopping**

- **The requirement for proper Firestopping applies to every and any product that penetrates a required fire separation. Whether the material is combustible or noncombustible.**

How Fast Does Smoke Travel?

- Smoke travels 120-420 feet per minute under fire conditions
- A square room 20 ft x 20 ft x 20 ft has a pencil hole between compartments.



•How long will it take for the smoke to fill the room to a thickness such that you cannot see your hands 18" in front of you?

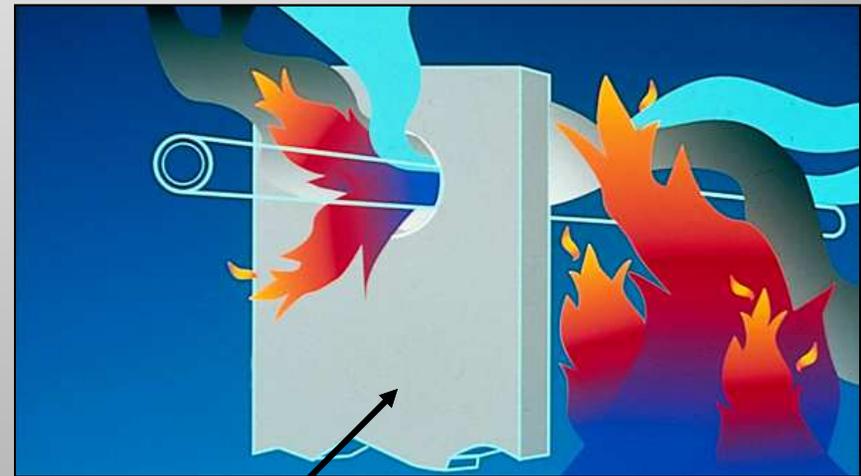
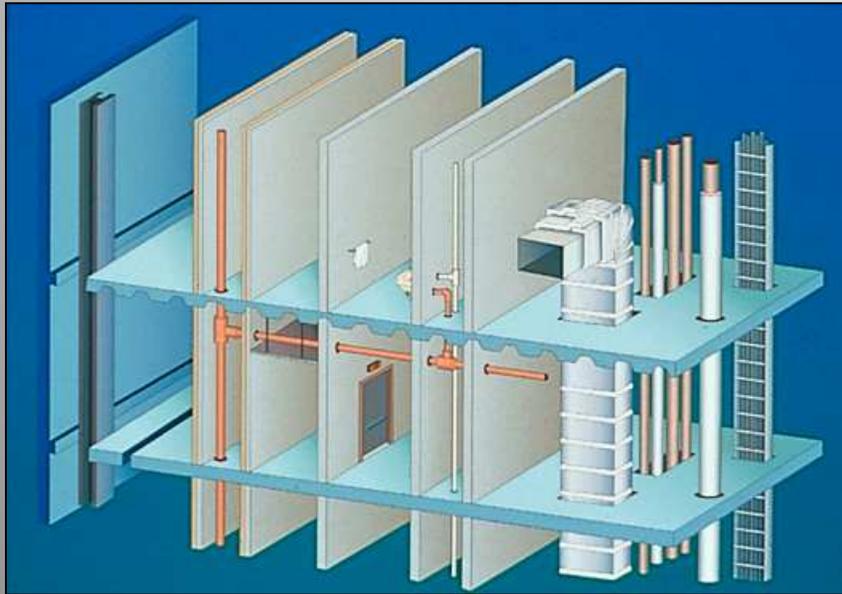
Hospital ~ What's Wrong?



CAN/ULC-S101

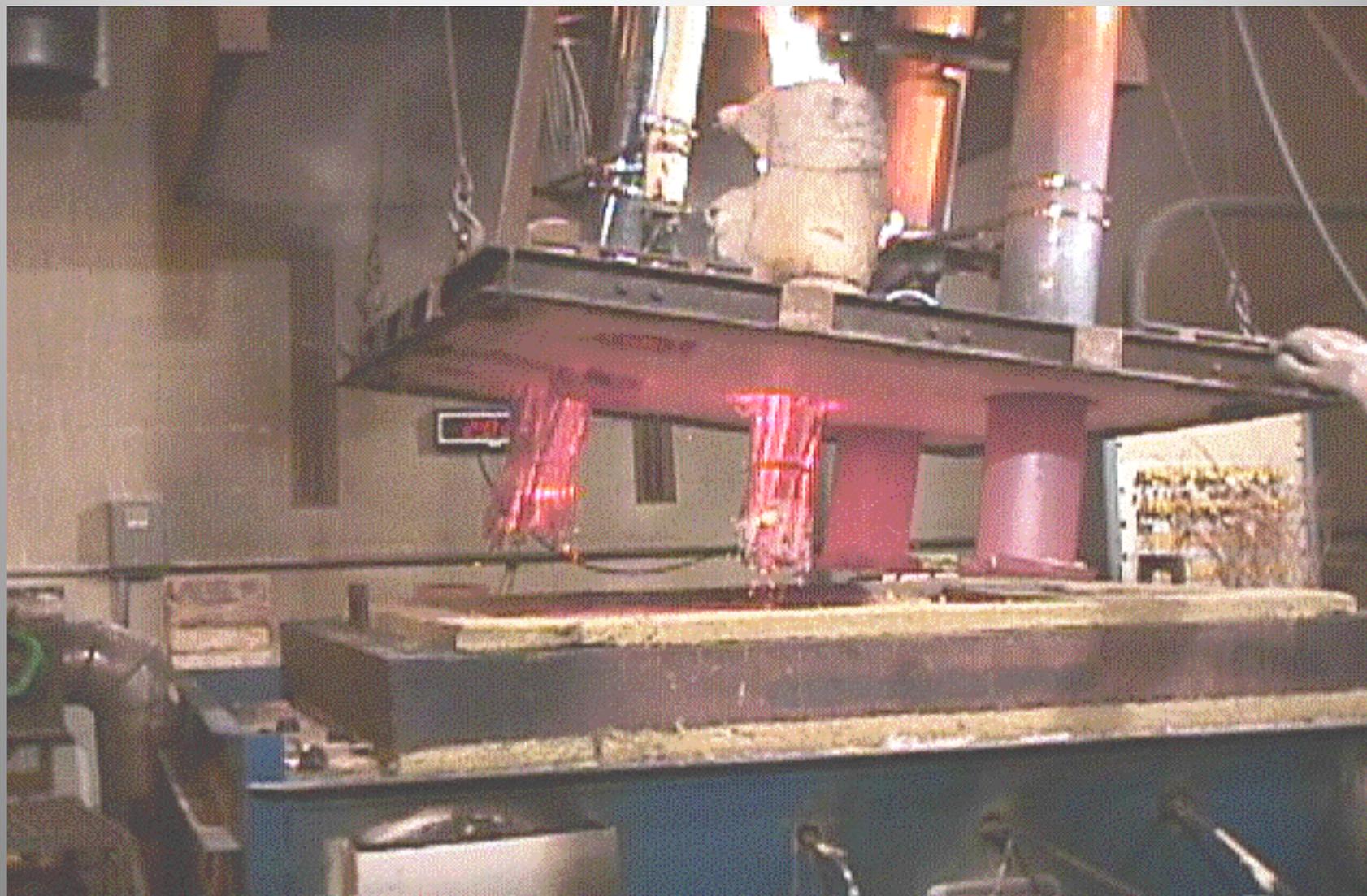
- A3.1 In CAN/ULC-S101, one criterion of acceptance of a floor or wall is that the assembly shall have withstood the fire resistance test without passage of flames or hot gases. The object of this criterion is to minimize the potential for igniting combustible material placed in contact with or close to the unexposed surface. In buildings, floors and walls must often be penetrated to provide building services. To ensure that such penetrations and their accompanying firestop systems do not jeopardize the ability of floors and walls to prevent the passage of flames, the F rating has been introduced in this standard.
- A3.2 In CAN/ULC-S101, a temperature rise criterion on the unexposed surface of the test specimen is also employed in assessing the fire resistance of floors or walls. Again the object is to minimize the potential for igniting combustibles in contact with the unexposed surface. For through-penetration firestop systems, the installation is often such that the system is not in contact with combustibles which ignite at low temperatures. In order to satisfy both possibilities, that is, the contact or lack of contact of combustibles with the firestop system, this Standard introduces in addition to the F rating which is based only on the observation of the passage of flame, an FT rating incorporating criteria for temperature rise and passage of flame and hot gases.

Fire Rated Walls and Floor Assemblies

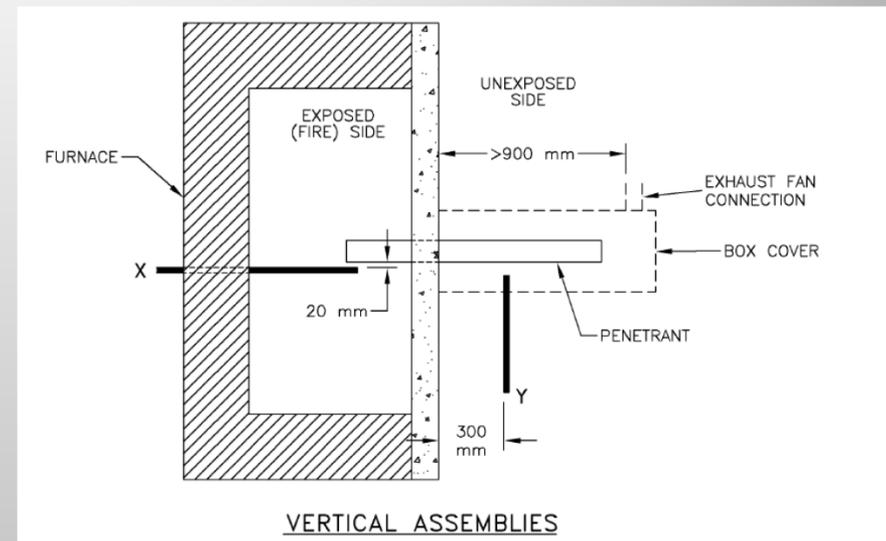
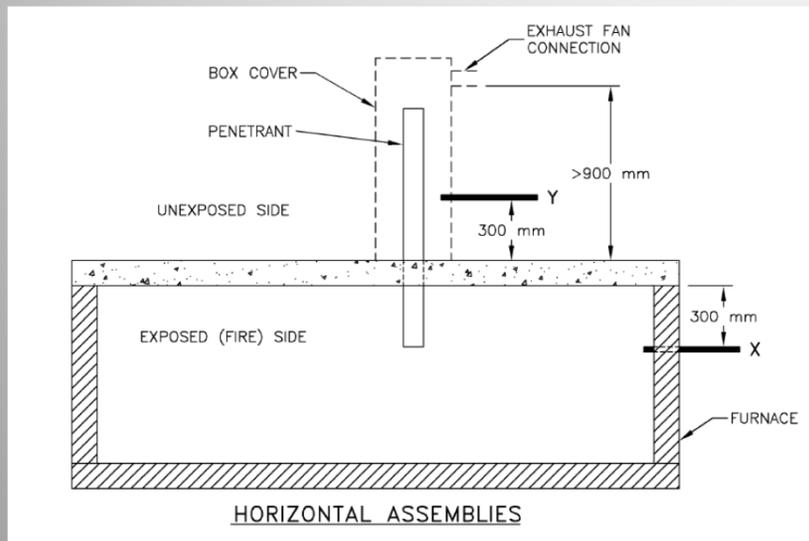


Fire Rated Assembly

Firestop Test - Floor Assembly



CAN/ULC-S115-10



- A1.1 This fire test method for firestop systems is concerned with evaluating the protection provided for openings created in walls or floors which otherwise have a fire resistance rating established in accordance with the Standard Methods of Fire Endurance Tests of Building Construction and Materials, CAN/ULC-S101. The objective is to assure that the use of such firestop systems does not jeopardize the required fire resistant performance of the wall or floor assembly.

ULC

CAN/ULC-S115-11	Fire Tests of Firestop Systems	3.1.5.16.(3)
		3.1.9.1.(1)
		3.1.9.1.(2)
		3.1.9.1.(3)
		3.1.9.4.(4)
		9.10.9.6.(2)
		9.10.9.7.(3)

Note: CAN/ULC-S115-11 is now a requirement of this code.

Fire Stops Tested not Listed

3.1.9.1. Fire Stops

1) Except as required by Sentences (2) change begin and (3), and permitted by Sentences (4) and (5), penetrations of change end 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 that, **when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,”** has an F rating not less than the fire-protection rating required for closures in the fire separation in conformance with Table 3.1.8.4.,

b) cast in place (see Appendix A) or

c) change be tightly fitted (see Appendix A).change end

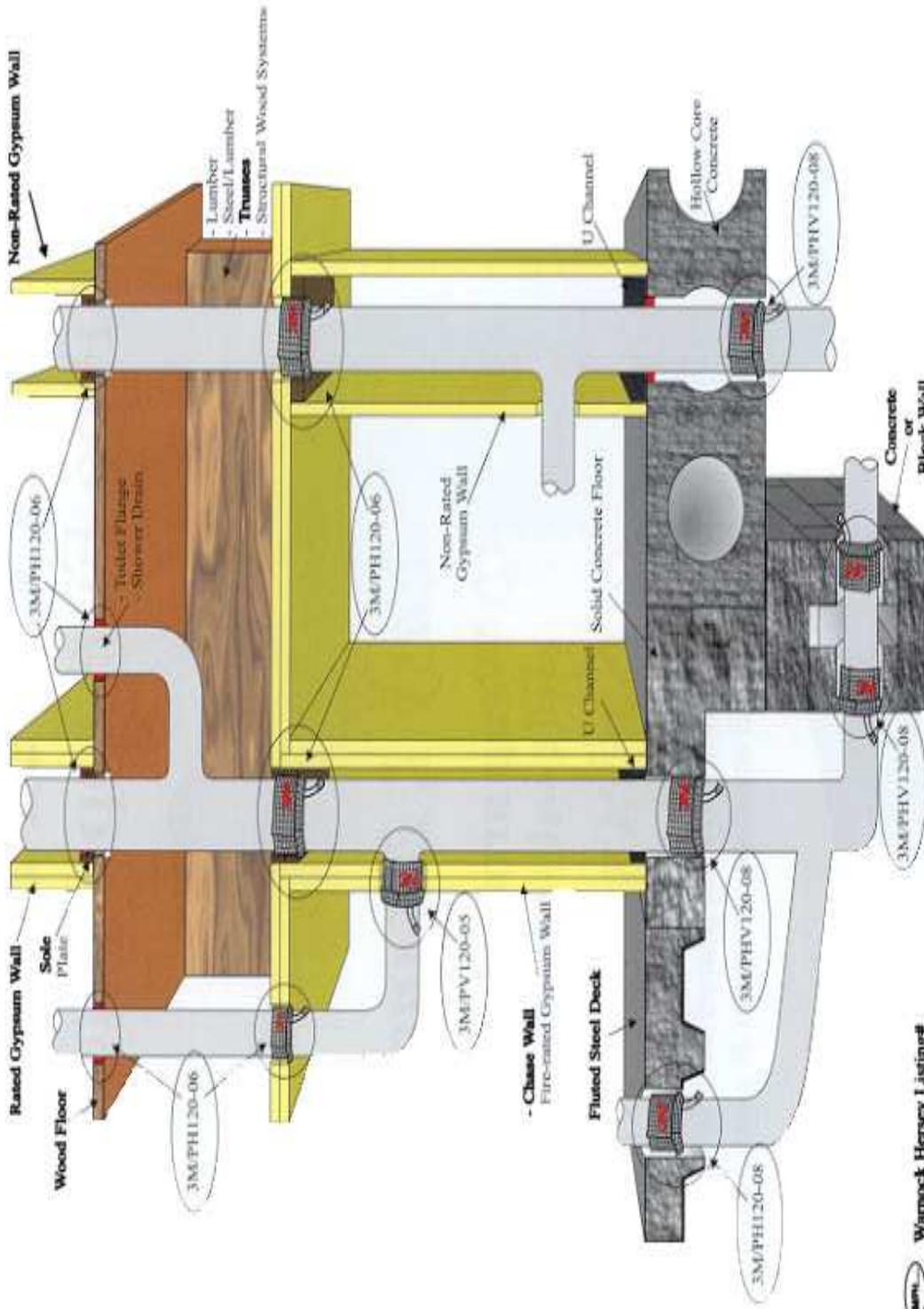
(See also Article 3.1.9.4. for requirements regarding penetrations by combustible drain, waste and vent piping.)

2) Penetrations change end of a firewall or a horizontal fire separation that is required to have a fire-resistance rating in conformance with Article 3.2.1.2. shall be sealed at the penetration by a fire stop that, **when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,”** has an FT rating not less than the fire-resistance rating for the fire separation.

3) Penetrations of a fire separation in conformance with Sentence 3.6.4.2.(2) shall be sealed by a fire stop that, **when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,”** has an FT rating not less than the fire-resistance rating for the fire separation of the assembly.

4) Sprinklers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the fire stop requirements of Sentences (1) to (3), provided the annular space created by the penetration of a fire sprinkler is covered by a metal escutcheon plate in accordance with NFPA 13, “Installation of Sprinkler Systems.”

3M™ FireStrap™ (Selection Guide)



Warnock Hersey Listings#

3M Firestrap

CP-25 WB+

- Combustible Pipe, DWV & Process Supply Applications
- Maximum Pipe Diameter - 75 mm ID (3")
- PVC, ccPVC, ABS, ccABS, CPVC, FRPP & Thin wall PVC
- Meets Building Code Requirements, 3.1.9.4, CAN4-S115-M or ULC-S115-95, including 50 pa pressure differential

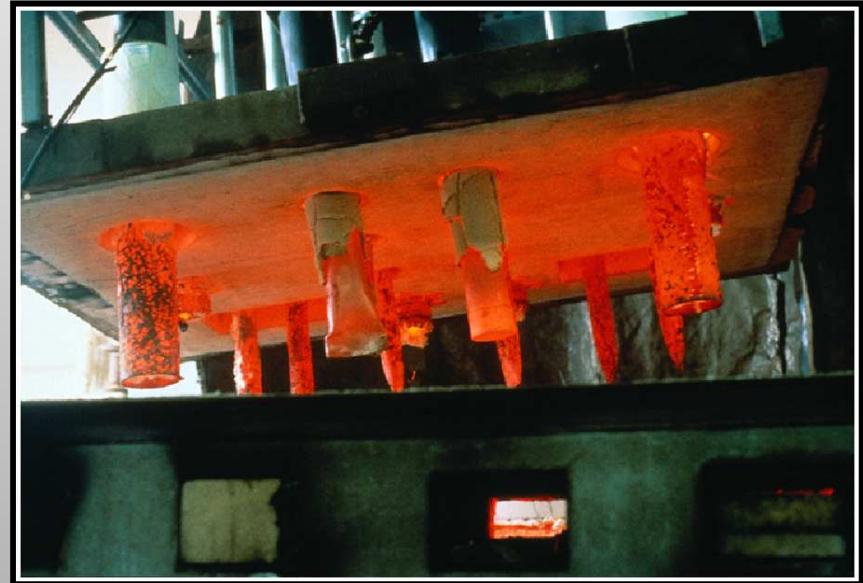
3M Fire Protection Products
 3M Canada Company
 P.O. Box 5757
 London, Ontario N6A 4T1

For Info Call 1 800 3M HELPS
www.3m.com/firestrap

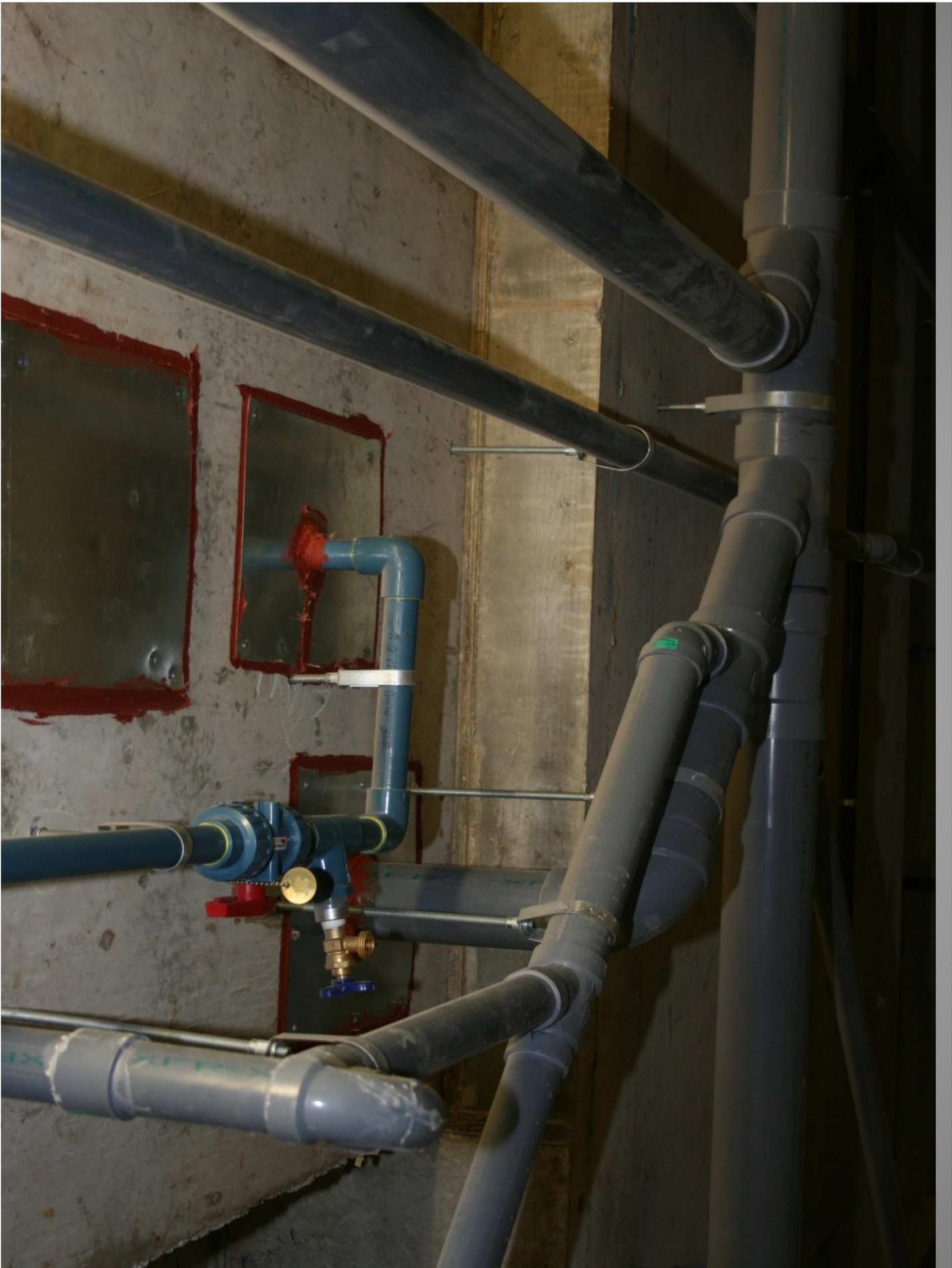
0005 LW 12020 E

3M Innovation

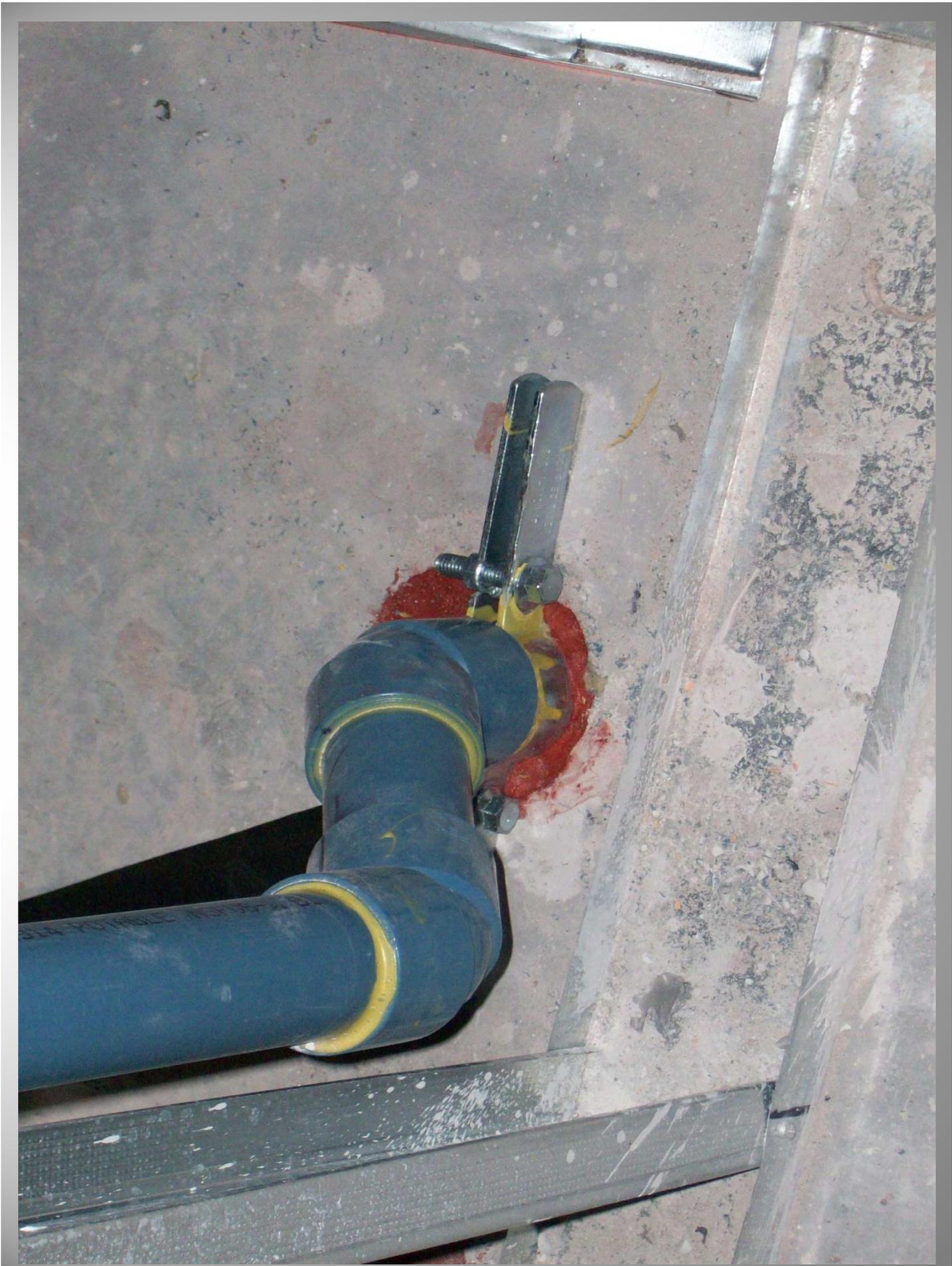
Testing Fire Rated Assembly with Penetrations











Storage Garage and FT-Rating



Classifying a Garage as a Separate Building - FT Rating Required

Many designers choose to classify the garage as a separate building from the structure above it using Sentence 3.2.1.2., particularly when designing multi-family buildings. There are a number of reasons for making this choice. Two major reasons are:

- The ability to place a number of smaller buildings over a larger garage.

If you classify the garage separately, you can often place a number of buildings over the top of a common garage area, without having to use the large garage area to classify the entire building.

- The use of different NFPA codes for the design of the sprinkler system in the garage and a multi-family building above.

By classifying the garage as a separate building, designers are also allowed to use NFPA 13 to design the sprinkler system in the garage portion, while the less restrictive NFPA 13R may be used to design the building above, if it is residential.

Storage Garage and FT-Rating

Plastic Pipe



Metallic Pipe



3.1.5.16. Combustible Piping Materials

1) Except as permitted by Clause 3.1.5.2.(1)(d) and Sentences (2) and (3), combustible piping and tubing and associated adhesives are permitted to be used in a building required to be of noncombustible construction provided that, **except when concealed in a wall or concrete floor slab**

CONTENTS

3.1.9.4. Combustible Piping Penetrations

- i** 1) *Combustible* sprinkler piping is permitted to penetrate a *fire separation* provided the *fire compartments* on each side of the *fire separation* are *sprinklered*.
- i** 2) *Combustible* water distribution piping is permitted to penetrate a *fire separation* that is required to have a *fire-resistance rating* without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the piping is protected at the penetration with a *fire stop* in conformance with Sentence (4).>
- i** 4) *Combustible* drain, waste and vent piping is permitted to penetrate a *fire separation* required to have a *fire-resistance rating* or a membrane that forms part of an assembly required to have a *fire-resistance rating*, provided
 - a) the piping is sealed at the penetration by a <*fire stop*> that has an F rating not less than the *fire-resistance rating* required for the *fire separation* when subjected to the fire test method in CAN/ULC-S115, "Fire Tests of Firestop Systems," with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side, and
 - b) the piping is not located in a <*vertical service space*>.
- i** 5) *Combustible* drain, waste and vent piping is permitted on one side of a vertical *fire separation* provided it is not located in a <*vertical service space*>.
- i** 6) <*Combustible* piping for central vacuum systems is permitted to penetrate a *fire separation* provided the installation conforms to the requirements that apply to *combustible* drain, waste and vent piping specified in Sentence (4).>

Interpretations

The Committee review the concerns expressed in the email dated December 01,2014, and concluded that similar to BC Appeal Board decisions, interpretations issued, remain valid for the code they reference.

Ernie s,. Nishi

Secretary ,

BC Building Code Interpretation Committee

BC BUILDING CODE INTERPRETATION COMMITTEE
AIBC, APEGBC, BOABC, POABC

File No: 98-0139 **INTERPRETATION** **Page 1 of 2**

Interpretation Date: June 20, 2006 Rev. – June 21, 2011

Building Code Edition: BC Building Code 1998

Subject: Combustible DWV Piping

Keywords: DWV piping, flame-spread rating

Building Code Reference(s): 3.1.5.15., 3.1.9.4.(3)(4)(5), 9.10.9.7.

Question:

1. Where a project consists of combustible townhouses or apartments built on top of a storage garage, is it acceptable to change the drain, waste and vent (DWV) piping material from noncombustible to combustible in multiple locations?
2. If so, would the change take place above or below the floor assembly required to be fire separation above a storage garage that is not classified as a separate building?
3. If the storage garage is required to be of noncombustible construction in accordance with Subsection 3.2.2., are there specific requirements regarding the use of combustible DWV piping?

Interpretation:

1. Yes.
In accordance with Sentence 3.1.9.4.(4) and 9.10.9.7.(3), combustible piping is permitted through penetrations of a fire separation required to have a fire resistance rating where the installation is fire stopped and not located in a vertical shaft in conformance with Clauses 3.1.9.4.(4)(a)&(b) and 9.10.9.7.(2)&(3). If these requirements cannot be met, then the DWV piping system must be noncombustible throughout in accordance with Sentence 3.1.9.4.(3) and 9.10.9.7.(1) with exception to the portions permitted to be combustible within 3.1.9.4.(5)&(6) and 9.10.9.7.(4)&(5).
2. It should be noted that where combustible DWV piping is used, combustible piping penetrations of fire separations required to have a fire-resistance rating must use a listed fire stop system in accordance with Clause 3.1.9.4.(4)(a) and 9.10.9.7.(3). In accordance with CAN4-S115-M testing criteria, a change from noncombustible to combustible piping must occur a minimum of 915 mm above the fire separation (see drawing on Page 2).

To comply with the fire stop assembly testing of a noncombustible pipe penetration, all drain, waste and vent piping below such penetration must be noncombustible piping material.

BC BUILDING CODE INTERPRETATION COMMITTEE
AIBC, APEGBC, BOABC, POABC

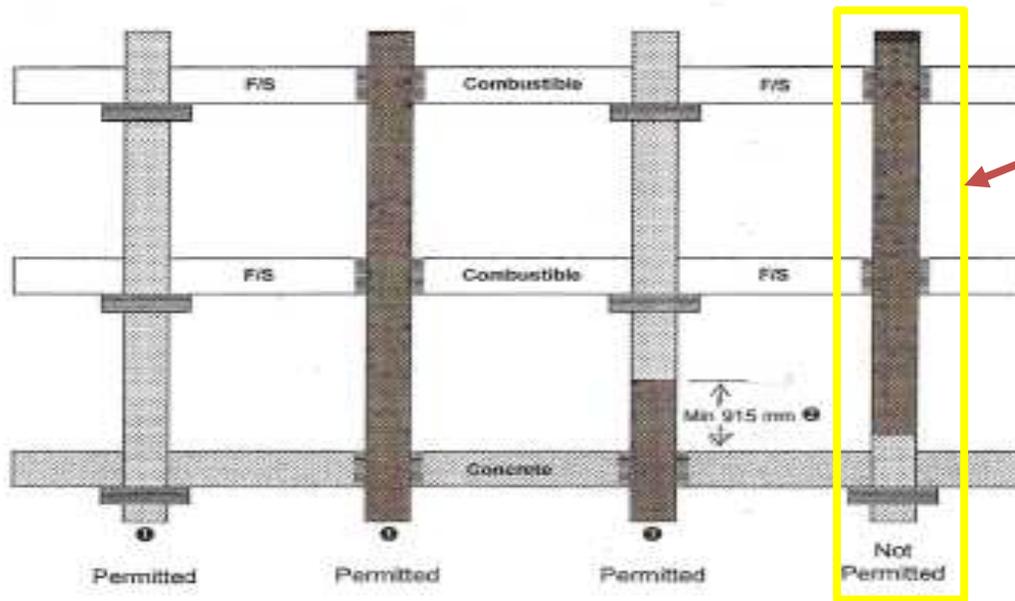
File No: 98-0139

INTERPRETATION

Page 2 of 2

3. Where a combustible DWV piping system is used, the combustible piping materials must meet the requirements of Article 3.1.5.15. with regards to flame-spread rating not more than 25 and where necessary, a smoke development classification not more than 50 for high buildings in accordance with Section 3.2.6. In accordance with Subsection 3.1.9., all penetrations must have a listed fire stop assembly consistent with the material utilized.

See drawings below illustrating these piping transition principles.



Enclosed within A Wall

Combustible Piping
Noncombustible Piping

Listed firestop assembly for combustible pipe penetrations
Listed firestop assembly for noncombustible pipe penetrations

- ① Same piping to grade level or noncombustible piping (typical).
- ② Derived from CAN4-S115-M testing criteria.


R. J. Light, Committee Chair

BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing

AIBC, APEGBC, BOABC, POABC

File No: 12-0004

INTERPRETATION

Page 1 of 2

Interpretation Date:	May 21, 2013
Building Code Edition:	BC Building Code 2012
Subject:	Combustible & Non-combustible Pipe Transitions
Keywords:	Fire Stop Assemblies, Transitions
Building Code Reference(s):	2.2.10.4.(2) ; 3.1.9.2.(1) ; 3.1.9.4. ; 3.2.1.2. ; 9.10.9.7.

Question:

As transitions of combustible and non-combustible DWV are permitted in Part 7 of the BCBC where can they take place when buildings are constructed above a common 3.2.1.2. concrete slab fire separation?

Interpretation:

Where a project consists of a single or multi storey building constructed on top of a common parking garage the concrete slab above the parking garage is constructed in accordance with Article 3.2.1.2. and the pipe penetrations must include a listed fire stop assembly with a minimum FT rating.

Articles 3.1.9.4. and 9.10.9.7. require the fire stop assembly to be tested in accordance with ULC-S115-05 with a pressure differential of 50 Pa between the exposed and unexposed sides of the penetration, with the higher pressure on the exposed side. Also, Sentence

3.1.9.2.(1) states that all combustible components of a fire stop assembly must be in place at the time of testing.

Part 8 of ULC-S115-05 indicates that the testing apparatus for piping being tested through the fire separation must extend to the dimensions noted above and below the fire stop penetration being tested. This would mean that any pipe couplings, connectors or transition fittings must be in the testing apparatus and if the test successfully obtained the necessary rating the added fittings would be noted in the listing drawing. Such is the case where cUL-F-B-2009 received a 2HR-FT rating with combustible piping through the separation and a transition coupling in separation.


R. J. Light, Committee

The views expressed are the copyright of the BC Building Code Interpretation Committee. These views should not be taken as an interpretation of the Building Code. Responsibility for an interpretation should rest with the user.

11/09/13 / 2013-05-28

BC BUILDING CODE INTERPRETATION COMMITTEE

A joint committee with members representing

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File No: 12-0004

INTERPRETATION

Page 2 of 2

Further information can be obtained in previous Interpretation 06-0070 that explains in detail where pipe transitions can occur above the 3.2.1.2. concrete slab fire separation where Part 3 multi storey buildings are constructed on top of the slab. Note that the 915mm dimension for transitions above the concrete slab is used because it would be above the required height of the fire stop assembly test apparatus indicated in ULC-S115-05.

Also, previous Interpretation 98-0160 shows the same 915mm dimension for pipe transitions where buildings without horizontal fire separations at the floor levels above the parking garage concrete slab are constructed on top of a 3.2.1.2. concrete fire separation.

While a transition can be made anywhere above the noted 915mm any proposed transition below that point and the top of the slab must have a listed fire stop assembly that includes a transition fitting in the listing drawing for the chosen fire stop assembly through the concrete slab

It is also noted that where transition fittings are installed Sentence 2.2.10.4.(2) of the BC Plumbing Code requires the mechanical couplings be certified in compliance with CAN/CSA-B602 Standard for Mechanical Couplings used with DWV piping.

The views expressed are the copyright of the BC Building Code Interpretation Committee. These views should not be taken as an interpretation of the Building Code. Responsibility for an interpretation should rest with the user.

3.1.9.2. Combustibility of Service Penetrations

-  **1)** Except as permitted by Articles 3.1.9.3. and 3.1.9.4., pipes, ducts, electrical outlet boxes, totally enclosed raceways or other similar service equipment that penetrate an assembly required to have a *fire-resistance rating* shall be *noncombustible*, unless the assembly was tested incorporating that service equipment. (See Appendix A.)

cUL SYSTEM NO. F-B-2009

PLASTIC/METAL PIPE TRANSITION THROUGH CONCRETE FLOOR ASSEMBLY

F, FT, FH, AND FTH-RATINGS = 2-HR.

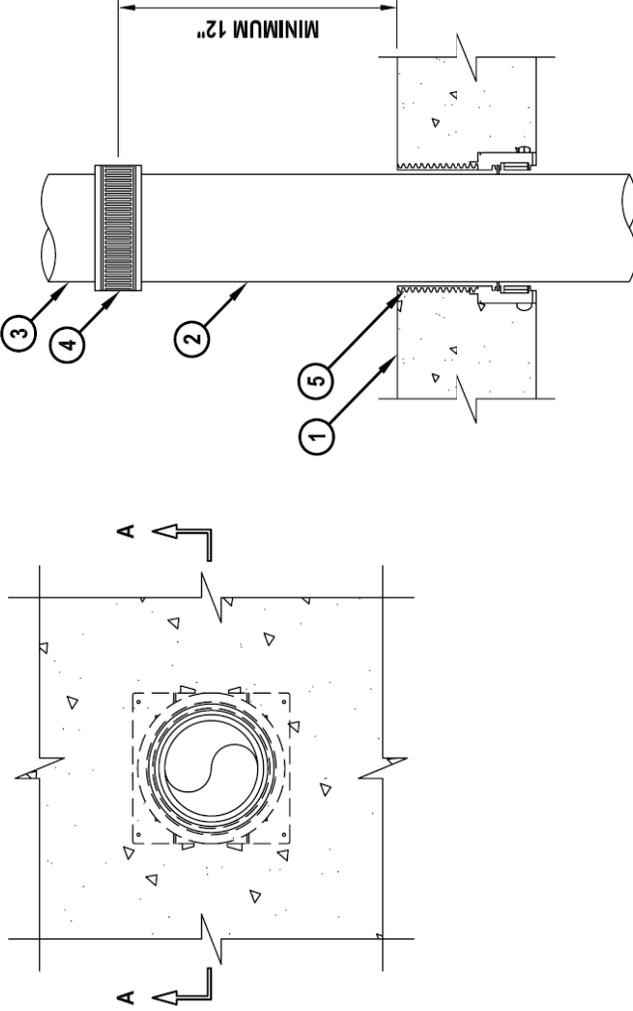
L-RATING AT AMBIENT = LESS THAN 5 L/S/SQ METER

L-RATING AT 400°F = LESS THAN 5 L/S/SQ METER

NOTE : TESTED WITH A 50 Pa PRESSURE DIFFERENTIAL

TOP VIEW

SECTION A-A



1. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 6" THICK) (2-HR. FIRE-RATING). NON-METALLIC PIPE TO BE ANY OF THE FOLLOWING AND TO EXTEND MINIMUM 12" ABOVE TOP SURFACE OF FLOOR :

A. MAXIMUM 4" NOMINAL DIAMETER PVC PLASTIC PIPE (SCH 40) (CELLULAR OR SOLID CORE) (CLOSED OR VENTED PIPING SYSTEM).

B. MAXIMUM 4" NOMINAL DIAMETER CPVC (SDR 13.5) PLASTIC PIPE (CLOSED PIPING SYSTEM ONLY). MAXIMUM 4" NOMINAL DIAMETER STEEL PIPE (SCH 10 OR HEAVIER) OR CAST/DUCTILE IRON PIPE.

4. COMPRESSION TYPE COUPLING WITH ELASTOMERIC GASKET AND A STAINLESS STEEL JACKET WITH STAINLESS STEEL BAND CLAMPS USED TO SECURE METALLIC PIPE WITH NON-METALLIC PIPE.

5. HILTI CP 680-P [2", 3", OR 4"] CAST-IN FIRESTOP DEVICE, CAST OR GROUTED INTO CONCRETE FLOOR. SIZE OF DEVICE TO MATCH NOMINAL DIAMETER OF PIPE.



Hilti Firestop Systems

HILTI, Inc.
Tulsa, Oklahoma USA (800) 879-8000

Sheet

1 of 1

Drawing No.

Scale

1 1/64" = 1"

cUL

Date

Sep. 18, 2007

FB2009a

Saving Lives through Innovation and Education

cUL FB2009a.091807





System No. F-B-2057 XHEZ7.F-B-2057 Through-penetration Firestop Systems Certified for Canada

Page Bottom

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

XHEZ7 - Through-penetration Firestop Systems Certified for Canada

See [General Information for Through-penetration Firestop Systems Certified for Canada](#)

System No. F-B-2057

October 22, 2014

F Rating — 2 Hr

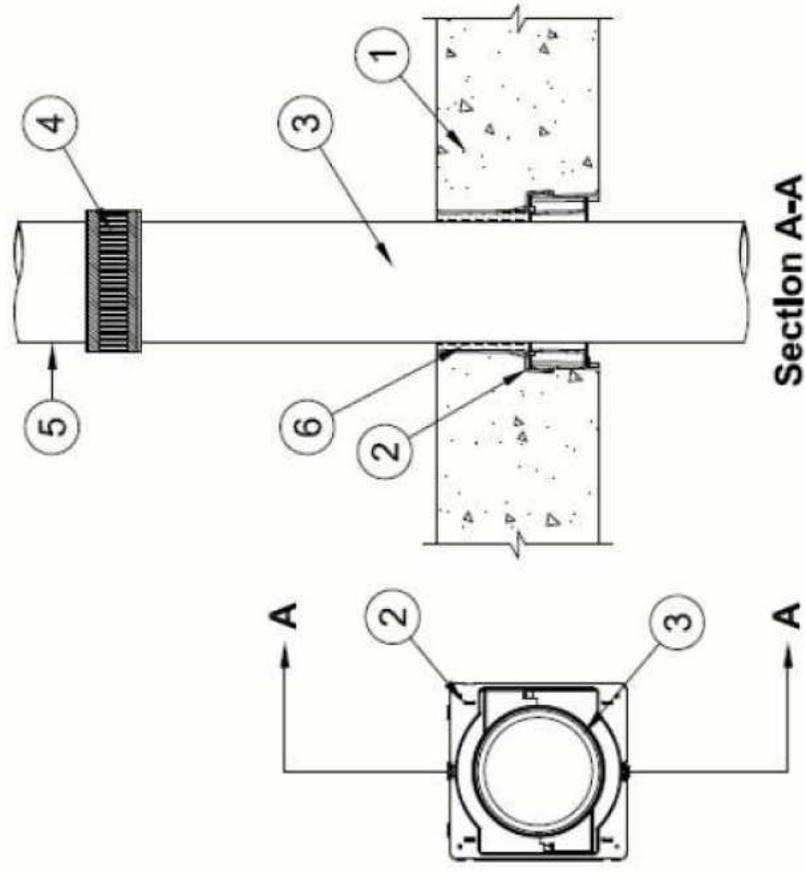
FT Ratings - 1/4 and 2 Hr (See Item 3)

FH Rating — 2 Hr

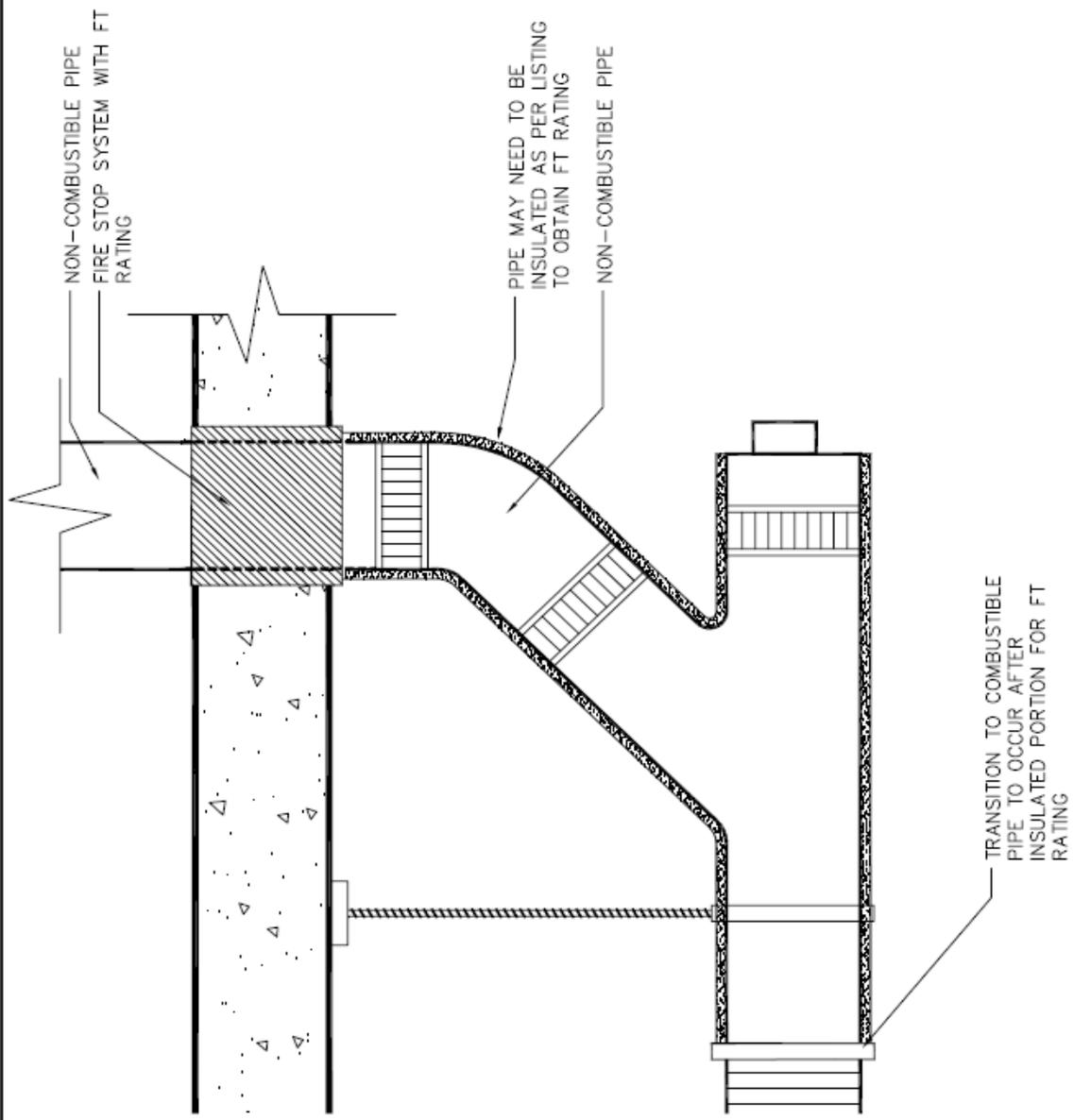
FTH Rating — 1/4 and 2 Hr

L Rating At Ambient - Less Than 1 CFM/sq ft (See Items 4 and 6)

L Rating At 400 F - Less Than 1 CFM/sq ft (See Items 4 and 6)

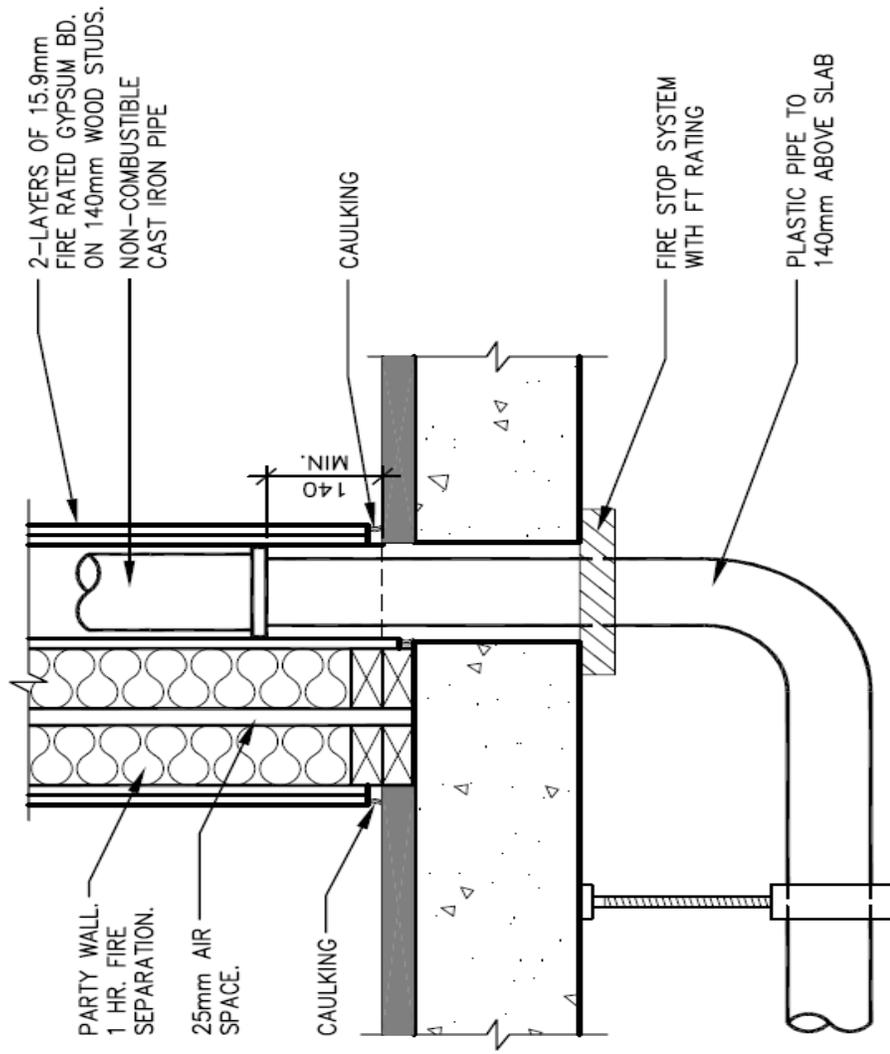


System tested with a pressure differential of 50 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.



Noncombustible Pipe Change to Combustible Pipe for a One Storey Garage

12b



SECTION

Noncombustible Pipe Change to Combustible Pipe for a One Storey Garage

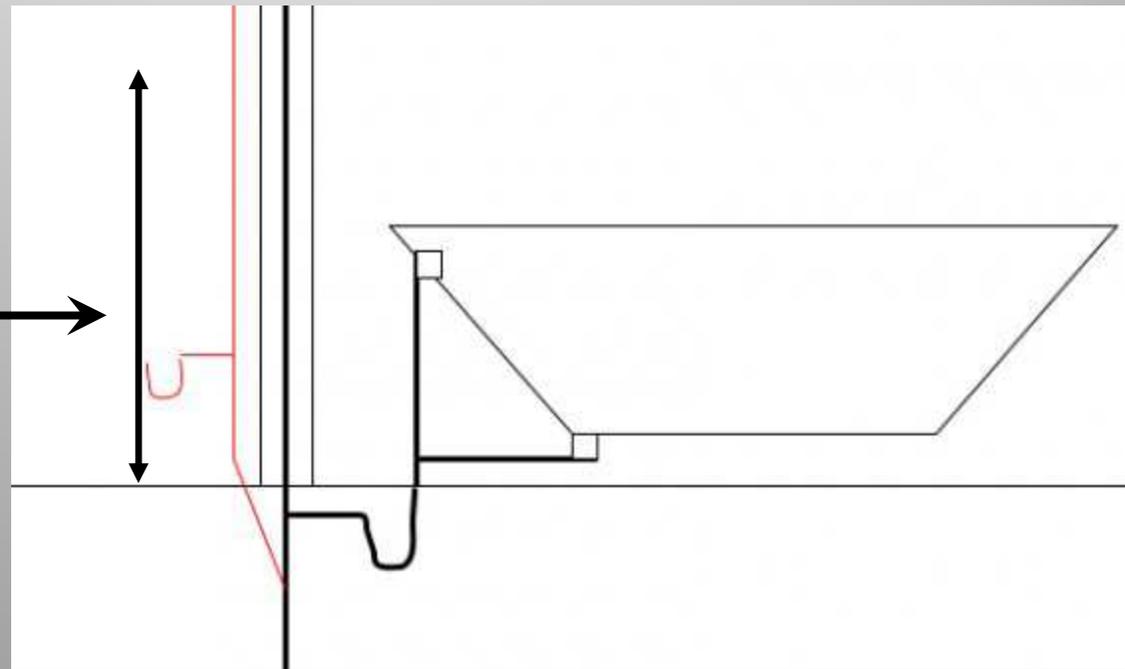
Party Walls

If designers do want to put services in STC rated walls, the authority may ask for:

- An STC test to show that the wall assembly containing the services and service penetrations does meet the required STC rating.

Transitions to Combustible

915mm →



Question:

As transitions of combustible and non-combustible DWV are permitted in Part 7 of the BCBC where can they take place when buildings are constructed above a common 3.2.1.2. concrete slab fire separation?

Part 8 of ULC-S115-05 indicates that the testing apparatus for piping being tested through the fire separation must extend to the dimensions noted above and below the fire stop penetration being tested. This would mean that any pipe couplings, connectors or transition fittings must be in the testing apparatus and if the test successfully obtained the necessary rating the added fittings would be noted in the listing drawing. Such is the case where cUL-F-B-2009 received a 2HR-FT rating with combustible piping through the separation and a transition coupling to non-combustible pipe located at 12 inches above the concrete fire separation.

While a transition can be made anywhere above the noted 915mm any proposed transition below that point and the top of the slab must have a listed fire stop assembly that includes a transition fitting in the listing drawing for the chosen fire stop assembly through the concrete slab



ULC Standards
Normes ULC

File : CAN/ULC-S115

16 January 2014

STANDARDS BULLETIN 2013-23

CAN/ULC-S115-11

Standard Method of Fire Tests of Firestop Systems

**INTERPRETATION OF REQUIREMENT ON THE INTENDED APPLICATION OF A
DIMENSION
(Clauses 6.1.3, 9.1.1, 9.4.2, 9.4.4, 9.4.5, 9.4.6, 9.4.7 and A5.2)**

The following is an interpretation by the ULC Standards Committee on Fire Tests on CAN/ULC-S115, Standard Method of Fire Tests of Firestop Systems. The interpretation is being issued in response to a request for interpretation received by ULC Standards pertaining to the Clauses listed below.

Question:

Is the 915 mm dimension in the Clauses listed above intended to be applied as a prescriptive dimension for field installations?

Response: No.

Rationale:

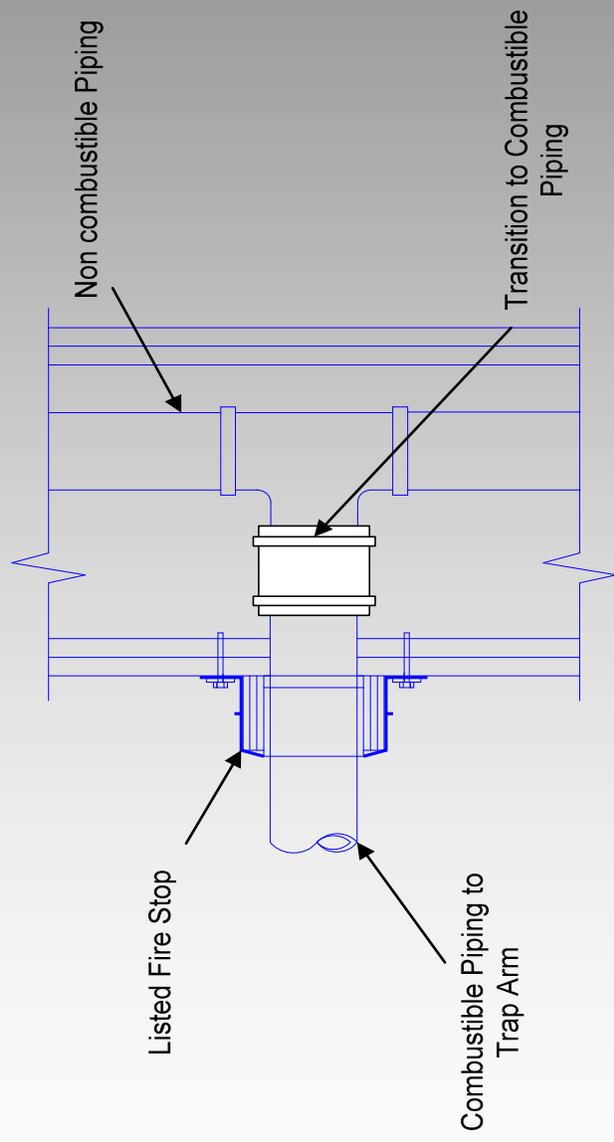
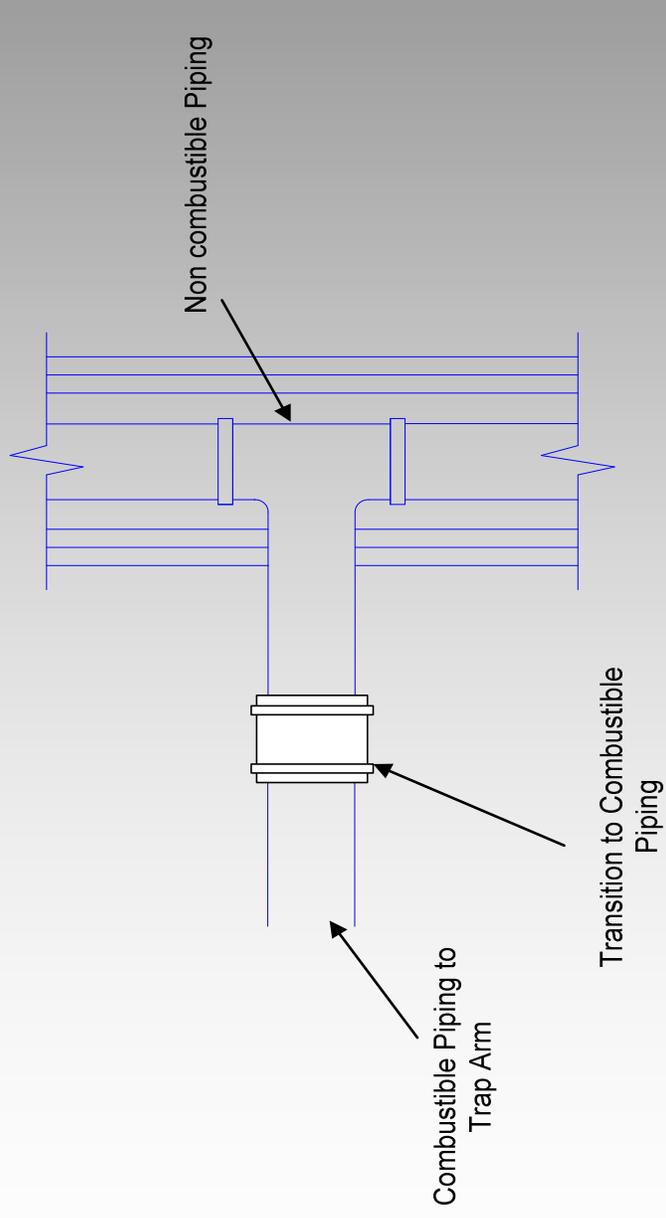
The 915 mm dimension is solely for the purpose for the construction of the test assembly.

The Standard addresses two types of firestop systems:

- 1) Through-Penetration Firestop System: a firestop system that seals the opening around penetrating items, such as cables, cable trays, conduits, ducts, and pipes, which pass through the entire assembly. The Standard prescribes a length of 915 mm as the extension on the unexposed side of the test specimen to simulate a continuous penetrating item used in the field.
- 2) Joint Firestop System: a firestop system that provides a seal along a continuous linear opening between two fire-resistance rated assemblies, or bounded by a fire-resistance rated assembly, to prevent the spread of fire. The prescribed minimum length of 915 mm in the Standard is to simulate the minimum test sample size that can be used to evaluate the joint system.

Transitions from Combustible to Non Combustible Piping Systems



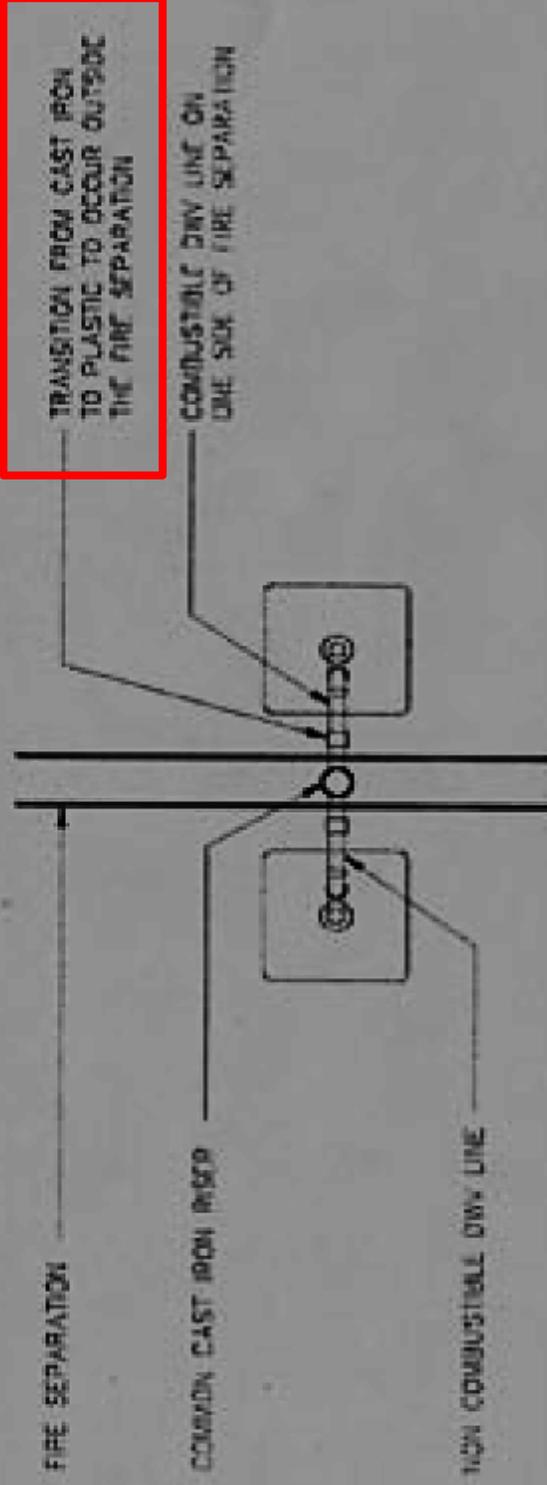


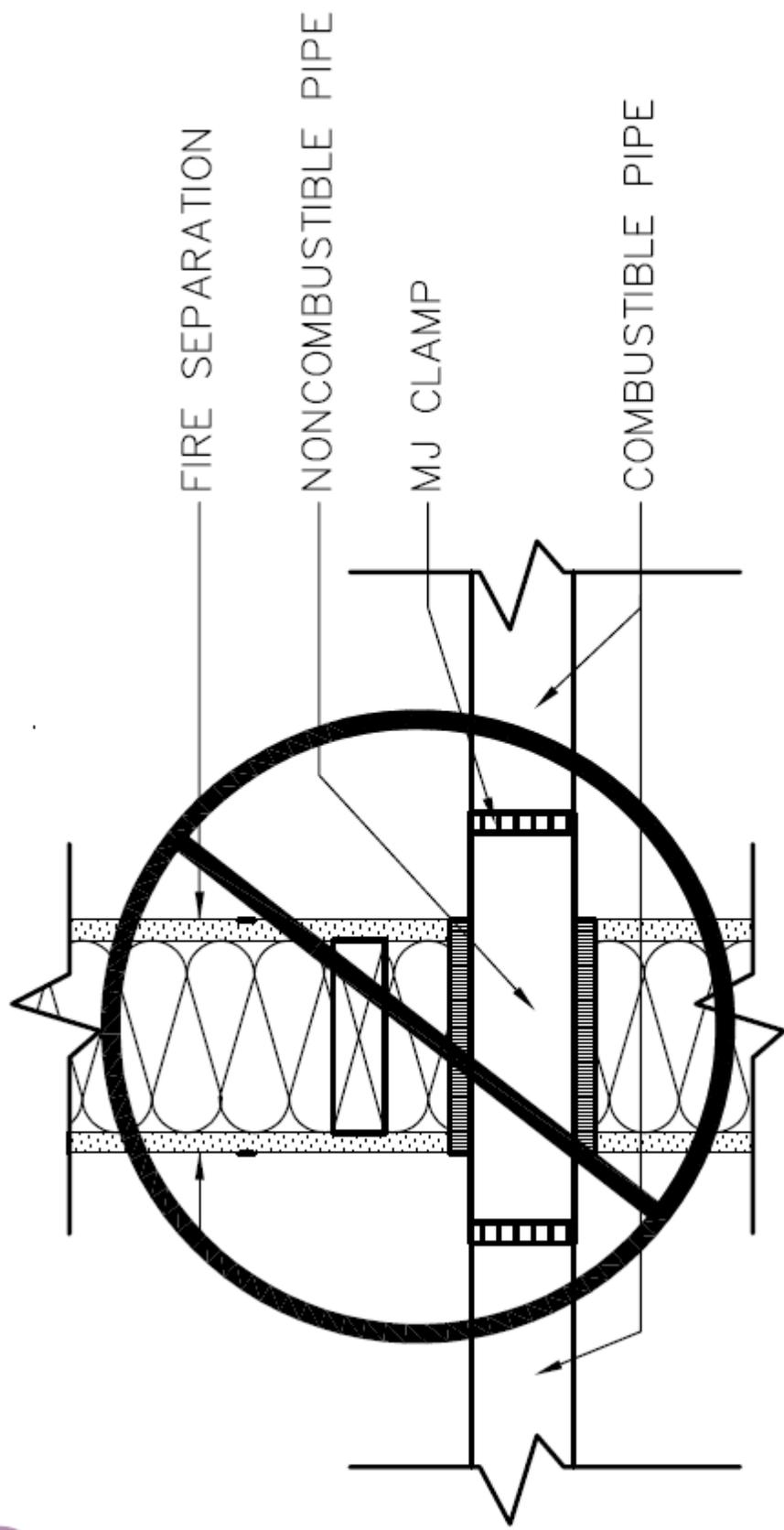
BC BUILDING CODE INTERPRETATION COMMITTEE
AIBC, APEGBC, BOABC, POABC

File No: 98-0159

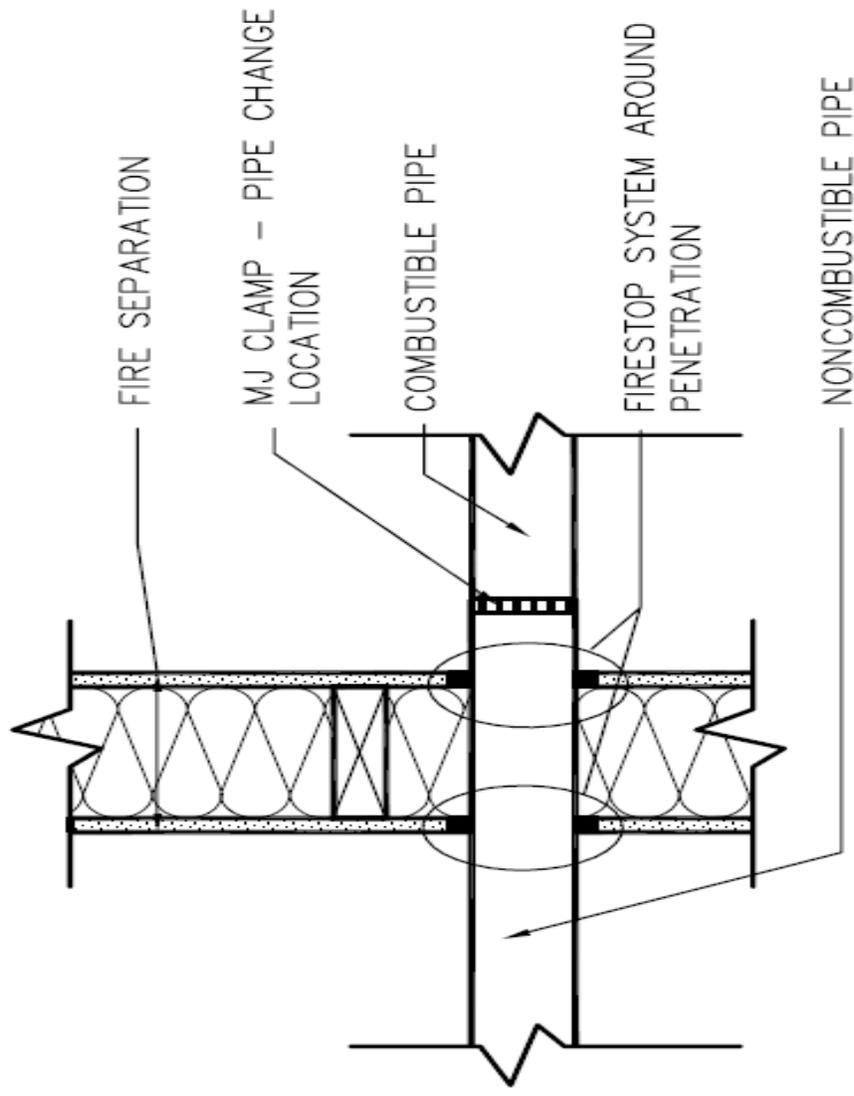
INTERPRETATION

Page 2 of 3

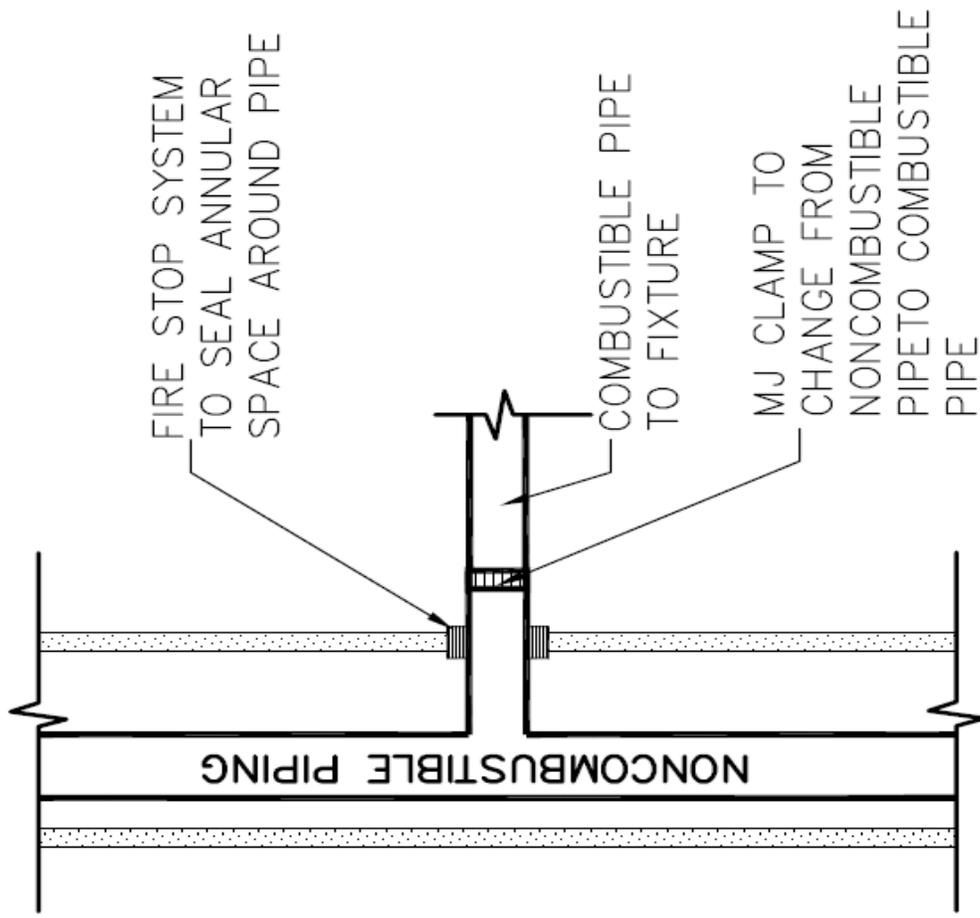




*Noncombustible Pipe Sleeves Through Fire Separations Changing to
Combustible Pipe on Both Sides - Not Allowed*



Detail - Pipe Transitions Between Fire Compartments



Noncombustible Pipe Riser Change to Combustible Pipe

Summary of the BC Building Code Requirements for combustible piping

Building Construction	Location in building	Limitations	Exceptions
Combustible Construction	Combustible piping permitted anywhere in the building.	See below requirements specific to plenums, requirements specific to combustible sprinkler piping, and requirements at the penetration of a fire separation.	
Noncombustible Construction	Piping permitted anywhere in building provided it has a maximum 25 FSR. (Note: most ABS piping has a FSR greater than 25 and would not be permitted)	See specific requirements for plenums, combustible sprinkler piping, and penetration at fire separations. Max. 25 FSR and 50 SDC for high buildings.	<ul style="list-style-type: none"> -Pipe concealed in a wall or concrete floor slab. -Combustible sprinkler piping within a sprinklered floor area. -Tubing for pneumatic controls ≤ 10mm. -Polypropylene pipes and fitting in DWV piping conveying high corrosive material and piping used to distribute distilled or dialyzed water in laboratories and hospitals provided: building is sprinklered, piping not in a vertical shaft, FT rated firestop at fire separation penetrations with same rating of fire separation.
	At the penetration of a firewall	Firestop at the penetration with a listed firestop system with an FT rating equal to the required fire resistance rating of the firewall.	
	At the penetration of a 3-2.1.2 slab	Firestop at the penetration of the slab with a 2 hr. FT rated listed firestop system	
Combustible or Noncombustible Construction	Sprinkler piping	Fire compartments on both sides of fire separation must be sprinklered. Piping firestopped at the penetration with a listed firestop system with an F rating equal to the required fire protection rating for a closure.	
	Water Distribution Piping	Piping firestopped at penetration by a listed firestop system with an F rating equal to the required fire resistance rating of the fire separation.	
	DWV piping and central vacuum piping	Piping firestopped at penetration by a listed firestop system with an F rating equal to the required fire resistance rating of the fire separation.	Not permitted in a vertical service space (Note: piping permitted in stud cavity of a fire rated wall as long as it is firestopped at the penetration of the wall membrane) and at the penetration of the floor assembly above and below
	In a plenum	Max FSR 25, Max SDC 50 (Note: most ABS piping has a FSR≥25 and would not be permitted)	Tubing for pneumatic controls
	Requirements specific to combustible sprinkler piping	Must meet the requirements of ULC/ORD-C109P, look for the ULC label with the word "listed" and the designation "Plastic Pipe and fittings for Sprinkler Systems" Piping protection: Piping must be separated from area served and other fire compartments by lath and plaster, gypsum board ≥ 9.5 mm thick, plywood ≥ 13 mm thick, or suspended membrane ceiling with steel suspension grids and lay in panels with a mass ≥ 1.7 kg/m ² .	<p>Exceptions for protection of piping:</p> <ul style="list-style-type: none"> -ULC listing for sprinkler piping specifically indicates no protection required (i.e. piping can be used exposed). -Piping may also be located above any ceiling provided that the distance between the edge of any unprotected ceiling opening and the nearest sprinkler is less than 300 mm.



Building means any structure used or intended for supporting or sheltering any use or *occupancy*.

3.6.4.3. Plenum Requirements

- i** 1) A concealed space used as a *plenum* within a floor assembly or within a roof assembly need not conform to [Sentence 3.1.5.15.\(1\)](#) and [Article 3.6.5.1.](#), provided
- a) all materials within the concealed space have a *flame-spread rating* not more than 25 and a smoke developed classification not more than 50, except for
 - i) tubing for pneumatic controls,
 - ii) optical fibre cables and electrical wires and cables <with *combustible* insulation, jackets or sheathes that are used for the transmission of voice, sound or data and conform to [Sentences 3.1.4.3.\(2\)](#) and [3.1.5.18.\(2\)](#),>
 - iii) totally enclosed non-metallic raceways <with an FT6 rating, when tested in accordance with [Clause 3.1.5.20.\(1\)\(a\)](#), in *buildings* required to be of *noncombustible construction*>, and
 - iv) <totally enclosed non-metallic raceways with an FT4 rating, when tested in accordance with [Clause 3.1.5.20.\(1\)\(a\)](#), in *buildings* permitted to be of *combustible construction*, and>
 - b) the supports for the ceiling membrane are of *noncombustible* material having a melting point not below 760°C.
- i** 2) If a concealed space referred to in [Sentence \(1\)](#) is used as a return-air *plenum* and incorporates a ceiling membrane that forms part of the required *fire-resistance rating* of the assembly, every opening through the membrane shall be protected by a *fire stop flap* that
- a) stops the flow of air into the concealed space in the event of a fire,
 - b) is supported in a manner that will maintain the integrity of the ceiling membrane for the duration of time required to provide the required *fire-resistance rating*, and
 - c) conforms to the appropriate requirements of [Appendix D](#).

3.1.5.15. Combustible Ducts

- i** 1) Except as required by Sentence 3.6.4.3.(1), *combustible* ducts, including *plenums* and duct connectors, are permitted to be used in a *building* required to be of *noncombustible construction* provided these ducts and duct connectors are used only in horizontal runs.
- i** 2) *Combustible* duct linings, duct coverings, duct insulation, vibration isolation connectors, duct tape, pipe insulation and pipe coverings are permitted to be used in a *building* required to be of *noncombustible construction* provided they conform to the appropriate requirements of Subsection 3.6.5.
- i** 3) In a *building* required to be of *noncombustible construction*, *combustible* ducts need not comply with the requirements of Sentences 3.6.5.1.(1) and (2) provided the ducts are

 - a) part of a duct system conveying only ventilation air, and
 - b) contained entirely within a *dwelling unit*.

3.6.5. AIR DUCT AND PLENUM SYSTEMS

3.6.5.1. Duct Materials

- i** 1) Except as permitted by Sentences (2) to (5) and Article 3.6.4.3., all ducts, duct connectors, associated fittings and plenums used in air duct systems shall be constructed of steel, aluminum alloy, copper, clay, asbestos-cement or other *noncombustible* material.
- i** 2) Except as permitted by Sentence (3), ducts, associated fittings and plenums are permitted to contain *combustible* material provided they
 - a) conform to the appropriate requirements for Class 1 duct materials in [CAN/ULC-S110, "Test for Air Ducts,"](#)
 - b) conform to Article 3.1.5.15. in a *building* required to be of *noncombustible construction*,
 - c) conform to Subsection 3.1.9.,
 - d) are used only in horizontal runs in a *building* required to be of *noncombustible construction*,
 - e) are not used in vertical runs serving more than 2 *storeys* in a *building* permitted to be of *combustible construction*, and
 - f) are not used in air duct systems in which the air temperature could be more than 120°C.
- i** 3) *Combustible* ducts which are part of a duct system conveying only ventilation air and are contained entirely within a *dwelling unit* need not comply with the requirements of Sentences (1) and (2).
- i** 4) Duct sealants shall have a *flame-spread rating* not more than 25 and a smoke developed classification not more than 50.
- i** 5) Duct connectors that contain *combustible* materials and that are used between ducts and air outlet units shall
 - a) conform to the appropriate requirements for Class 1 air duct materials in [CAN/ULC-S110, "Test for Air Ducts,"](#)
 - b) be not more than 4 m long,
 - c) be used only in horizontal runs, and
 - d) not penetrate a required *fire separation*.

Thank You

