

COURSE 207

Filing Representative Training
for

Class 2 Code and Zoning Representatives

Includes:

- Fire Alarm Plan Examination Procedure
- Sprinkler and Standpipe
- Ansul Type Systems on Kitchen Hoods
- Fire Protection 2008 Building Code
- Fire Protection 2014 Building Code update

Fire Alarm Plan Examination Procedure

Neil Adler, P.E.
Chief Plan Examiner

- 2008 NYC Building Code (BC) Section BC 907, 908 and Appendix Q amending NFPA 72
- 2008 NYC Electrical Code
- NYC Fire Code (FC) section 908

....but, the Department of Buildings does not review fire alarm design documents



Michael R. Bloomberg, Mayor
Robert D. LiMandri, Commissioner
January, 2010

New Fire Alarm Plan Examination Procedure

Effective December 1, 2009, fire alarm drawings will be reviewed by the Fire Department at its Brooklyn headquarters. This change supports the implementation of [FDNY Rules](#).

New Fire Alarm Plan Examination
9 Metrotech Center
Brooklyn, NY

Key Changes:

- All fire alarm applications must be filed as separate Alteration Type 2 applications with a fire alarm work type (FA).
- Drawings must be submitted to and reviewed by the Fire Department.
- Application forms and fees must still be submitted at DOB Borough Offices.
- There are two new required items related to fire alarms. Both will automatically apply to the Alteration 2 FA job:
 - Prior to Approval: FDNY Received and Approved Plans
 - Prior to Signoff: "As Built" Plans**Note: this requirement will be waived if the job's letter of approval was issued prior to 12/1.*

In-flight Applications:

If you filed your fire alarm application with the Department of Buildings prior to December 1, 2009 and plan exam review has not yet started, you must pick up the plans from the Borough Office and submit it to FDNY for review and approval.

If plan exam is in process but not yet approved prior to December 1st, 2009, applicants must check the linked list to determine which agency reviewed your application:

- FDNY Review:** If the job was examined by FDNY, applicants must retrieve their folder and submit it to FDNY at Metrotech.
- Department of Buildings Review:** If the job was examined by DOB, applicants must complete plan exam approval in borough office.

Regardless of where the plan examination occurs, the "As-built" plans must be submitted to the Fire Department to obtain FDNY's Letter of Approval.

For more information regarding this process change, please visit the [FDNY's website](#).



Battalion Chief Thomas J. Pigott - Chief of Technology Management
Office of Technology Management
Bureau of Fire Prevention

9 METROTECH CENTER – BROOKLYN, NY 11201



TECHNOLOGY MANAGEMENT BULLETIN # 10-2/2009 (Revised June 7, 2011)

To: Public Agencies, Real Estate Entities, Architects, Engineers, Fire Alarm and Construction Industry Entities, Fire Safety Directors and Building Managers

Re: Clarification of Fire Department and Department of Buildings Consultative Determination regarding replacement of control equipment and/or Fire Command Stations of existing prior approved Advisory Class 'E' fire alarm systems or new replacements of entire systems of the Advisory Class E fire alarm systems.

- After consultation between the NYC Department of Buildings Technical Affairs and the NYC Fire Department Office of Technology Management the policy is hereby enacted, in the interest of life safety, that any Advisory Class 'E' fire alarm system, which is either not functional and/or requires replacement of the Fire Command Station, shall be upgraded to the High Rise code provisions of BC § 907.2.12 for new fire alarm installations and the provisions of DOB Buildings Bulletin # 2009-022 for existing building fire alarm modifications, additions and/or replacements installations' regulations.

Information You Need to Know!

safety

service

integrity

Page 1 of 2

Effective Date: June 7, 2011

To obtain copies of these memos, visit the Department of Buildings and the Fire Department websites

Fire Alarm Application Drawings are reviewed by the NYC Fire Department

Effective December 1, 2009

[At the Department of Buildings \(DOB memo Jan. 2010\):](#)

- File as separate Alteration-2 applications with a “Fire Alarm” (FA) work type
- Submit only PW-1 form, pay fee, obtain BIS application number
- “As-Built Plans” will be listed as a BIS “Required Item” prior to sign-off, unless FDNY approval letter prior to 12/1/09
- *Contrary to current memo*, “FDNY Received and Approved Plans” will not be a “Required Item” prior to approval
- DOB will sign-off FA application, once FDNY Letter of Approval and as-built plans are received.

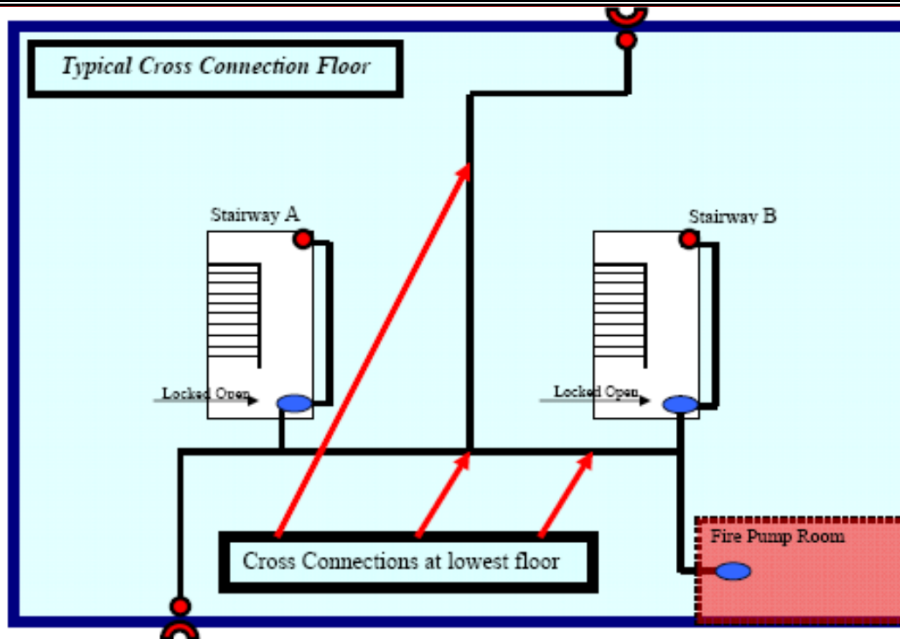
At the Fire Department (Metrotech Center, Brooklyn), per
FDNY memo 10/2009 revised 3/31/2011:

- Submit drawings and DOB application forms, with assigned BIS number
- Drawings shall be reviewed by an assigned FDNY examiner, who shall update the DOB BIS system to indicate the drawings' approved or disapproved status
- FDNY shall issue a "Letter of Approval" upon final inspection by FDNY
- Please note that as-built plans must be submitted to the Fire Department to obtain FDNY's Letter of Approval.

Sprinkler and Standpipe

Shawn Jones

Chief of Central Plumbing Enforcement



- Locate the Standpipe line, if the Standpipe line is not clearly visible ask the Site Safety Manager to walk the line with you.
- The Standpipe line may or may not have an OS&Y valve in the cellar (*Cross connection floor*), but if it does it should be locked in the open position. (*Stem Out see below*).
- You should be able to trace the Standpipe lines from the Siamese connections riser to the stairways and up to the floors.
- Each floor should have a brass hose valve. It is not required that the hoses be onsite, FDNY will bring their own.
- The Siamese riser should go up to the street floor and out to the Siamese connection in the street. If a plywood fence is in place the Siamese should extend to the street side of the fence.
- If in some cases the Dry Standpipe line are connected to a Fire Pump all Fire Pump valves should be locked in the closed position (*Stem in, see below*), or capped off.
- The Standpipe should be capped one floor below the demo floor.
- If the building has an existing sprinkler system, it must be maintained throughout the demolition. The Sprinkler and Standpipe risers should be checked periodically.

Orientation of OS&Y Valves

Stem out valve is OPEN



Stem in Valve is Closed



Siamese Color Code

Red Standpipe
Green Sprinkler
Yellow Combination
A Blue Collar on a Siamese Connection Denotes a Dry System

- OS&Y Valve
- ⤿ Siamese Connection
- Pipe Riser

New Laws state all Fire Suppression piping is to be color coded painted RED the valve handles and Siamese connection caps painted RED for Standpipe GREEN for Sprinkler and YELLOW for Combination systems.

Note:

During deconstruction, if two or more standpipes exist on may be used for construction purposes. (Water/Air) 27-1014

AGU-018.53

-
- **BC 902** – “**STANDPIPE SYSTEM.** Piping installed in a building or structure that serves to transfer water from a water supply to hose connections at one or more locations in a building or structure for fire-fighting purposes...” Types include **Automatic Wet & Dry, Manual Wet & Dry, and Semi-automatic Dry**

 - **AC28-401.3** – “**COMBINED STANDPIPE SYSTEM.** A standpipe to which a sprinkler system is connected or is being connected.”

Dry standpipe

- A "dry" standpipe is a pipe extending into a building that can be used by the fire department to supply fire fighting water to the interior of the structure or fighting fires in another building through the use of the roof manifold. The pipe is fixed and permanently in place with an intake (fire dept. connection) located near the street so that a fire engine can supply water to the system [1]. Fire fighters bring hoses in with them and attach them to standpipe outlets located along the pipe throughout the structure. Dry standpipes are not normally filled with water, the pipes are thus dry and are so named. When a fire occurs the pipes are "charged", meaning water is introduced into them through the Fire Department Connection.

Wet standpipe

A "wet" standpipe, on the other hand, is filled with water and is pressurized at all times. In contrast to dry standpipes, which may be used only by firefighters.

BC 902

Class I system. A system providing 2 1/2-inch (64 mm) hose connections to supply water for use by the Fire Department and those trained in handling heavy fire streams.

Class II system. A system providing 1 1/2-inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the Fire Department during initial response.

Class III system. A system providing 1 1/2-inch (38 mm) hose stations to supply water for use by building occupants and 2 1/2-inch (64 mm) hose connections to supply a larger volume of water for use by the Fire Department and those trained in handling heavy fire streams.

Fire Department Connections





Red Standpipe



Yellow Combination
Sprinkler/Standpipe

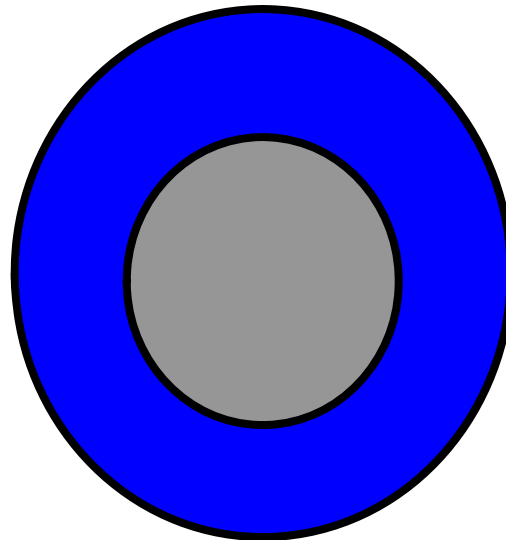


Green Sprinkler



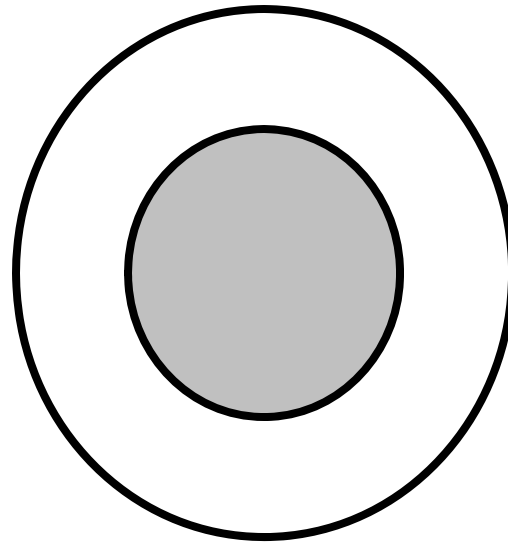


- **Blue Collar** tells FDNY this has been changed to a Dry System





- **White Collar** tells FDNY this System is Temporary or Permanently out of service



- All fire suppression risers are to be painted Red
 - For example, water service, sprinkler, standpipe and cross connections
- Branch sprinkler lines need not be painted
- All valve handles shall be painted as Siamese caps

- **Red** – Standpipe Systems
- **Green** – Sprinkler Systems
- **Yellow** – Combination Systems

DOB requires the following inspections:

- **Standpipe**

- A finish inspection, the inspector will walk the entire standpipe line checking, pipe, fittings, valves, water connections and if installed Fire Pump

- *A Hydrostatic test for standpipe is 300 psi for 1 hour

- **Sprinkler**

- A finish inspection, the inspector will walk the sprinkler line checking that all areas are covered

- *A Hydrostatic test for sprinkler is 200 psi for 1 hour

- **Fire Pump Test**

- If the building has a fire pump it to is tested by DOB inspectors

- **Special Inspection**

- Third party testing (TR-1 Required)

The Five year test is witnessed by FDNY and is not required by DOB

*A Hydrostatic test must include the entire system

Horizontal & recessed
vertical & horizontal
sidewall



recessed pendant
& upright



Pendant



Recessed vertical &
horizontal sidewall



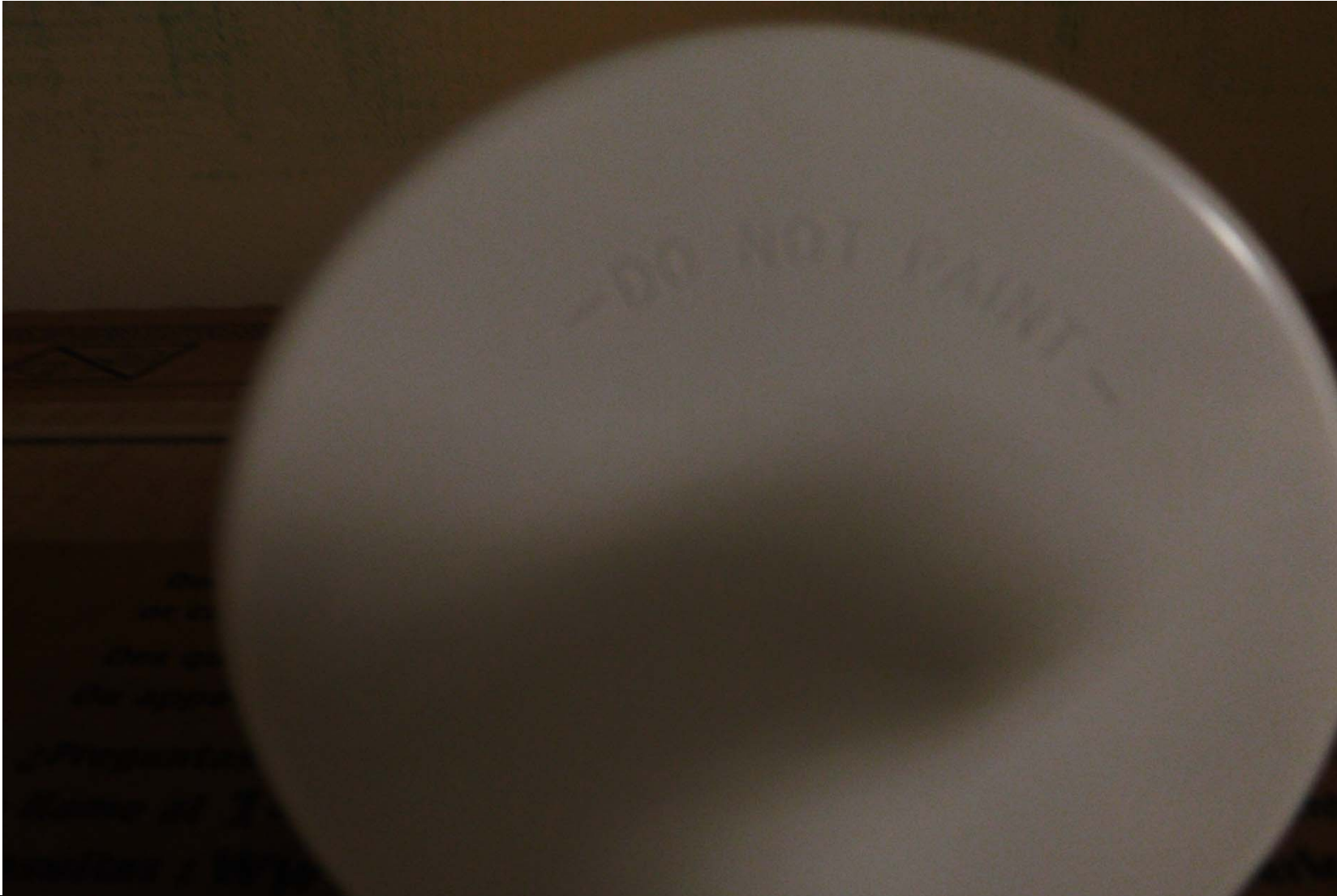
Problematic Installations Concealed Head Open and Exposed



Problematic Installations Concealed Sprinkler Head



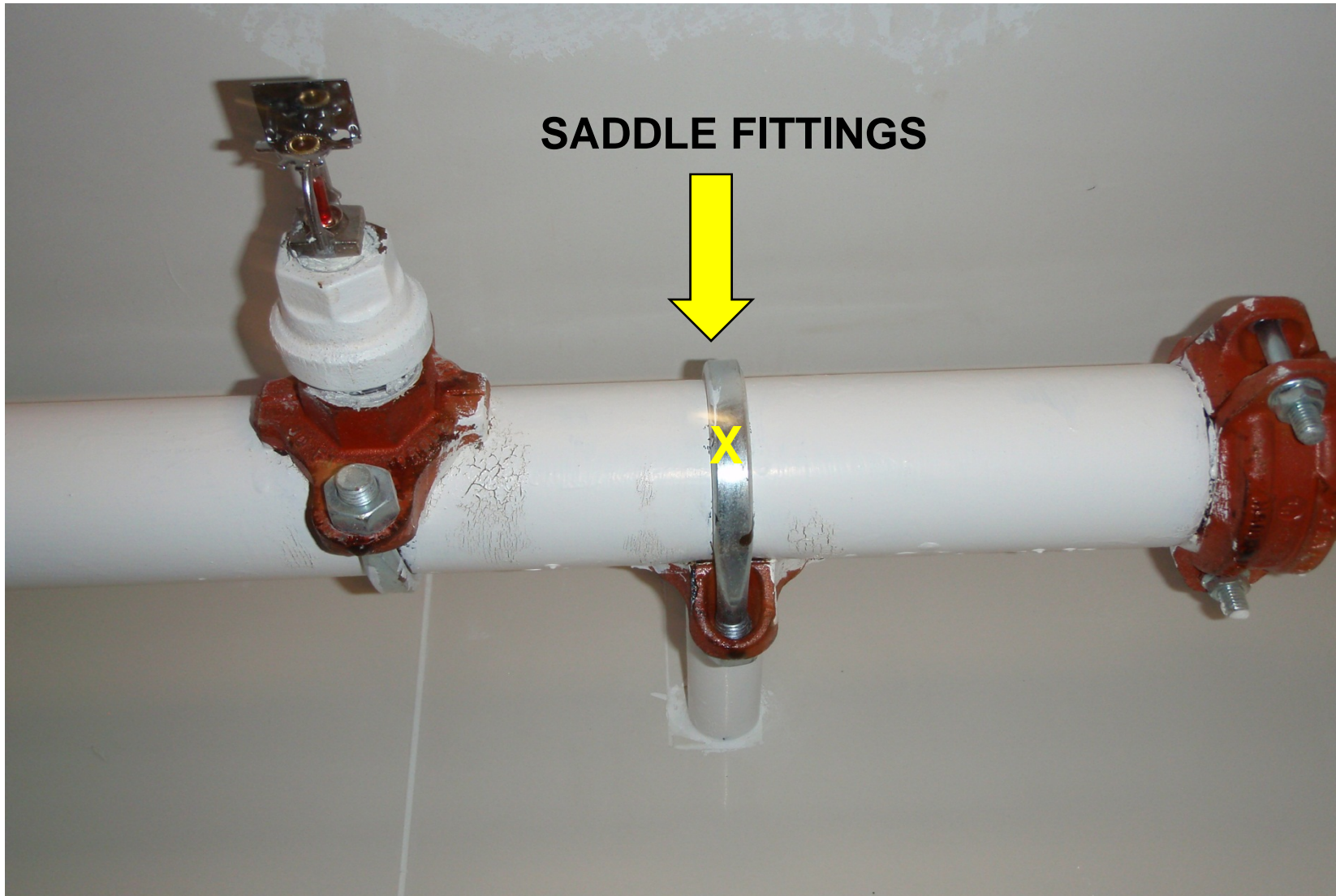
Problematic Installations Concealed Sprinkler Head

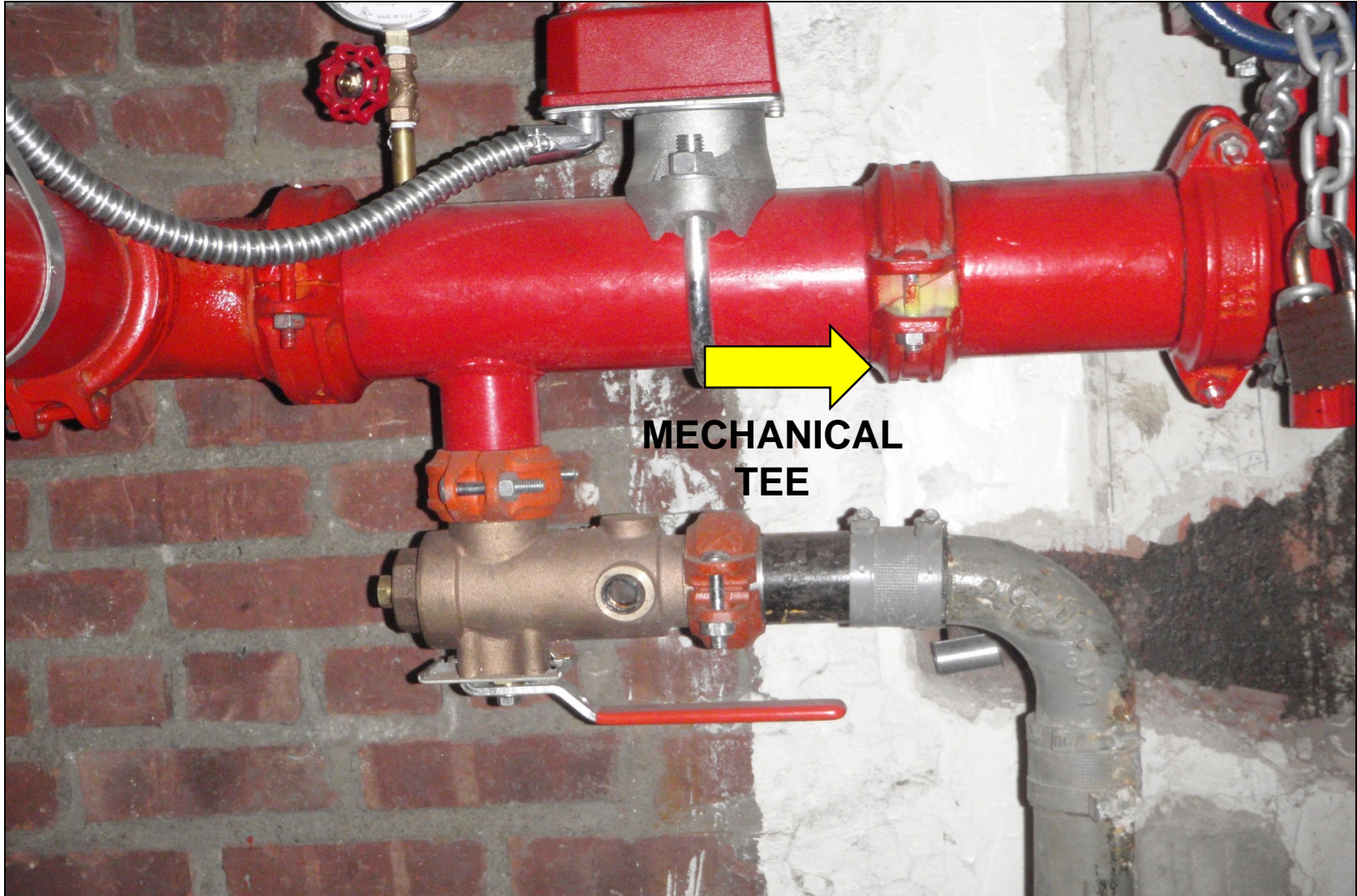


Concealed Sprinkler Head



Unapproved Materials

















NYC Buildings STANDPIPES + SPRINKLERS New Safety Regulations

New standpipe and sprinkler piping laws go into effect in 2010. Building owners and contractors must be sure their properties and projects comply with these new local laws.

The Buildings Department participated in the multi-agency advisory group that proposed these new safety standards. Mayor Michael R. Bloomberg appointed Deputy Mayor Edward Skyler to lead the Construction, Demolition and Abatement Working Group, which generated 33 safety recommendations – including the four local laws described here.

To learn more, read *Strengthening the Safety, Oversight and Coordination of Construction, Demolition and Abatement Operations*, available at nyc.gov/buildings.

CUTTING AND CAPPING Local Law 60/09, effective 3/2/2010.

Permits are required to cut and cap standpipes or sprinklers.

- **Authorized Licensees:** Only licensed master plumbers or licensed master fire suppression piping contractors may cut and cap standpipes or sprinklers during demolition.
- **Local Law Incorporates TPPN 3/07:** For demolitions and gut rehabilitations, a registered design professional must have a variance to remove damaged or inoperable sprinklers. This filing must include a damage report and explanation why the system can't be restored. (The design professional must first file the variance with the Fire Department and have FDNY approval before filing it with the Buildings Department.)

COLOR CODING

Local Law 58/09, effective 3/2/2010.

Existing buildings must comply by 6/2/2010.

All exposed standpipes and sprinkler piping must be painted red. The law outlines specific exceptions, such as branch piping.

All buildings – no matter the size or occupancy – must comply with these new requirements.

Dedicated standpipe valve handles must be painted **red**.



Combination standpipe valve handles must be painted **yellow**.



Dedicated sprinkler valve handles must be painted **green**.



COLOR CODING CERTIFICATION

Buildings Under Construction

The special inspector will confirm compliance before the walls are enclosed.

Existing Buildings

Owners of buildings with exposed sprinkler piping and standpipes must comply and hire one of four types of contractors to certify the color coding:

- Licensed master plumbers;
- Licensed master fire suppression piping contractors;
- Registered design professionals; or
- People with the appropriate Fire Department Certificate of Fitness.

PROOF OF COLOR CODING CERTIFICATION

The color coding certification must be kept on the premises at all times for Buildings and Fire Department inspection. Visit nyc.gov/buildings for the certification form, available online in March 2010. (over)



Robert D. LiMandri, Commissioner

Michael R. Bloomberg, Mayor

NYC Buildings STANDPIPES + SPRINKLERS New Safety Regulations

PRESSURE TESTING Local Law 63/09, effective 2/4/2010.

Freezing temperatures can damage a pressurized system. Compressors without air dryers generate moisture in the line, which can freeze. Exposed valves can also freeze – causing the system to depressurize and triggering the alarm.

- **New or Altered Sprinkler Systems:** A licensed master plumber or licensed fire suppression piping contractor must conduct hydrostatic pressure testing.
- **New or Altered Standpipe Systems:** A licensed master plumber or licensed fire suppression piping contractor must conduct hydrostatic pressure testing. (Read Local Law 63/09 for limited exceptions in freezing conditions.)
- **Removing Stories:** A licensed master plumber or licensed fire suppression piping contractor must conduct hydrostatic pressure testing before work begins.
- **New Buildings Under Construction:** An initial standpipe hydrostatic pressure test must be performed when the building reaches 75 feet high; additional tests are required when the building reaches 175 feet high and every 100 feet thereafter.
- **Enlargement Triggering a New Standpipe System or Addition to an Existing Standpipe System:** A hydrostatic pressure test is required at every 75 feet in height added to the system.

STAND PIPE



STANDPIPE PRESSURIZED ALARM SYSTEMS Local Law 64/09, effective 2/4/2010.



- **Vacant Buildings Being Demolished:** Existing standpipes must be dry standpipes and have an air-pressurized alarm.
- **New Buildings Higher Than 75 Feet:** Temporary and permanent dry standpipes must have an air-pressurized alarm.
- **Prior Notification for Scheduled Work:** Contractors must notify the Fire Department before any planned alarm deactivation.
- **Out of Service Standpipes:** Contractors must notify the Fire Department.
- **Site Safety Manager's Log:** Alarm activations, inspections and repairs must be logged.
- **Installation Applications:** A registered design professional must file the application.
- **Installation Permits:** A licensed master plumber or licensed master fire suppression piping contractor and a licensed electrician must have a permit.



Robert D. LiMandri, Commissioner

Michael R. Bloomberg, Mayor

Violation to be Written

NOTICE OF VIOLATION AND HEARING										
										
COMMISSIONER OF THE DEPARTMENT OF BUILDINGS OF THE CITY OF NEW YORK, PETITIONER, AGAINST					Violation No. ENVIRONMENTAL CONTROL BOARD					
First name (for entity name)					Last name					
Number and street					City New York		State NY	Zip code 10018		
License No. (If Applicable)					Project Code					
Additional mailing to be sent (agent, care of, other):										
First name					Last name		Company	City	State	Zip code
Number and street										
Commissioner's Order To Correct Violations										
Place of occurrence			Boro Manhattan	Date of violation 4 / 7 / 11		Type P2	Dist. 07	Code	No.	
Construction type 11	BIN No.	No. of stories 6	Block	Lot 10	Occupancy at time of inspection Residential			Basis of violation		
Based on an inspection of the premises and/or records of the Department, the undersigned has determined that you are in violation of the sections of law cited below, of Title 27, Title 2 of the NYC Administrative Code, the NYC Construction Codes, the NYC Zoning Resolution, the Reference Standards and/or Titles 1 and/or 2 of the Rules of the City of New York.										
Violating Conditions Observed										
Infraction Code B101	Provision of Law 28-105.1			Work without a permit						
Stop Work Order <input type="checkbox"/> Full <input checked="" type="checkbox"/> Partial										
Class 1 <input checked="" type="checkbox"/> Class 2 <input type="checkbox"/> Class 3 <input type="checkbox"/> Recurring Condition <input type="checkbox"/>										
Upon physical inspection found sprinkler system removed partially from ceiling and floors 1-6 due to demolition process without a permit and FDNY approval. Stop Work Order issued for floors ceiling, 1-6 where sprinkler was removed. S.W.O. partial - work only to make safe.										
Remedy: Obtain a permit or restore premises to prior legal condition										
<input type="checkbox"/> ILLEGAL CONVERSION - CLASS 1. Per 28-202.1 & 1RCNY 102-01, additional daily penalties for continued violation of 28-210.1 also applicable.										
<input type="checkbox"/> Per 28-202.1 & 1RCNY 102-01, additional "Class 1" daily or "Class 2" monthly penalty also applicable.										
<input type="checkbox"/> Aggravated II Condition per 1RCNY 102-01(f)										
The Commissioner of the Department of Buildings orders that you correct these conditions and file a certificate of such correction.										
Important Information: As detailed in §28-201.4 and Section 102-01 of Subchapter B of Title 1 of the Rules of the City of New York, violations may be subject to aggravated penalties of the first order, which shall be imposed in accordance with the ECB Buildings Penalty Schedule.										
Resolution options										
CURE DATE _____		HEARING DATE 5 / 20 / 11 at <input checked="" type="checkbox"/> 8:30 AM <input type="checkbox"/> 10:30 AM <input type="checkbox"/> 1:30 PM								
If a date appears in the box above, you may have the option to admit the violation and certify correction by the "cure date." By doing so, you avoid a hearing before the Environmental Control Board and any penalties which would be assessed at the hearing. Note: Depending on the violation, non-ECB civil penalties may apply before a cure can be granted. For more information, see reverse side of the respondent copy of this Notice of Violation.		The hearing date above is mandatory if you are either charged with a Class 1 violation, or the violation is marked as an Aggravated II condition, or if no "cure date" is given on this Notice of Violation. Also, the above hearing date is mandatory for all other types of charges if a certificate of correction (for a cure) is not received by the date indicated to the left, or is not approved by the Department, or if you are offered but have not timely accepted a pre-hearing stipulation. Refer to the ECB Violation Penalty Table in the Reference Area of www.nyc.gov/buildings or check the violation status on the BIS query on this website. YOU MUST ATTEND THE HEARING IF YOU WISH TO CONTEST THE VIOLATION.								
		Environmental Control Board hearing locations: <input type="checkbox"/> Queens, (718) 296-7300 - 144-06 94th Avenue, 1st fl. <input checked="" type="checkbox"/> Manhattan, (212) 361-1400 - 66 John Street, 10th fl. <input type="checkbox"/> Brooklyn, (718) 875-7428 - 233 Schermerhorn Street, 11th fl. <input type="checkbox"/> Bronx, (718) 993-6110 - 3030 3rd Ave., 2nd fl. <input type="checkbox"/> Staten Island, (212) 361-1400 - 350 St. Marks Place, 1st fl.								
		Proceedings will be held under the authority of the NYC Charter section 1049-a and the rules promulgated thereunder. This hearing is your opportunity to answer and defend against the allegations set forth above. Failure to appear, unless an appearance is not required through availability of a Cure or Stipulation (see reverse), will result in a default and imposition of maximum penalties.								
		For more information, to reschedule your hearing or inquire about the case status, call the Environmental Control Board at the numbers listed above. For information on certifying correction of this violation, read instructions on the Certificate of Correction form, call the Department of Buildings at 311, or download the "ECB Violation Reference Guide" in the Reference Materials section at www.nyc.gov/buildings.								
Issuing officer's last name, first initial (print)		I personally observed the violation(s) charged and/or verified their existence through review of departmental records.								
Badge number _____		Issuing officer's signature _____ This statement is affirmed under penalty of perjury.								
Supervisor's signature _____		Unit Code: 110								
ISSUING UNIT COPY										



November 14, 2011

Attn: Mr. Josh Wuestneck

Re: The removal of standpipe and sprinkler systems from three buildings on the former 1 sharing a common address.
Buildings # 1(, Building #3() and Building #4 ()
Fire Prevention Index #'s and .

Subject: Variance to Fire Code FC 901.6 and FC 1413.2 and FC 1414.1
Deactivation of the sprinkler system and standpipe systems in conjunction with the demolition of the buildings.

Dear Mr. Wuestneck,

The Bureau of Fire Prevention has reviewed your application for a waiver from the requirements of Fire Code FC 901.6 and FC 1413.2 and FC 1414.1. An FDNY inspection found the buildings vacant, without electrical and water services and minimal fire load.

Therefore, the FDNY would have **No Objection** to the deactivation of the sprinkler and standpipe systems in the 3 buildings referenced above under the following conditions:

1. Compliance with Fire Code section FC 901.7, *Out-of-Service Systems*. Notification to the FDNY Borough Communications Office (718-965-8261) prior to dismantling the sprinkler system.
2. Compliance with all other applicable sections of *Chapter 14, Construction, Alteration and Demolition*.

November 14, 2011

Page 2 of 2

3. Compliance with the Rules of the City of New York, *3 RCNY Chapter 14, Construction, Alteration and Demolition*
4. Maintain unobstructed access to all fire hydrants adjacent to the building during demolition operations.
5. Maintain a minimum clearance of five (5) feet around all fire hydrants.
6. Surveillance inspections may be performed by the Bureau of Fire Prevention to determine compliance with the conditions, restrictions and limitations stipulated in this conditional approval letter.
7. Compliance with any other NYC rule, regulation, law etc. relating to construction operations and site safety not previously specified.
8. In the interest of public safety, the Fire Commissioner may revoke, modify or require additional safeguards not expressed in this document.

Sincerely,

Joseph L. Barracato Jr.
Director, Construction, Demolition and Abatement Unit

C: Thomas Jensen, Chief of Fire Prevention, FDNY
Thomas Connors, Executive Director, NYC DOB BEST Squad
Michael F. Marrone, Staten Island Borough Commander, FDNY
Louis Cendagorta, Chief Inspector, FDNY



standpipe/sprinkler (combination) system
with fire pump and roof tank

*valve handles NOT PAINTED

sprinkler rig, blow down, and branch piping NOT PAINTED; handles painted GREEN

blow down pipe NOT PAINTED

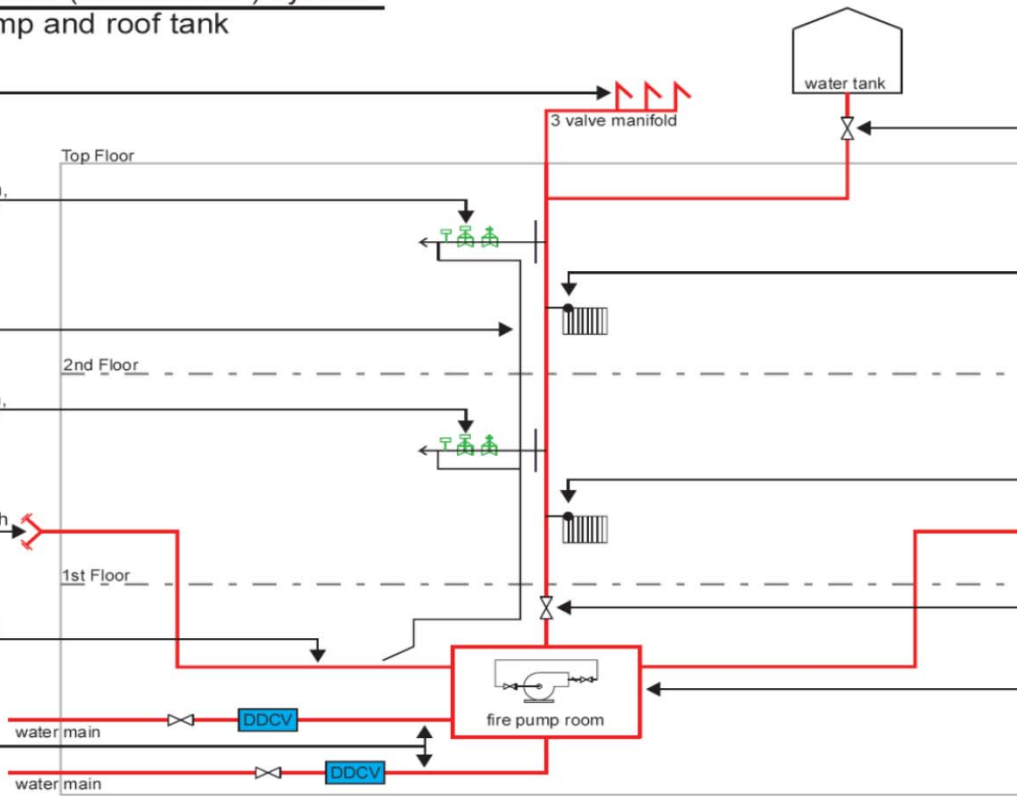
sprinkler rig, blow down, and branch piping NOT PAINTED; handles painted GREEN

siamese connection with caps painted YELLOW

cross connection piping painted RED

main to fire suppression system painted RED

*valve handles need not be painted; if painted RED by manufacturer, may be installed/remain RED



pipe painted RED; handle painted YELLOW

*hose valve handle NOT PAINTED

*hose valve handle NOT PAINTED

siamese connection with caps painted YELLOW

SD riser control valve handle painted YELLOW

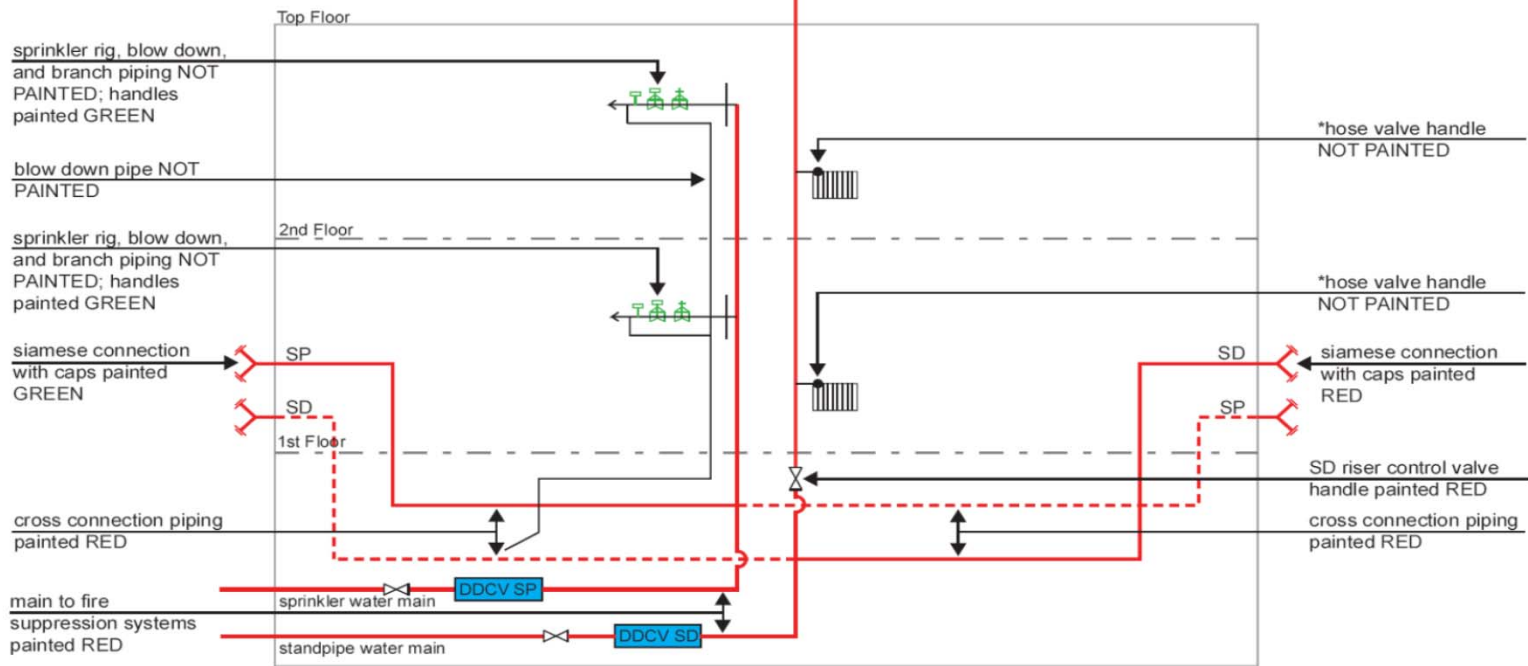
fire pump room
all fire suppression piping painted RED; fire pump connected to combination system handles painted YELLOW; valve handles for a stand alone standpipe system painted RED.

08/10

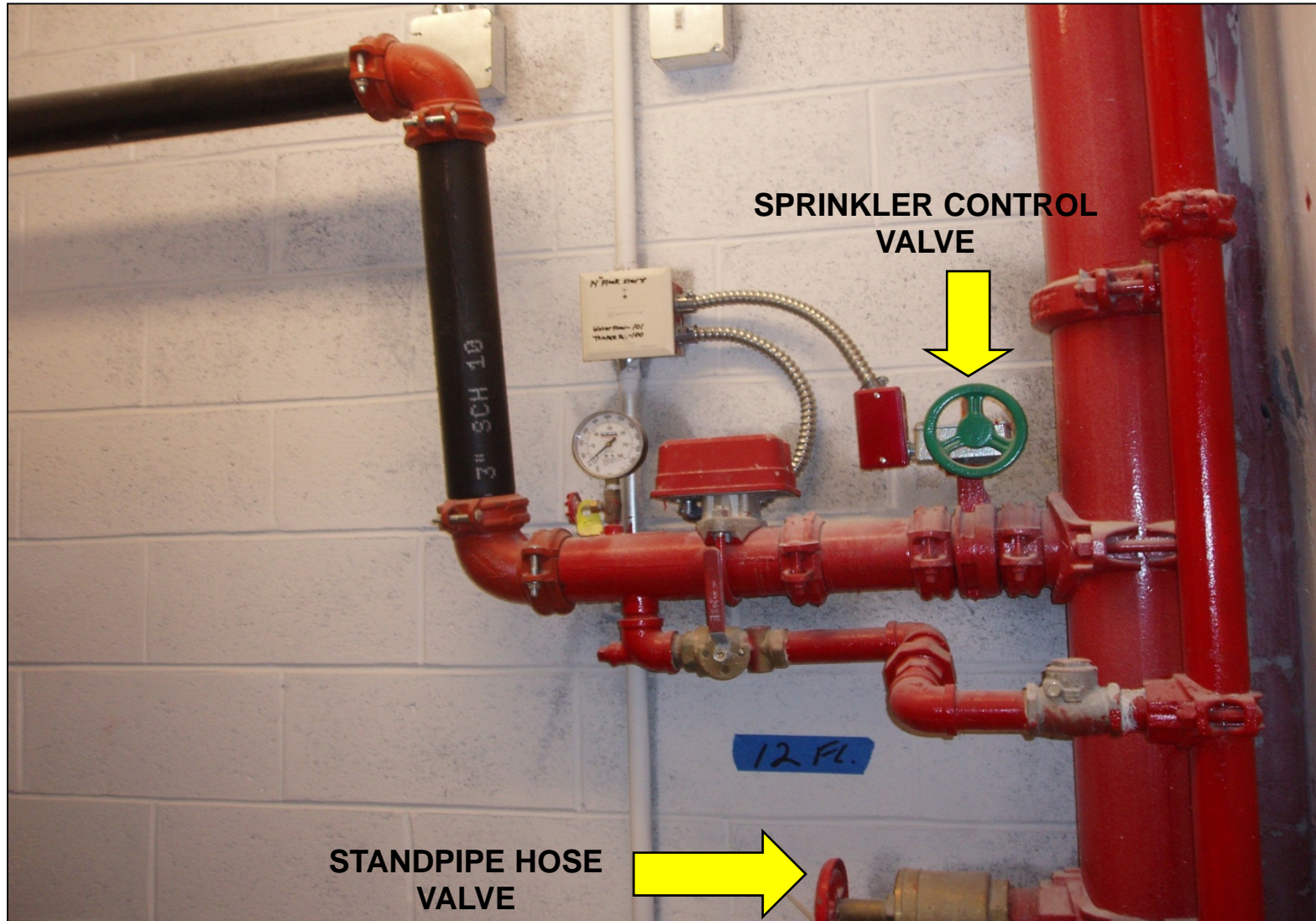


standpipe and sprinkler systems
two independent systems

*valve handles NOT PAINTED



*valve handles need not be painted; if painted RED by manufacturer, may be installed/remain RED



Combination
SP & SD
Control Valve





Do We Have a Problem?



Thank You!

Fire Extinguishing Systems

Artie Cordes

Executive Director of Plumbing and Fire
Suppression at Technical Affairs

Unlike Fire Suppression Systems (Sprinkler and Standpipe) Fire Extinguishing Systems have their plan examination and approvals completed by the NYC Fire Department.

The Construction Code Lists 5 Fire Extinguishing Systems:

- **904.5 Wet-Chemical Extinguishing Systems**
- **904.6 Dry-Chemical Extinguishing Systems**
- **904.7 Foam Extinguishing Systems**
- **904.8 Carbon Dioxide Extinguishing Systems**
- **904.9 Halogenated Extinguishing Systems**

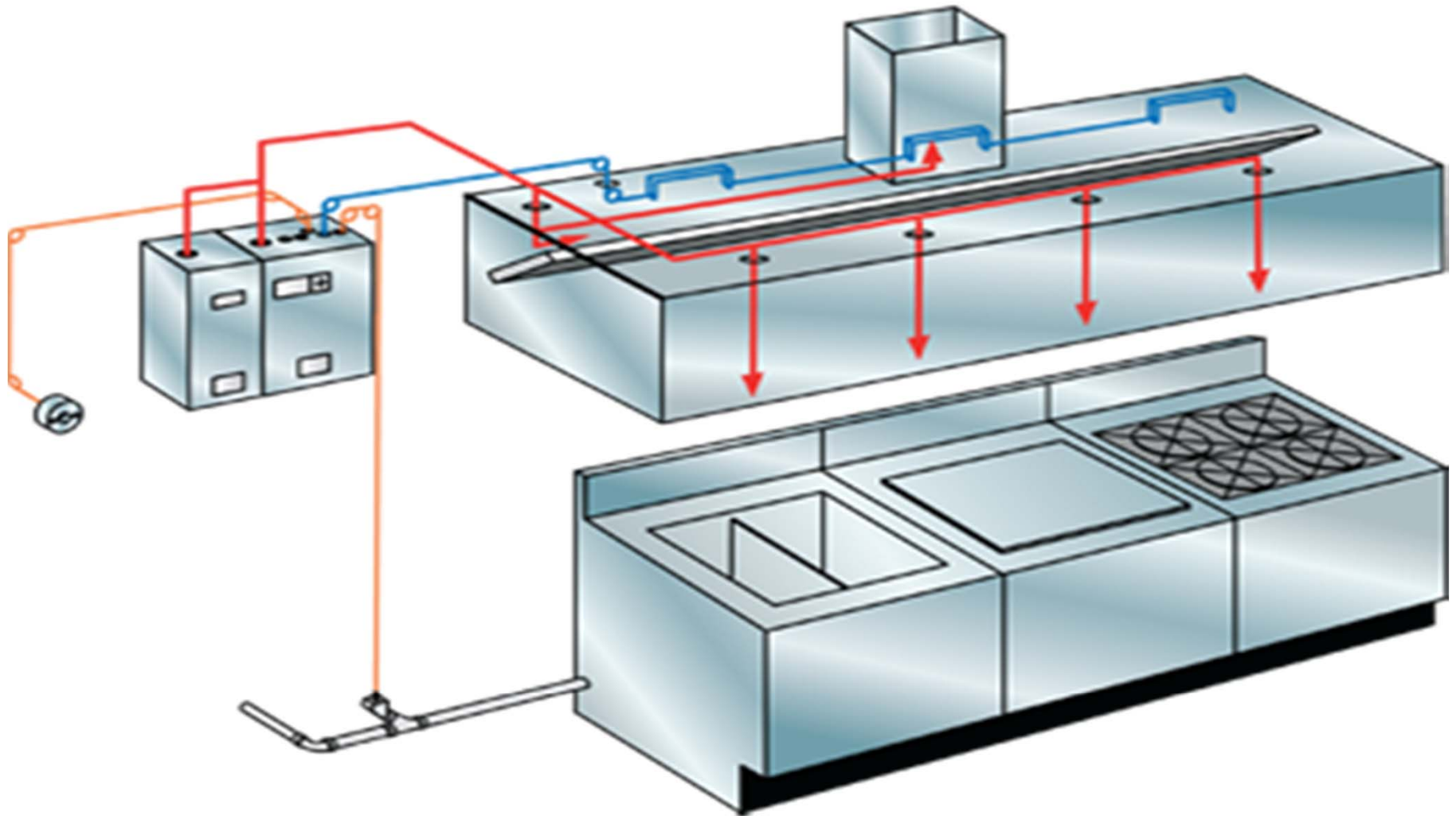
All listed systems are, approved, inspected and tested In accordance with the New York City Fire Department (FDNY).

In addition the New York City Fire Department maintains and annually inspects and tests the listed Fire Extinguishing Systems in accordance with the New York City Fire Code.

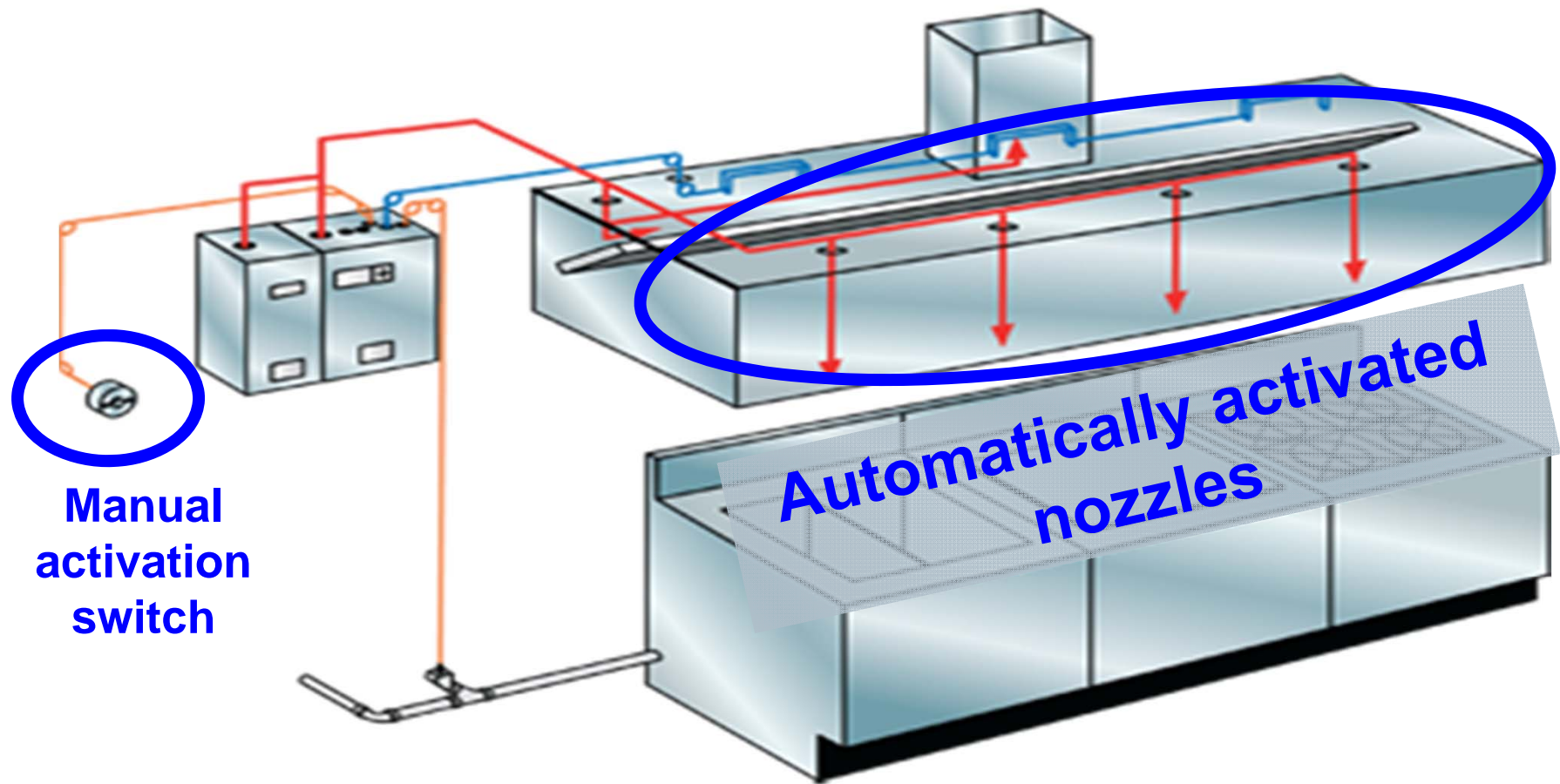
The system most commonly reviewed by DOB is the **Wet-Chemical system**. This type of system is used for commercial cooking equipment. The system must be filed as both a FP (*Fire Suppression*) and PL (*Plumbing*) work type. The PL work type is for the gas valve inter-connected to the Fire Extinguishing Systems and gas piping connecting the cooking equipment.

When the Fire Extinguishing System activates it closes the gas valve and dispenses the extinguishing agent.

Typical Commercial Cooking Extinguishing Systems

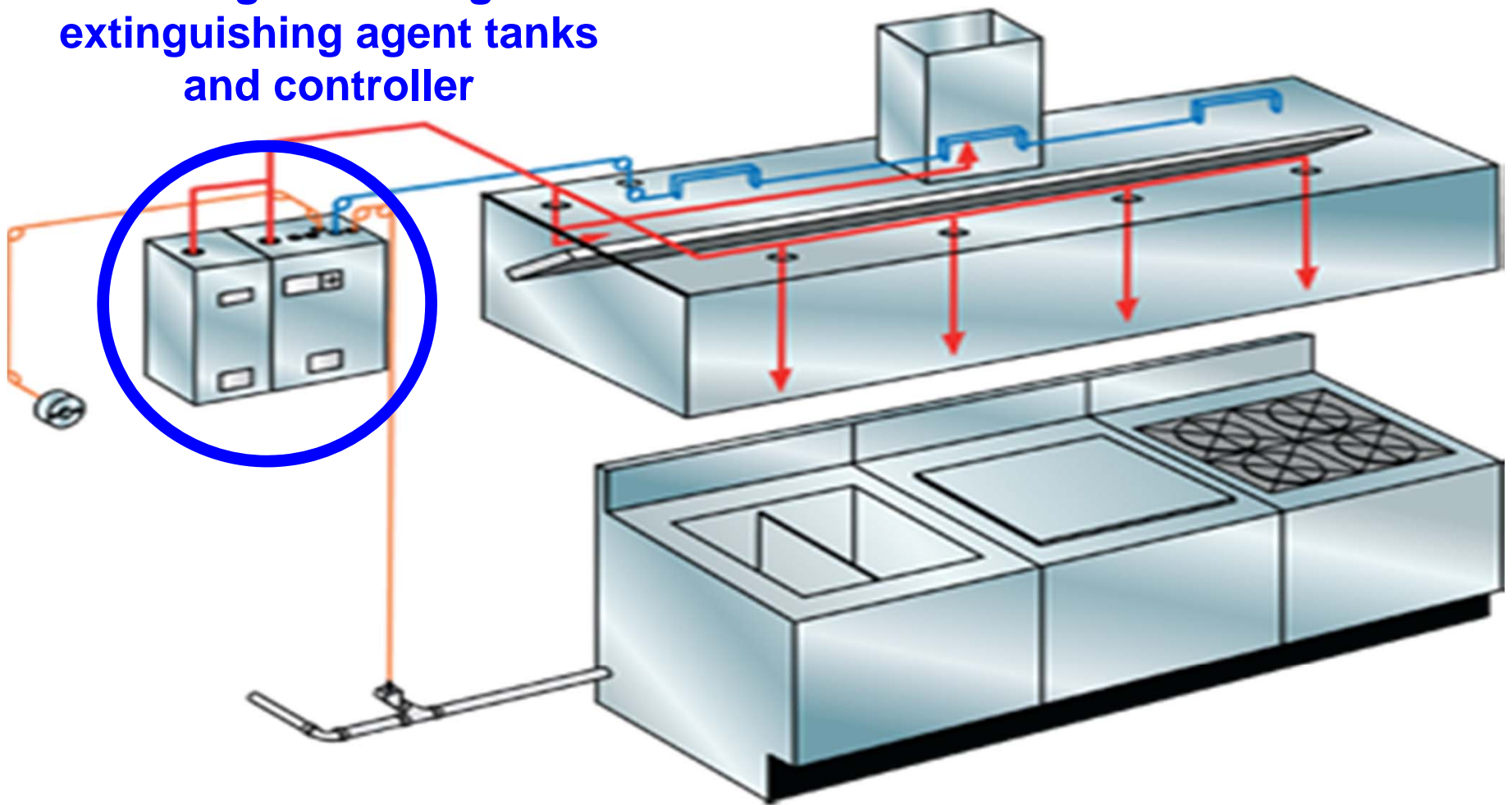


Typical Commercial cooking Extinguishing Systems

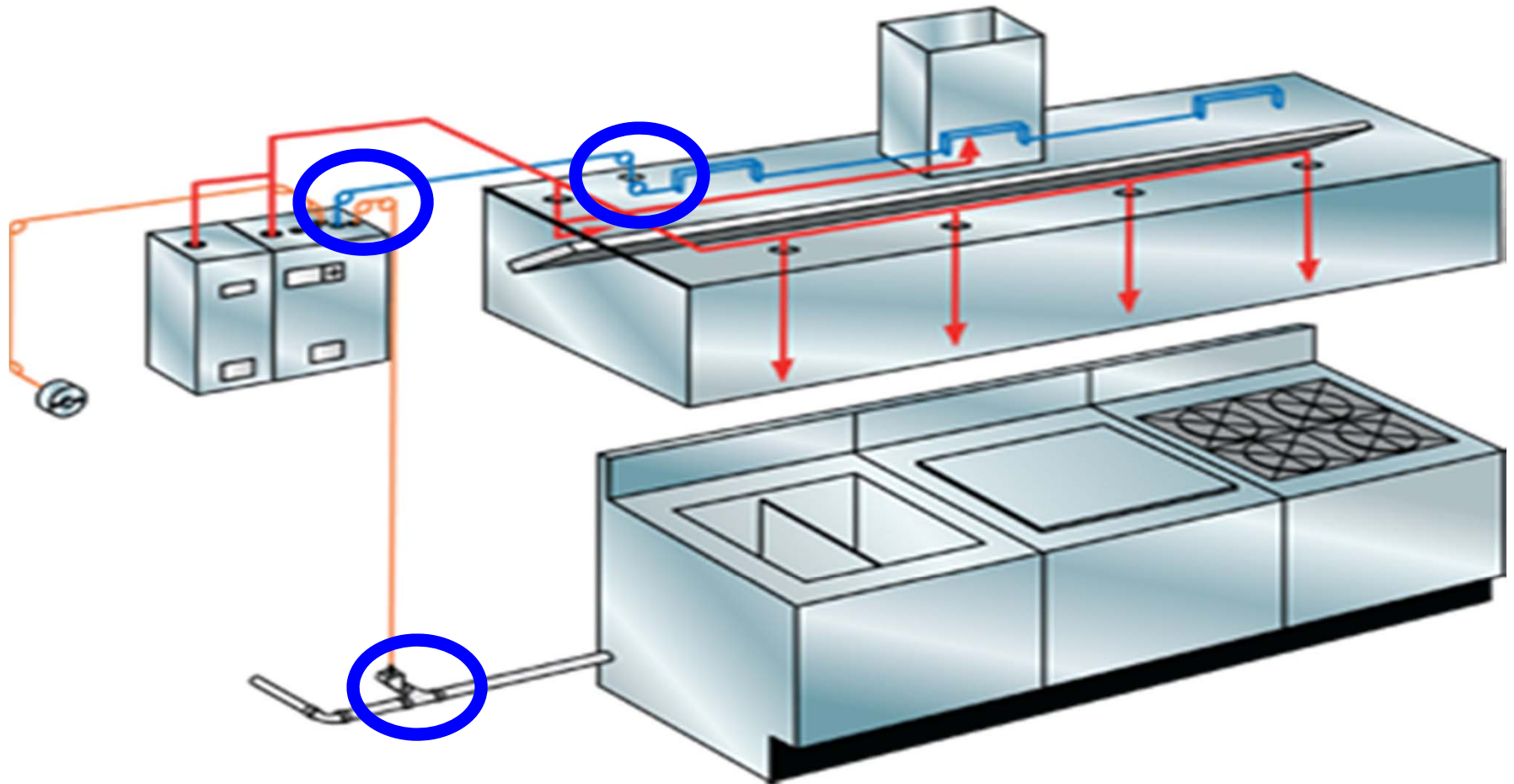


Typical Commercial cooking Extinguishing Systems

Housing containing the extinguishing agent tanks and controller

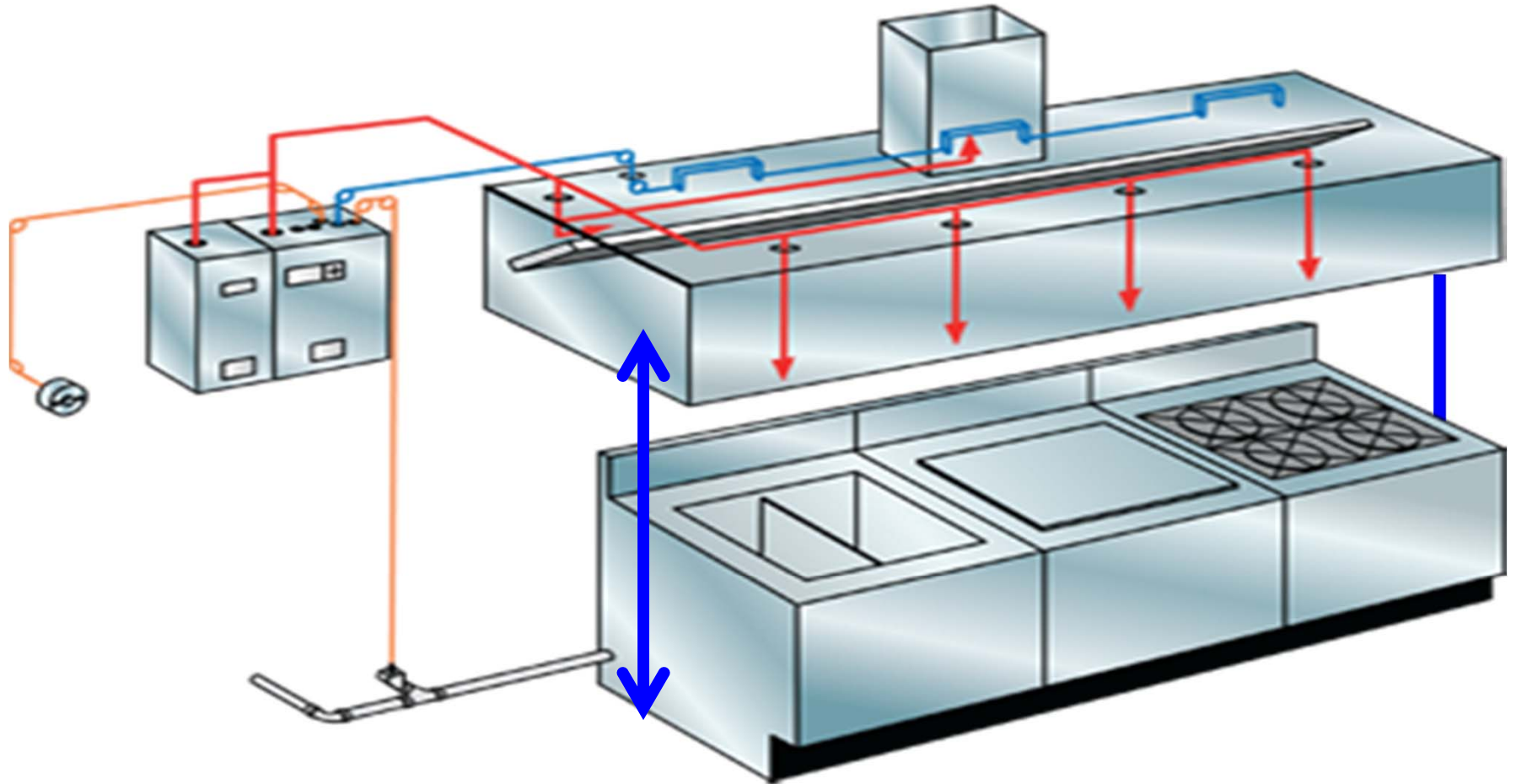


Typical Commercial cooking Extinguishing Systems



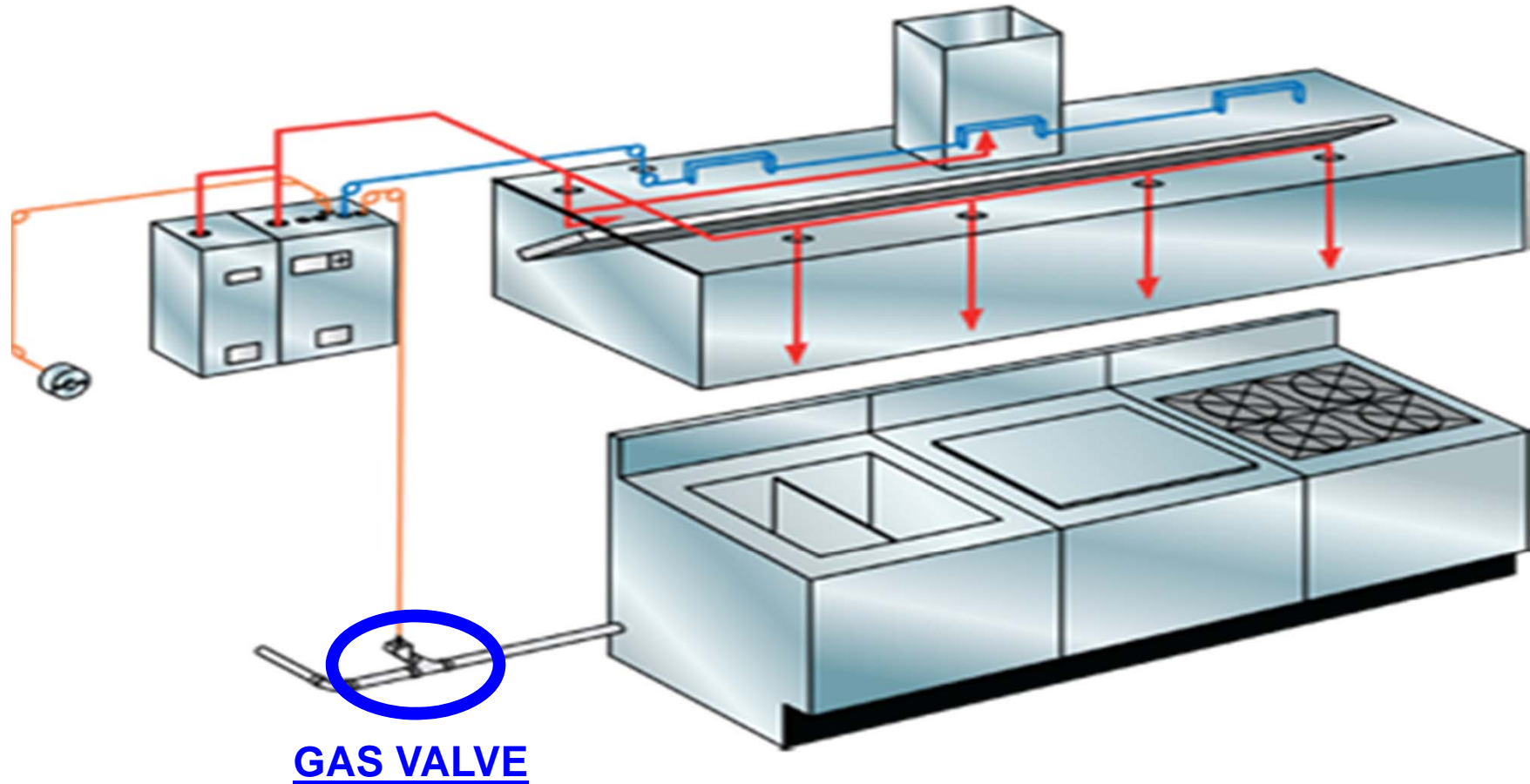
Hard link cables when activated close the Gas and hood damper.

Typical Commercial cooking Extinguishing Systems



The extinguishing hood must cover all cooking equipment, only Pizza ovens don't need hoods

Typical Commercial cooking Extinguishing Systems



All gas valves and associated gas piping and equipment are subjected to DOB plan examination, inspections and tests.

Construction Documents:

Identifies:

- The type of fuel (Gas, Electric, etc.)
 - Location of all fuel shut-off valves
 - Type of fire extinguishing agent
 - Identify all fire suppression piping
 - Location of gas valve inter-connected to the extinguishing system
-

Fire Extinguishing Systems are:

- Filed on an FP work type with DOB
- Approved by the Fire Department
- Inspected by the Fire Department
- Tested by the Fire Department

Important design considerations with respect to Code

- FGC 623.1.1** Cooking appliances using LPG gas are prohibited.
- FGC 623.2** Commercial cooking appliances can not be used for domestic cooking.
- FGC 904.6** Dry Chemical systems are not permitted for protection of kitchen equipment.
- 903.2.12.2** **Commercial cooking operations.** An automatic cooking systems in accordance with Section 904.11.

Important design considerations with respect to Code - cont.

Section 507 of the NYC Mechanical Code

Is where you would find Information about Commercial Kitchen Hoods.

Thank You!



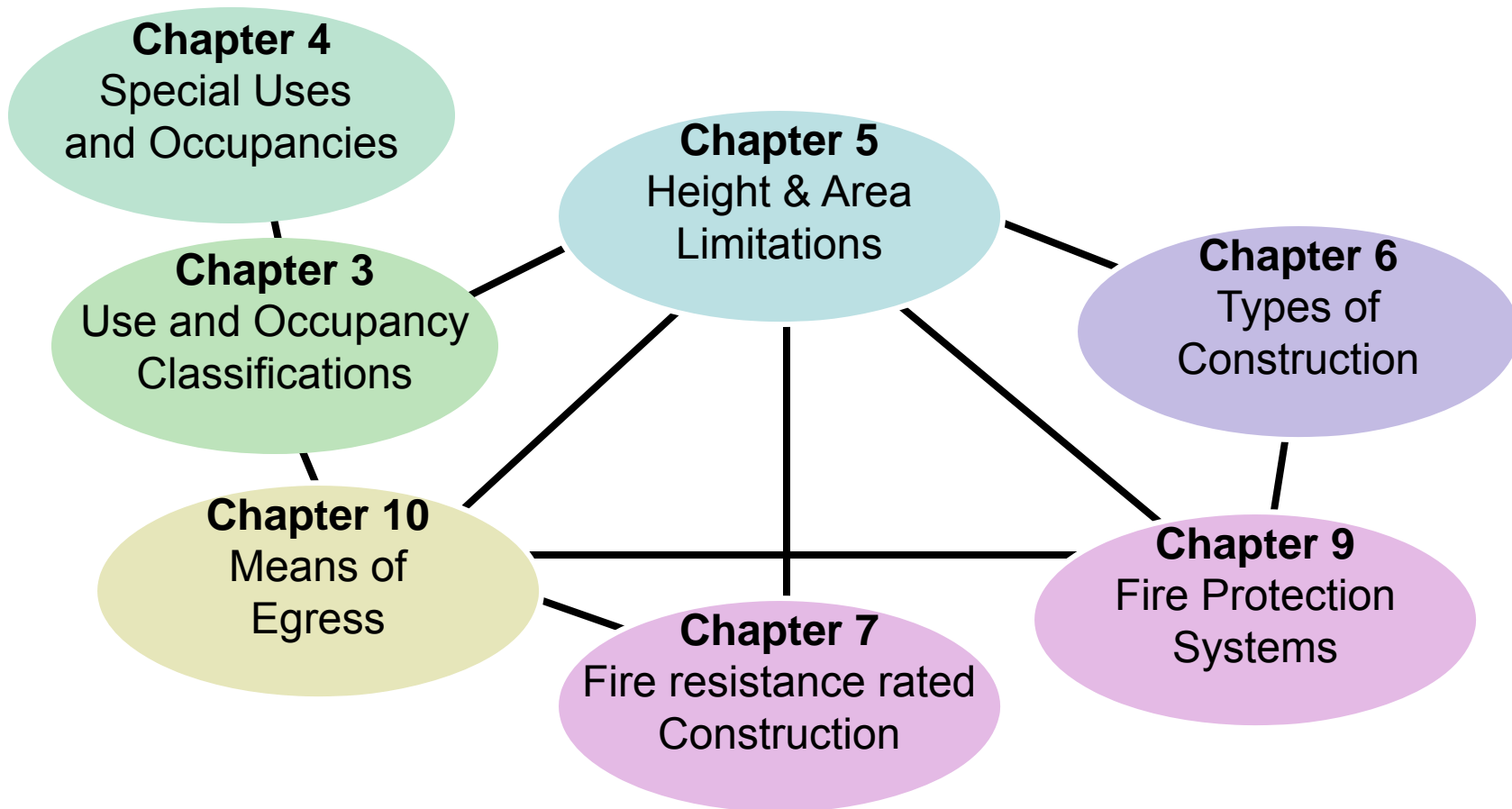
Codes & Laws

Fire Protection 2008 Building Code

John Lee, R.A.
Technical Affairs

Code and Zoning Representative
Training Module 14.1.1

Occupancies, fire protection, and egress





2008 Code		1968 Code
A	Assembly: Groups A-1, A-2, A-3, A-4, and A-5	F
A-1	with fixed seating, intended for production and viewing of the performance arts or motion pictures .	F-1a
A-2	food and/or drink consumption.	F-4
A-3	worship, recreation or amusement (physically active) , and other assembly uses not classified elsewhere in Group A.	F-3, F-1b, F-4
A-4	indoor sporting events with spectator seating .	F-1b
A-5	participation in or viewing outdoor activities .	F-2
B	Business: office, professional, service-type transaction, public or civic services.	E
E	Educational: 5 or more persons at any time for educational purposes.	G
F	Factory and industrial: Groups F-1 and F-2	D
F-1	moderate-hazard .	D-1
F-2	involve non-combustible, non-flammable materials, or low-hazardous production .	D-2
H	High Hazard: Groups H-1, H-2, H-3, H-4, and H-5	A
H-1	materials that present a detonation hazard.	A
H-2	uses present a deflagration hazard or a hazard from accelerated burning .	A
H-3	materials that readily support combustion or present a physical hazard.	A
H-4	materials that are health hazards .	none
H-5	semiconductor fabrication facilities using hazardous production materials (HPM) in excess of the permitted aggregate quantity.	D-1



2008 Code		1968 Code
I	Institutional: Groups I-1, I-2, I-3, and I-4	H, J-2
I-1	housing persons, on a 24-hour basis , capable of self-preservation and responding to an emergency situation without physical assistance from staff.	J-2
I-2	medical, surgical, nursing or custodial care , on a 24-hour basis , of more than 3 persons, who are not capable of self-preservation or responding to an emergency situation without physical assistance from staff.	H-2
I-3	more than 5 persons who are detained under restraint or security reason.	H-1
I-4	day care facilities, occupied by persons of any age who receive custodial care (without overnight) by individuals other than parents, guardians, or relatives in a place other than at the home.	H-2
M	Mercantile: display and sale of merchandise.	C
R	Residential: Groups R-1, R-2, and R-3	J
R-1	occupied transiently (for less than one month) and student dormitories.	J-1
R-2	more than 2 dwelling units on a long term basis (for a month or more).	J-2
R-3	not more than 2 apartments on a long term basis (for a month or more).	J-3
S	Storage: Groups S-1, and S-2	B
S-1	moderate-hazard storage occupancy for any flammable or combustible materials.	B-1
S-2	low-hazard storage occupancy for non-combustible materials.	B-2
U	Utility and Miscellaneous: structures of an accessory character, or not classified in any specific occupancy .	K

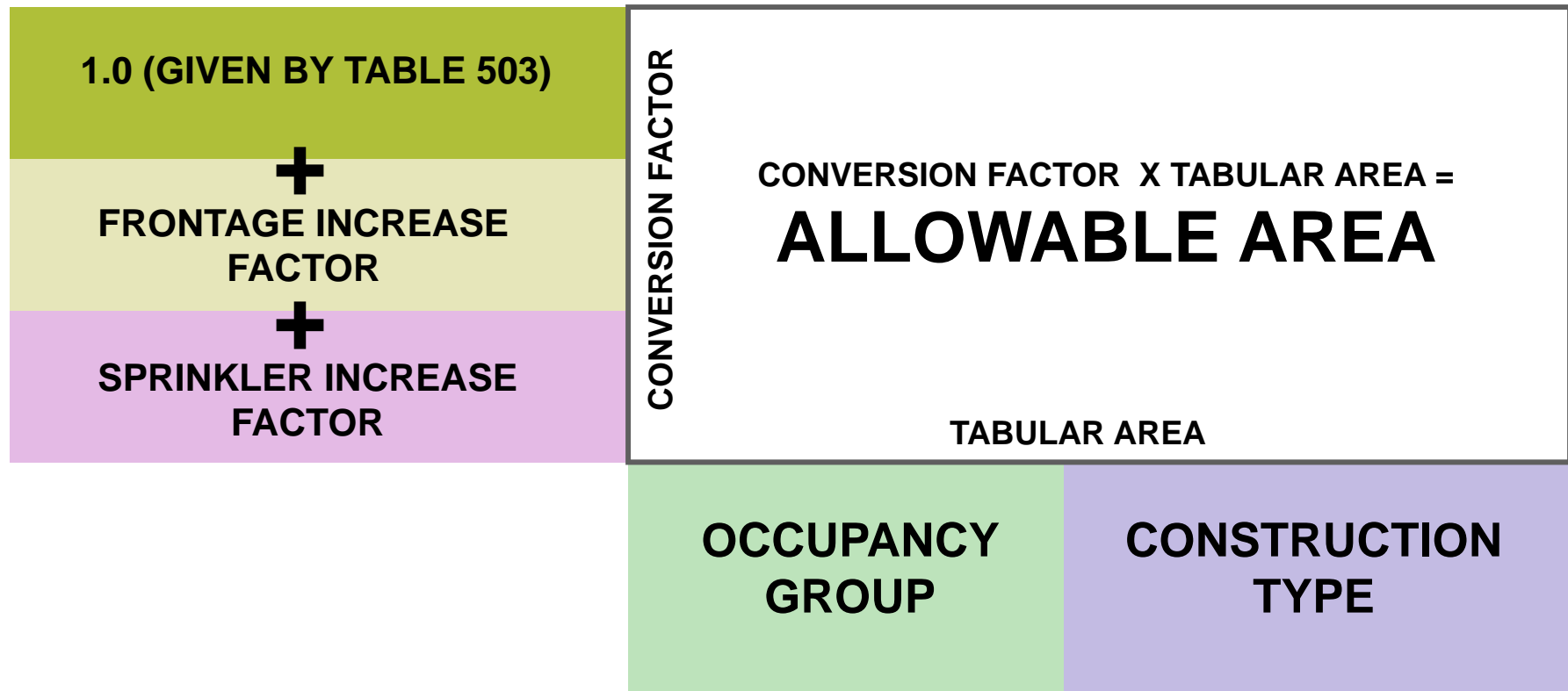
Existing Legal Use						
Floor	Maximum Number of Persons	Live Load (psf)	2008 Code Designations?	Building Code Occupancy Group(s)	Dwelling/ Rooming Units (BC)	Zoning Use Group(s)
			<input type="checkbox"/> Yes <input type="checkbox"/> No			
	Description					

Proposed Use				<i>*Use 2008 Code equivalents only even for older Codes.</i>		
Maximum Number of Persons	Live Load (psf)	2008 Code Designations only*	Building Code Occupancy Group(s)	Dwelling/ Rooming Units (BC)	Zoning Use Group(s)	
		<input checked="" type="checkbox"/> Yes				
	Description					

TABLE 503
ALLOWABLE HEIGHT AND BUILDING AREAS^a
 Height limitations shown as stories and feet above grade plane.
 Area limitations as determined by the definition of “Area, building,” per floor.

GROUP	Hgt(feet) Hgt(S)	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
		UL	160 ^e	65	55	65	55	65	50	40
A-1	S	UL	UL	6	3	6	3	6	3	2
	A	UL	UL	17,500	10,500	14,700	5,600	15,000	8,400	5,500
A-2	S	UL	UL	6	3	6	3	6	3	2
	A	UL	UL	17,500	9,500	14,000	5,600	15,000	8,400	5,500
A-3	S	UL	UL	6	3	6	3	6	3	2
	A	UL	UL	17,500	9,500	14,000	5,600	15,000	8,400	5,500
A-4	S	UL	UL	6	3	6	3	6	3	2
	A	UL	UL	17,500	9,500	14,000	5,600	15,000	8,400	5,500
A-5	S	UL	UL	UL	UL	UL	UL	6	UL	UL
	A	UL	UL	UL	UL	UL	UL	UL	UL	UL
B	S	UL	UL	6	3	6	3	6	3	2
	A	UL	UL	37,500	10,500	28,000	5,600	36,000	8,400	5,500
E	S	UL	UL	4	3	4	3	6	3	2
	A	UL	UL	26,000	10,500	23,000	5,600	25,500	8,400	5,500
F-1	S	UL	UL	5	3	5	2	5	3	2
	A	UL	UL	12,500	7,500	7,500	3,000	10,000	3,000	1,000
F-2	S	UL	UL	6	3	6	3	6	3	2
	A	UL	UL	37,500	10,500	28,000	5,600	30,000	8,400	5,500

Not permitted in Fire District
 Not permitted in Fire District without sprinklers





Section 506 Area Modifications

Where a building is equipped throughout with an automatic sprinkler system*, such building is allowed to have:

- 200% increase in floor area over tabular limits for multi-story buildings
- 300% increase for single story buildings

* Where an automatic sprinkler system is installed to reduce the required fire-resistance rating by 1 hour as per Table 601, Note d, it may not be used again for height and area increase purposes in Chapter 5



Section 504 Height Modifications

Where a building is equipped throughout with an automatic sprinkler system*, such building is allowed to have:

- 20 feet additional height
- 1 additional story

* Where an automatic sprinkler system is installed to reduce the required fire-resistance rating by 1 hour as per Table 601, Note d, it may not be used again for height and area increase purposes in Chapter 5



	Classification	Subclassification	Description of building elements
noncombustible	TYPE I	TYPE IA	Noncombustible building elements
		TYPE IB	
	TYPE II	TYPE IIA	
		TYPE IIB	
combustible	TYPE III	TYPE IIIA	Noncombustible exterior walls Combustible or noncombustible interior elements
		TYPE IIIB	
	TYPE IV	TYPE IV	Noncombustible exterior walls Heavy timber interior elements
	TYPE V	TYPE VA	Combustible building elements permitted by the code
TYPE VB			



**TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENT (hours)**

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V ^d	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Structural frame ^a Including columns, girders, trusses	3 ^b	2 ^b	1	0	1	0	HT	1	0
Bearing walls									
Exterior ^{f,g}	3	2	1	0	2	2	2	1	0
Interior	3 ^b	2 ^b	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions	See Table 602								
Exterior									
Interior ^e	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction ^h Including supporting beams and joists	2	2	1	0	1	0	HT	1	0
Roof construction Including supporting beams and joists	1 1/2 ^c	1 ^c	1 ^c	0	1 ^c	0	HT	1 ^c	0

*** Where an automatic sprinkler system is installed to reduce the required fire-resistance rating by 1 hour as per Footnote d, it may not be used again for height and area increase purposes in Chapter 5**



2008 Code construction types	Similar 1968 code construction classes
Type IA	Class I-B
Type IB	Class I-C
Type IIA	Class I-D
Type IIB	Class I-E
Type IIIA	Class II-B
Type IIIB	Class II-C
Type IV	Class II-A
Type VA	Class II-D
Type VB	Class II-E



Combustible materials that may be used in Construction Type I and II; examples include:

- Fire-retardant-treated wood in:
 - Nonbearing interior partitions with fire-resistance rating ≤ 1 hour (however, public corridors and exits must be of noncombustible materials)
 - Certain roof construction as per Table 601, Note c, Item 3
- Thermal and acoustical insulation with limited flame spread
- Foam plastics per Chapter 26
- Class A or B roof coverings
- Combustible exterior wall coverings in accordance with Chapter 14
- Interior finishes as permitted by Chapter 8
- Other applications as permitted by Section 603



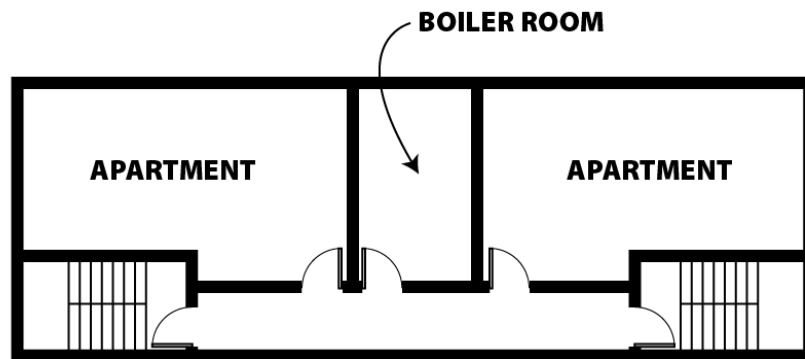
- Single Use
- Incidental Use
- Mixed Use
 - Accessory
 - Nonseparated
 - Separated
- Separated Buildings

Incidental Use Areas

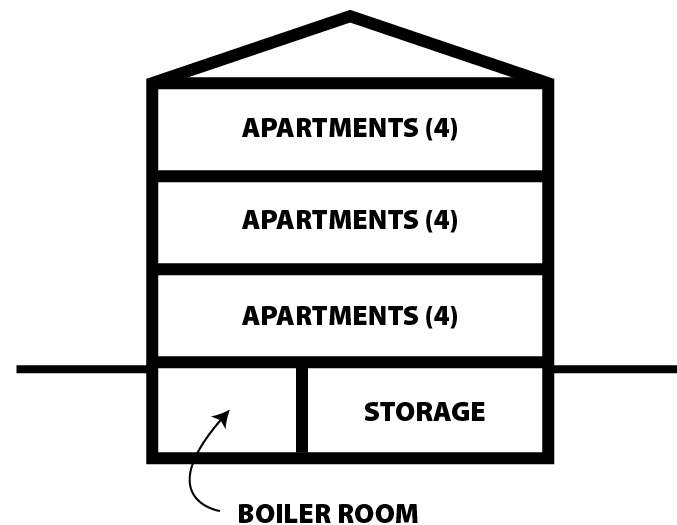
Table 508.2

ROOM OR AREA	SEPARATION ^a
Furnace room where any piece of equipment is over 400,000 Btu per hour input	2 hour; or 1 hour and provide automatic fire-extinguishing system
Furnace room where any piece of equipment is 400,000 Btu per hour input or less, except in R-3 occupancy	1 hour or provide automatic sprinkler system
Rooms with any boiler over 15 psi and 10 horsepower	2 hour; or 1 hour and provide automatic fire-extinguishing system
Rooms with any boiler 15 psi or less and 10 horsepower or less, except in R-3 occupancy	1 hour or provide automatic sprinkler system
Mechanical and/or electrical equipment room, except in R-3 occupancy	1 hour or provide automatic sprinkler system
Refrigerant machinery rooms	1 hour or provide automatic sprinkler system
Parking garage (Section 406.2)	2 hours; or 1 hour and provide automatic fire-extinguishing system
Hydrogen cut-off rooms	2-hour fire barriers and floor/ceiling assemblies in all occupancy groups.
Incinerator rooms	2 hours and automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic fire-extinguishing system
Laboratories and vocational shops, not classified as Group H, located in Group E or I-2 occupancies	2 hour; or 1 hour and provide automatic fire-extinguishing system
Laundry rooms over 100 square feet, except within dwelling units	1 hour or provide automatic fire-extinguishing system
Storage rooms over 100 square feet, except in R-3 occupancy	1 hour or provide automatic fire-extinguishing system
Group I-3 cells equipped with padded surfaces	1 hour
Group I-2 waste and linen collection rooms	1 hour
Waste and linen collection rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system

Rooms with any boiler 15psi or less and 10 hp or less...



Example 1



Example 2

the incidental use area is classified in the same occupancy group as the space that it serves.

Table 508.3.3

REQUIRED SEPARATION OF OCCUPANCIES (HOURS) ^a																									
USE	A-1	A-2	A-3	A-4	A-5	B ^b	E	F-1	F-2	H-1	H-2	H-3	H-4	H-5	I-1	I-2	I-3	I-4	M ^b	R-1	R-2	R-3, R-4	S-1	S-2 ^c	U
A-1	—	2	2	2	2	2	2	3	2	NP	4	3	2	4	2	2	2	2	2	2	2	2	3	2	1
A-2 ^e	—	—	2	2	2	2	2	3	2	NP	4	3	2	4	2	2	2	2	2	2	2	2	3	2	1
A-3	—	—	—	2	2	2	2	3	2	NP	4	3	2	4	2	2	2	2	2	2	2	2	3	2	1
A-4	—	—	—	—	2	2	2	3	2	NP	4	3	2	4	2	2	2	2	2	2	2	2	3	2	1
A-5	—	—	—	—	—	2	2	3	2	NP	4	3	2	4	2	2	2	2	2	2	2	2	3	2	1
B ^b	—	—	—	—	—	—	2	3	2	NP	2	1	1	1	2	2	2	2	2	2	2	2	3	2	1
E	—	—	—	—	—	—	—	3	2	NP	4	3	2	3	2	2	2	2	2	2	2	2	3	2	1
F-1	—	—	—	—	—	—	—	—	3	NP	2	1	1	1	3	3	3	3	3	3	3	3	3	3	3
F-2	—	—	—	—	—	—	—	—	—	NP	2	1	1	1	2	2	2	2	2	2	2	2	3	2	1
H-1	—	—	—	—	—	—	—	—	—	—	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
H-2	—	—	—	—	—	—	—	—	—	—	—	1	2	2	4	4	4	4	2	4	4	4	2	2	1
H-3	—	—	—	—	—	—	—	—	—	—	—	—	1	1	4	3	3	3	1	3	3	3	1	1	1
H-4	—	—	—	—	—	—	—	—	—	—	—	—	—	1	4	4	4	4	1	4	4	4	1	1	1
H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4	4	3	1	4	4	4	1	1	3
I-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	2	2	2	2	4	3	2
I-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	2	2	2	3	2	1
I-3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	2	2	3	2	1
I-4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	2	3	2	1
M ^b	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	3	2	1
R-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	3	2	1
R-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	3	2	1
R-3, R-4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	2 ^d	1 ^d
S-1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	3
S-2 ^c	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



**Accessory
occupancies**

**Nonseparated
occupancies**

**Separated
occupancies**

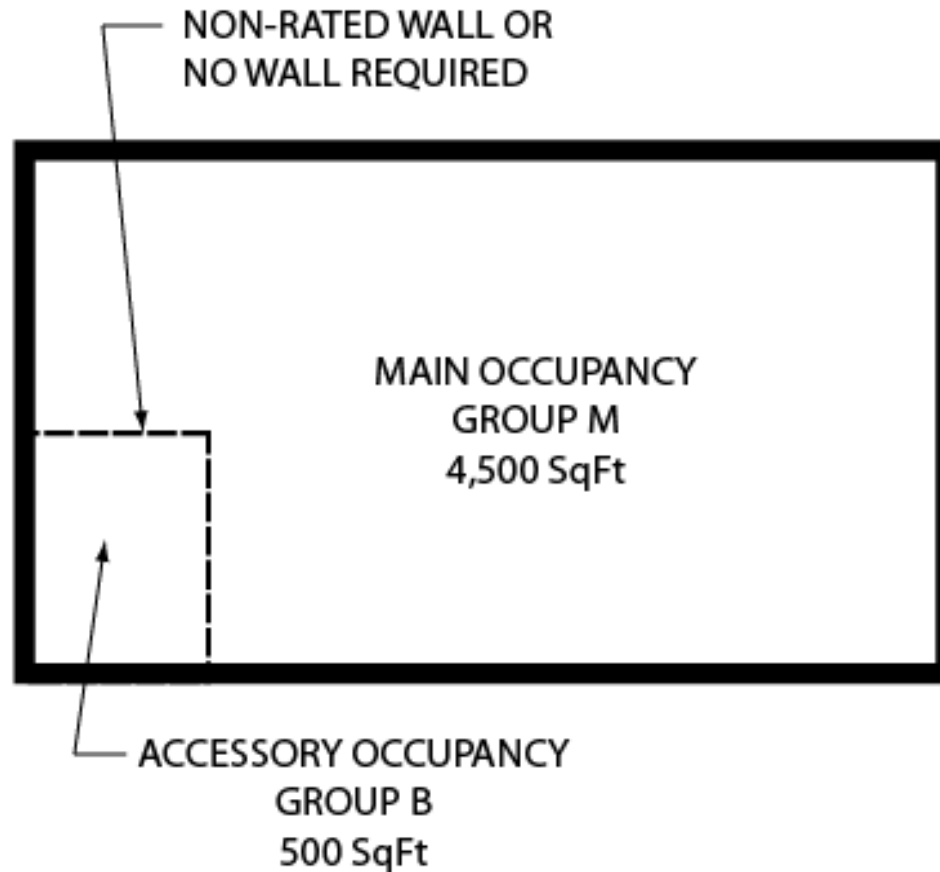


To qualify as an accessory occupancy:

1. The area must be subsidiary to the main occupancy
2. Aggregate of all accessory occupancies located on a single story does not exceed 10% of the floor area of the story where the accessory use areas are located**, and
3. Does not exceed the tabular values in Table 503 for each accessory occupancy (no height and area increases allowed for the accessory occupancies)

H-2 through H-5 occupancies must be treated as separated occupancies.

**Exceptions include Assembly areas less than 750 SF, Assembly areas accessory to Group E, and accessory religious educational rooms and religious auditoriums with less than 100 occupants

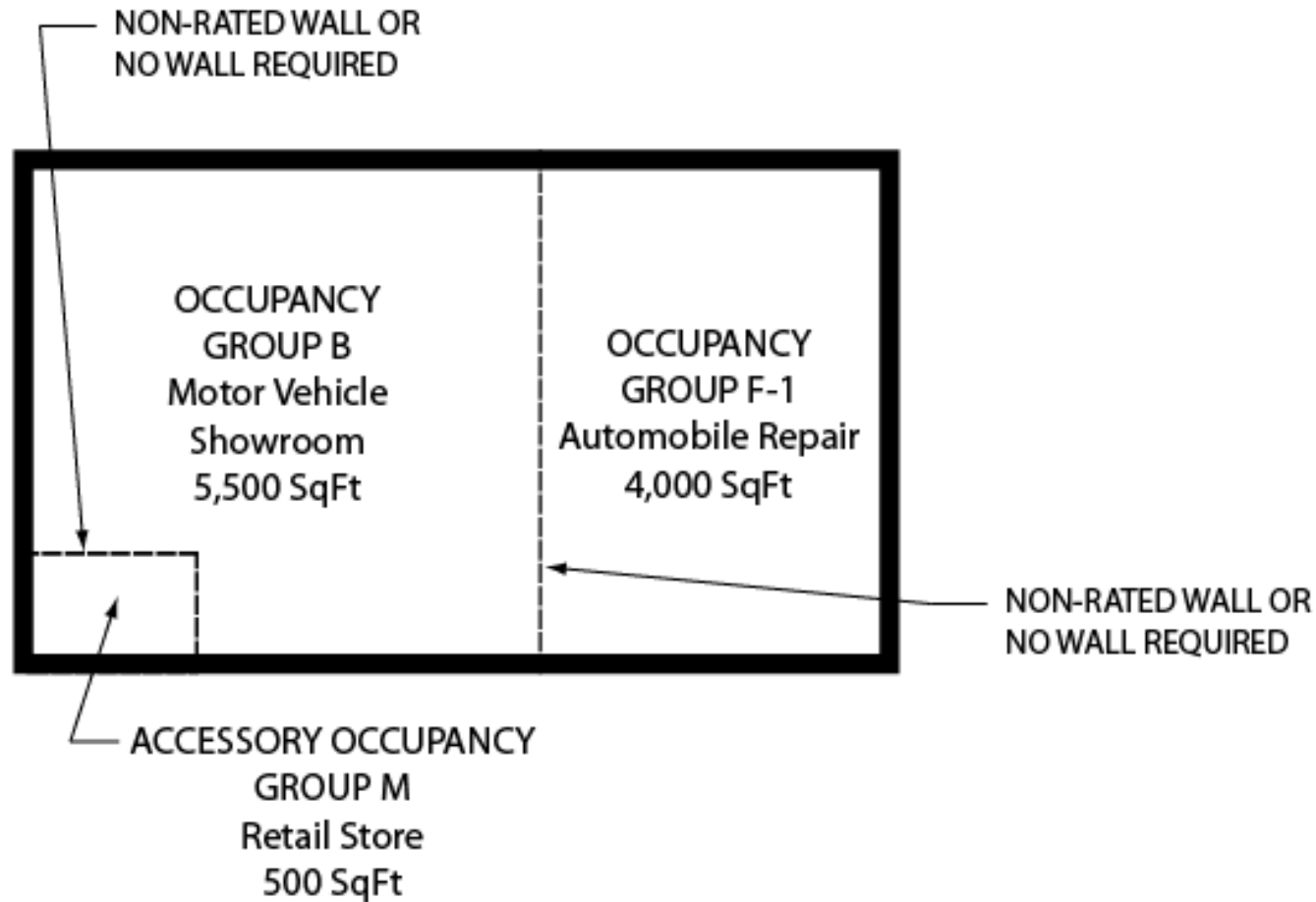


TOTAL FLOOR AREA = 5,000 SqFt

TOTAL FIRE AREA = 5,000 Sq. Ft, Group M



Separation	Occupancy Group	Allowable Height & Area	Code requirements
No separation required	Individually classified	<ol style="list-style-type: none"> <u>Building ht. & area</u>: Based on main occupancy <u>Accessory occupancies ht. & area</u>: Each accessory occupancy cannot exceed the tabular values of Table 503 (Height and area increases for frontages and sprinklers are not to be factored) 	<p>Each fire area must comply with the code based on the occupancy classification of such fire area.</p> <p>Other code requirements (means of egress, design occupant load, exterior wall rating, etc.) shall be based on the actual occupancy of the accessory space.</p>



TOTAL FLOOR AREA = 10,000 SqFt

TOTAL FIRE AREA = 10,000 Sq. Ft, Group F-1



Separation	Occupancy Group	Allowable Height & Area	Code requirements
No separation required	Individually classified	Based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building	<p>Most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to the entire building</p> <p>Other code requirements (means of egress, design occupant load, exterior wall rating, etc.) shall be based on the actual occupancy of the space.</p>



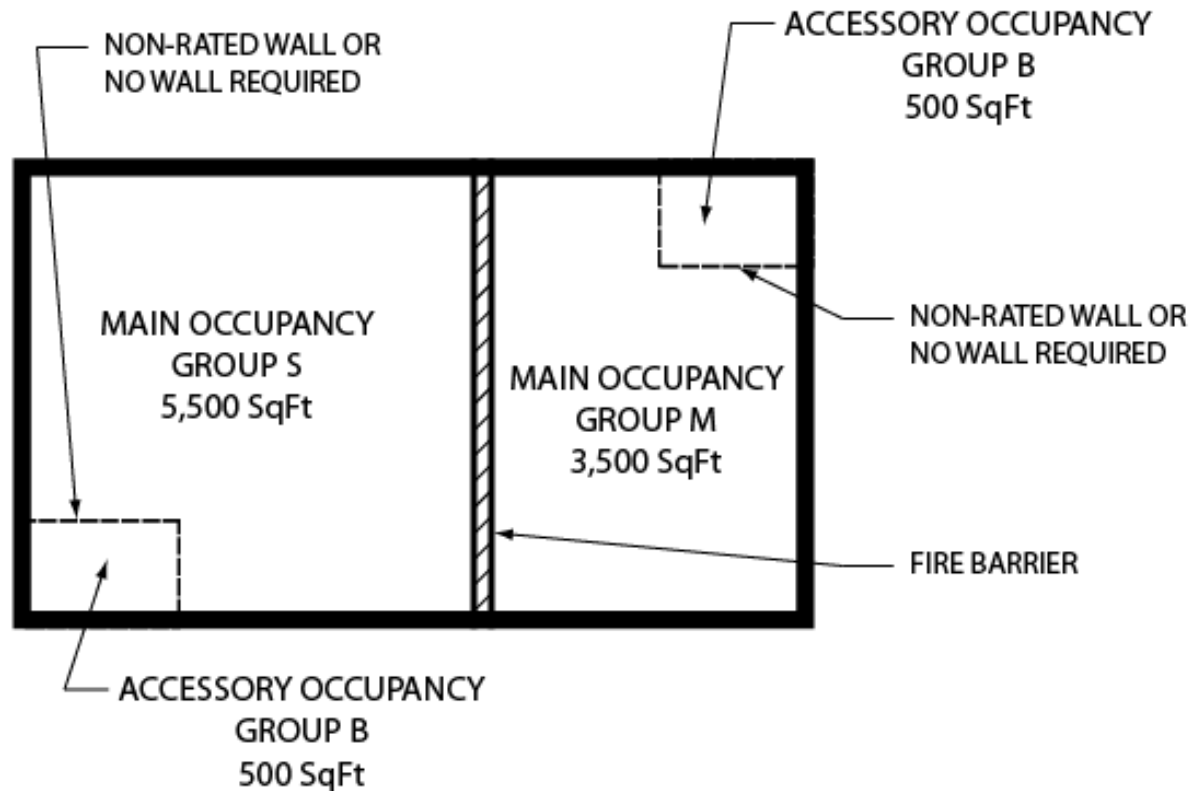
General Concepts:

- Occupancies must be separated according to Table 508.3.3.
 - Occupancies that pose the same risk may not require separation, such occupancies are still considered separated for height and area limitation purpose, but the size of a fire area is potentially increased. Therefore, the larger fire area may exceed the fire area thresholds in Section 903 and may require automatic sprinkler systems
 - For most occupancies, the required separations may be reduced by 1 hour with an automatic sprinkler system, but not less than that required for the floor and not less than 1 hour, whichever is higher
- The allowable height is occupancy dependent

Table 508.3.3 (Partial)

REQUIRED SEPARATION OF OCCUPANCY

USE	A-1	A-2	A-3	A-4	A-5	E ^b	E	F-1	F-2	H-1	H-2	H-3	H-4	H-5
A-1	—	2	2	2	2	2	2	3	2	NP	4	3	2	4
A-2 ^d	—	—	2	2	2	2	2	3	2	NP	4	3	2	4
A-3	—	—	—	2	2	2	2	3	2	NP	4	3	2	4
A-4	—	—	—	—	2	2	2	3	2	NP	4	3	2	4
A-5	—	—	—	—	—	2	2	3	2	NP	4	3	2	4
E ^b	—	—	—	—	—	—	2	3	2	NP	2	1	1	1
E	—	—	—	—	—	—	—	3	2	NP	4	3	2	3
F-1	—	—	—	—	—	—	—	—	3	NP	2	1	1	1
F-2	—	—	—	—	—	—	—	—	—	NP	2	1	1	1
H-1	—	—	—	—	—	—	—	—	—	—	NP	NP	NP	NP
H-2	—	—	—	—	—	—	—	—	—	—	—	1	2	2
H-3	—	—	—	—	—	—	—	—	—	—	—	—	1	1
H-4	—	—	—	—	—	—	—	—	—	—	—	—	—	1
H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—

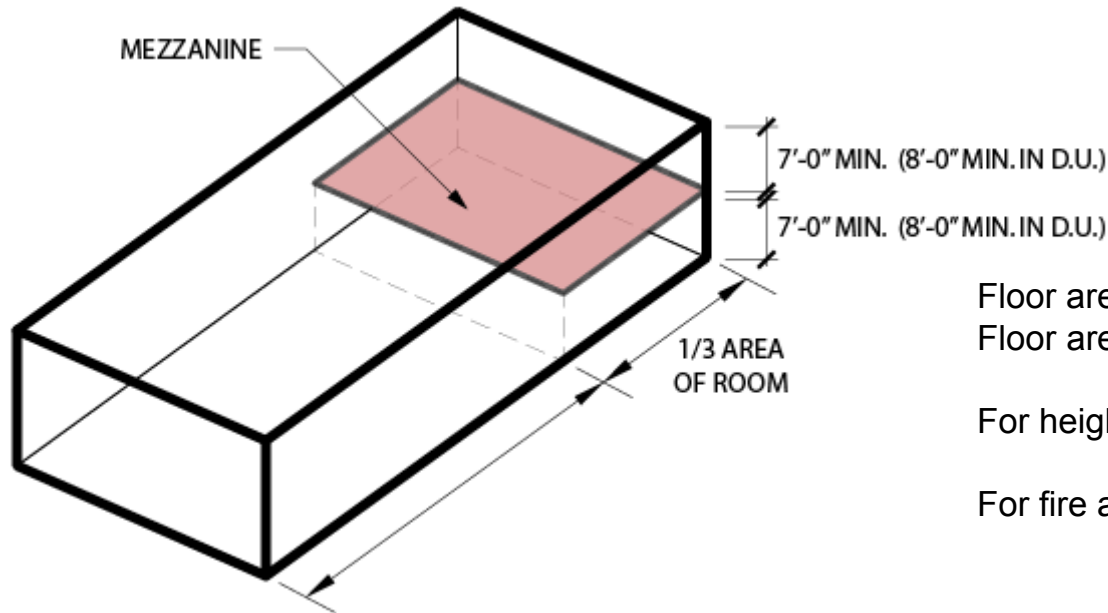


TOTAL FLOOR AREA = 10,000 SqFt

TOTAL FIRE AREAS = 6,000 Sq. Ft, Group S
4,000 Sq. Ft, Group M



Separation	Occupancy Group	Allowable Height & Area	Code requirements
As per Table 508.3.3	Individually classified	<p>Allowable Height: Each occupancy must comply with height limitations based on the type of construction of the building</p> <p>Allowable Area: In each story, the building area shall be such that the sum of the ratios of the actual floor area of each occupancy divided by the allowable area of each occupancy shall not exceed one</p>	Each fire area must comply with the code based on the occupancy classification of such fire area



Floor area of the room = **3,000 SF**
 Floor area of mezzanine = **1,000 SF**

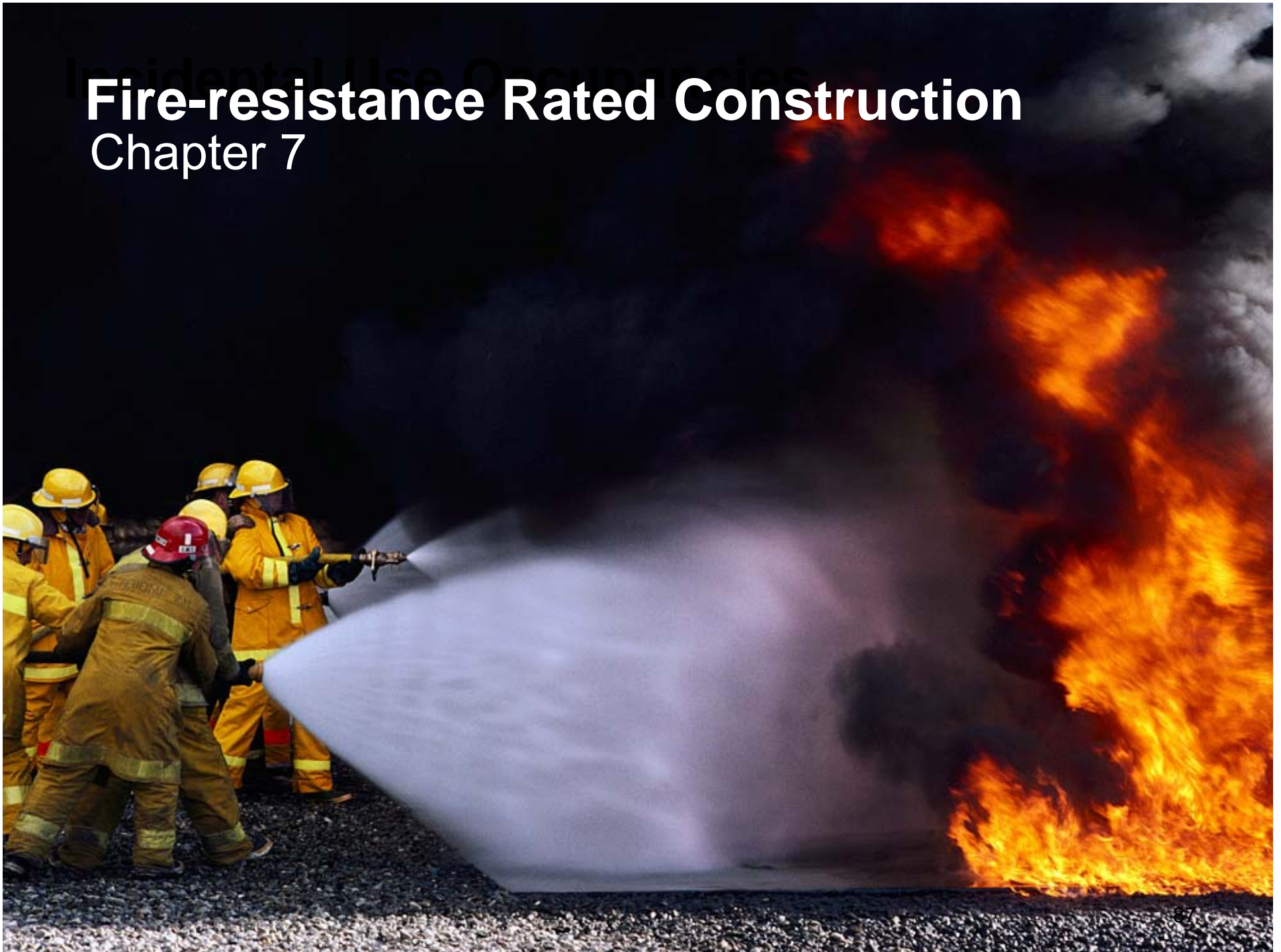
For height & area limitations, floor area = **3,000 SF**

For fire area, floor area = **4,000 SF**

- The aggregate area of all mezzanines in a room cannot exceed 1/3 of the floor area of the room
- The floor area of the mezzanine is not included in the floor area of the room below when determining height & area limitations.
- The mezzanine is not considered an additional story.
- The area of the mezzanine is included in the area of the room below for calculating the size of the fire area.

Fire-resistance Rated Construction

Chapter 7





Designed to contain the fire to the building of origin and prevent its spread to adjoining properties.

For Fire Rating, refer to:

- **Table 601** Protection based on Construction Type
- **Table 602** Fire Separation Distance based on
 - Distance between buildings
 - Construction Type and
 - Occupancy

**TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENT (hours)**

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V ¹	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Structural frame ^a Including columns, girders, trusses	3 ^b	2 ^b	1	0	1	0	HT	1	0
Bearing walls Exterior ^{f,g}	3	2	1	0	2	2	2	1	0
Interior	3 ^b	2 ^b	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior ^e	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction ^h Including supporting beams and joists	2	2	1	0	1	0	HT	1	0
Roof construction Including supporting beams and joists	1 1/2 ^c	1 ^c	1 ^c	0	1 ^c	0	HT	1 ^c	0

**TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE
SEPARATION DISTANCE^{a,d,e}**

FIRE SEPARATION DISTANCE (feet)	TYPE OF CONSTRUCTION	GROUP H	GROUP F-1, M, S-1	GROUP A, B, E, F-2, I, R ^b , S-2, U
< 5 ^c	All	3	2	1
≥ 5 < 10	IA	3	2	1
	Others	2	1	1
≥ 10 < 30	IA, IB	2	1	1
	IIB, VB	1	0	0
	Others	1	1	1
≥ 30	All	0	0	0



- Exterior load-bearing walls: Table 601 + Table 602
- Exterior nonload-bearing walls: Table 602 only
- Additional requirements for exterior walls in fire district (Note d and e)
- Additional provisions for exterior walls and openings in Section 704

Fire Separation Distance

Construction Types

Occupancy Groups

↓

↓

↓

↓

↓

Table 602

FIRE SEPARATION DISTANCE (feet)	TYPE OF CONSTRUCTION	GROUP H	GROUP F-1, M, S-1	GROUP A, B, E, F-2, I, R ^b , S-2, U
< 5 ^c	All	3	2	1
≥ 5 < 10	IA	3	2	1
	Others	2	1	1
≥ 10 < 30	IA, IB	2	1	1
	IIB, VB	1	0	0
	Others	1	1	1
≥ 30	All	0	0	0



Defined in section 702:

FIRE SEPARATION DISTANCE. The distance measured from the building face to the closest interior tax lot line, to the centerline of a street or other public space, or to an imaginary line between two buildings on the same tax lot. The distance shall be measured at right angles from the face of the wall.

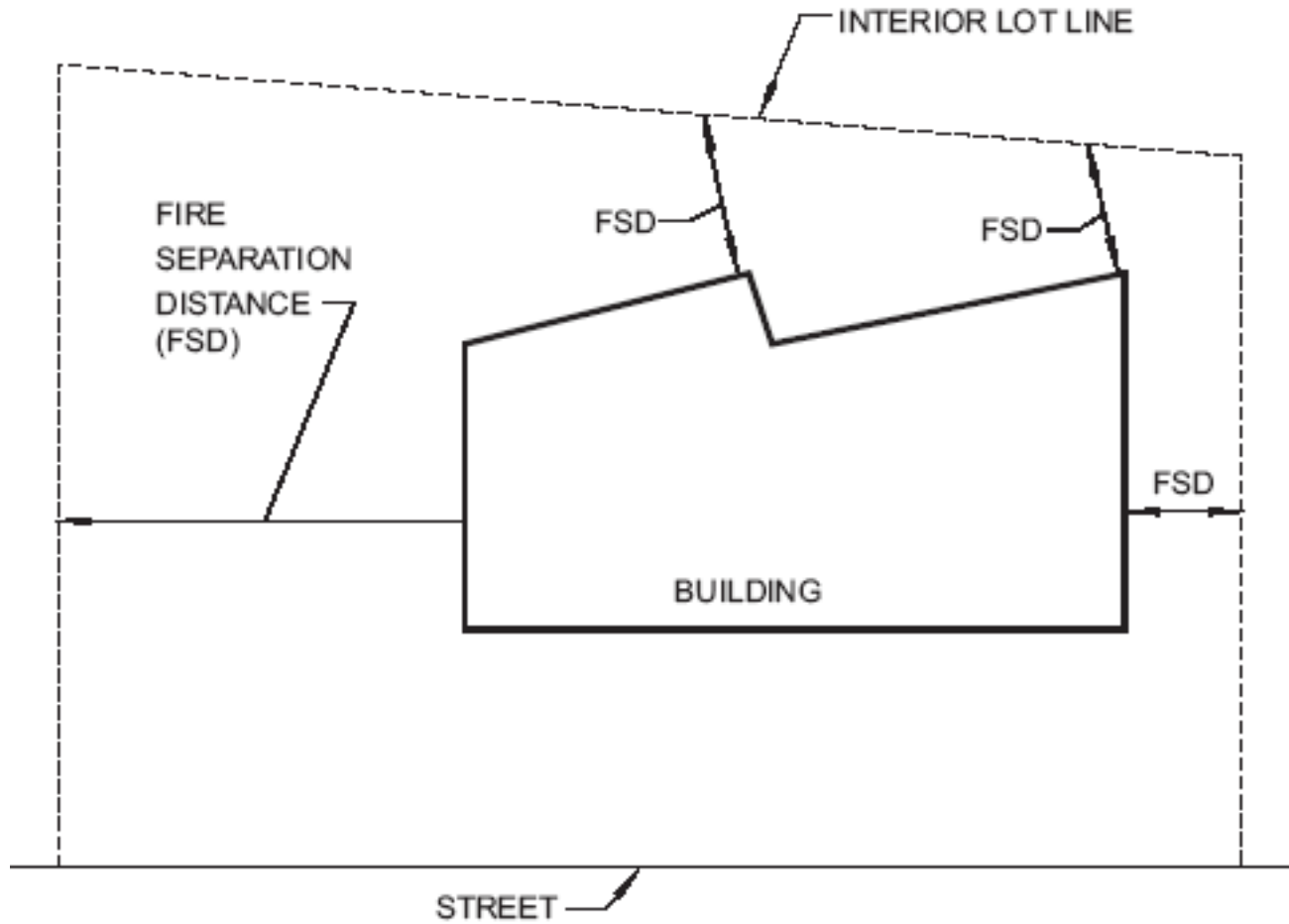


Figure 702.1(6)
FIRE SEPARATION DISTANCE MEASURED TO AN INTERIOR LOT LINE

Courtesy of ICC

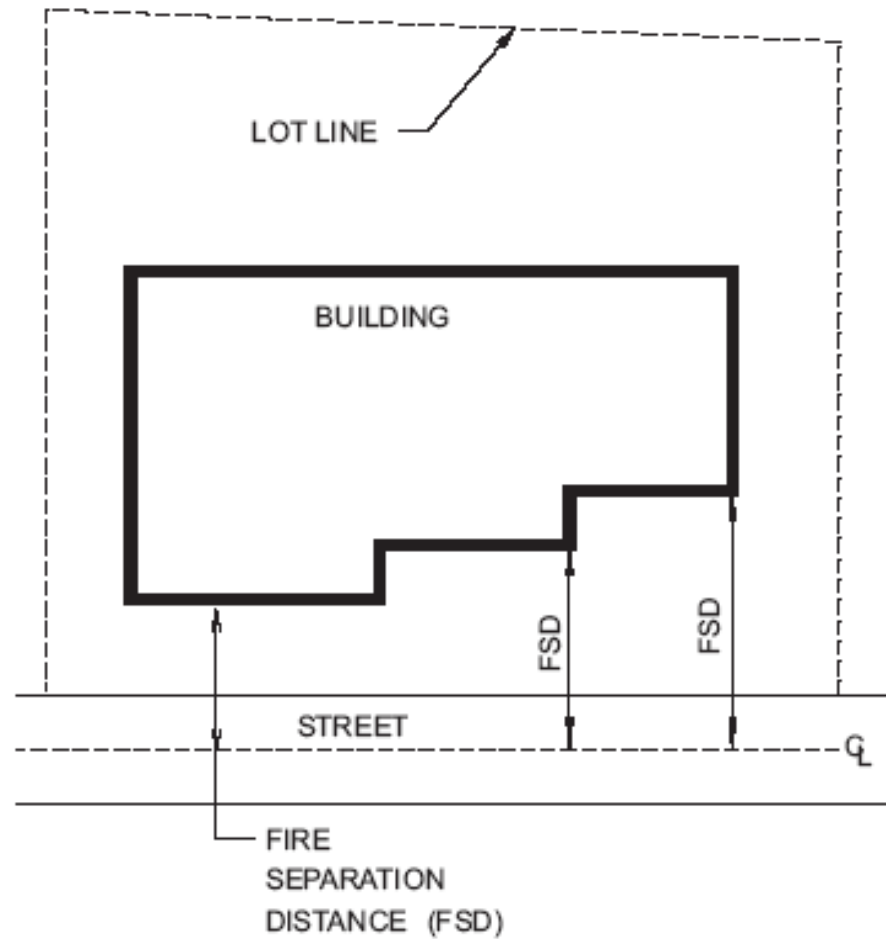


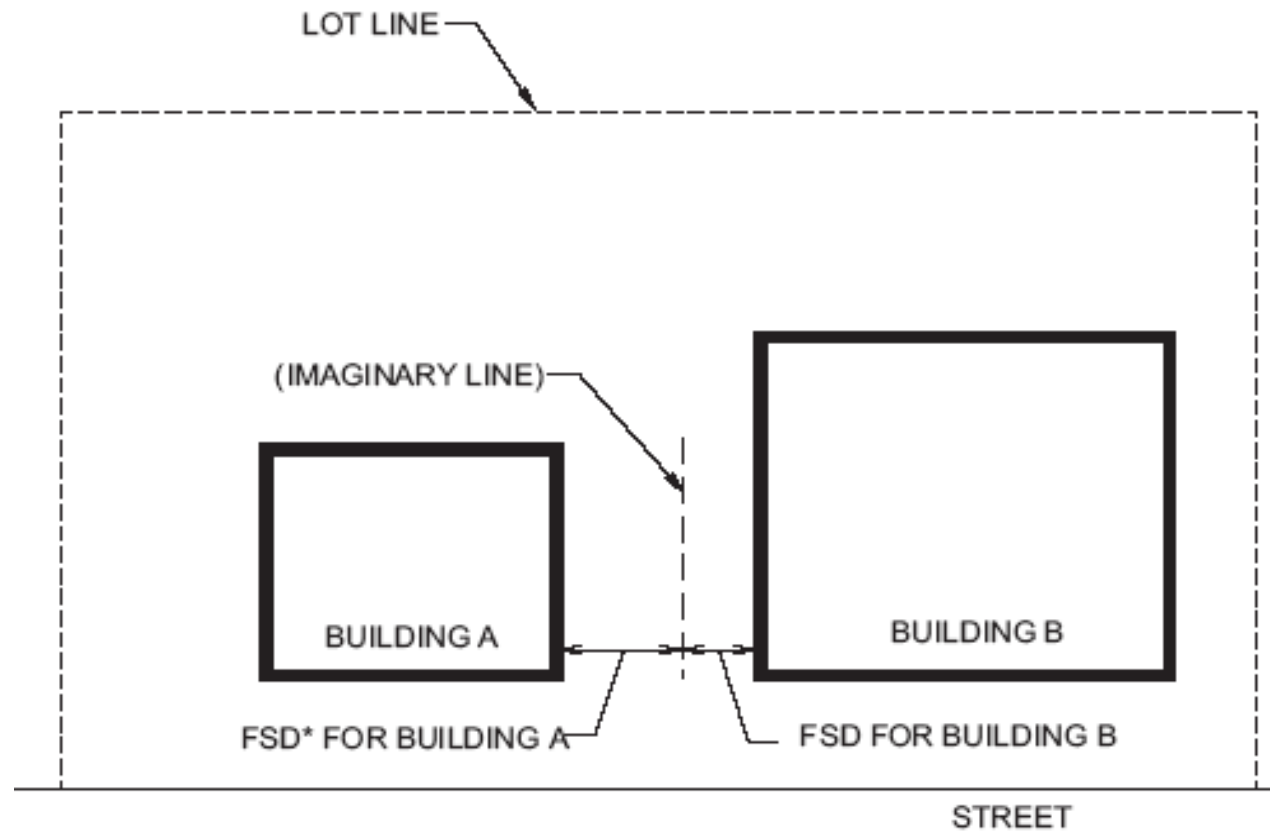
Figure 702.1(7)
FIRE SEPARATION DISTANCE MEASURED TO THE CENTERLINE OF A STREET

Courtesy of ICC



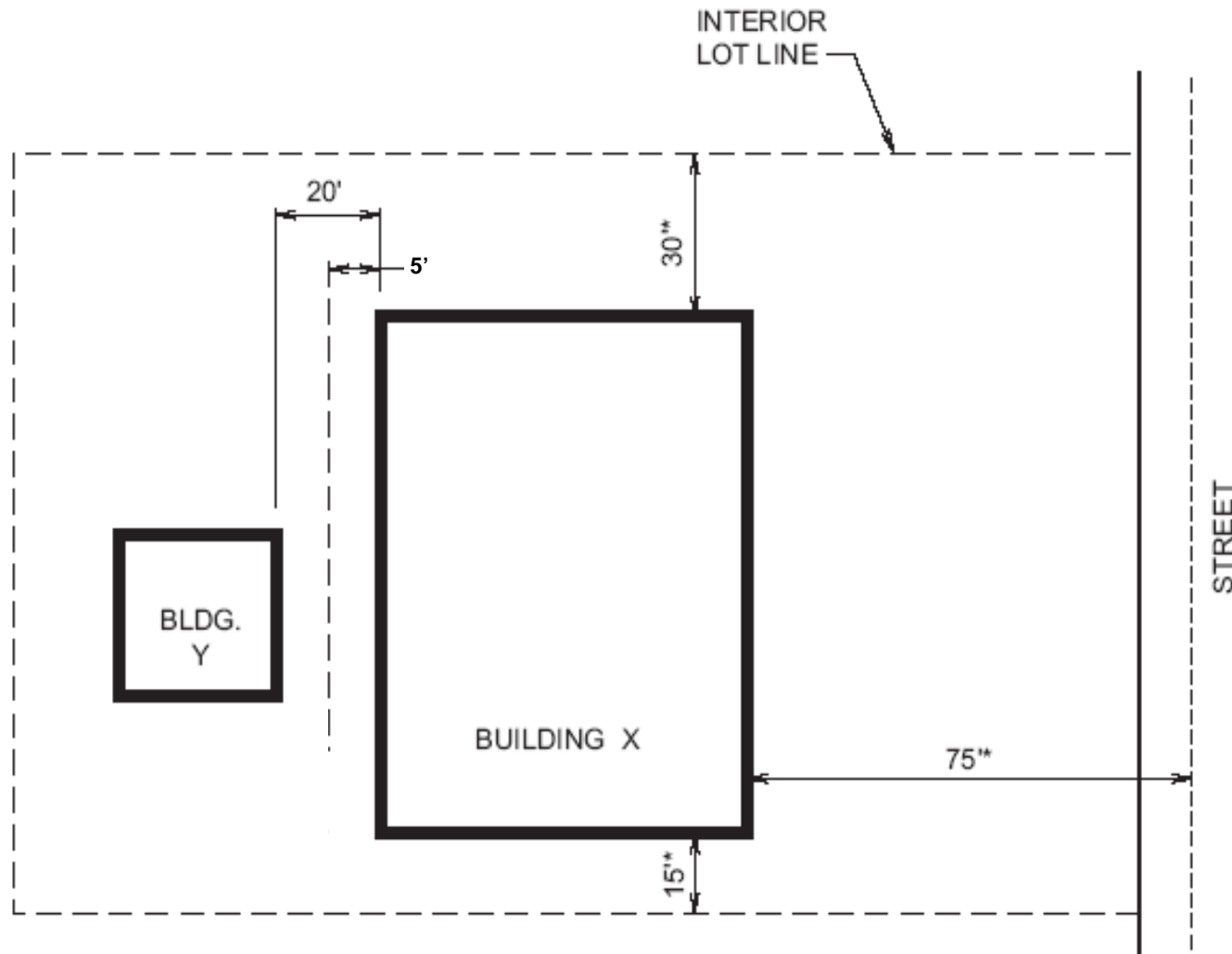
Buildings on the same tax lot

Fire separation distance measured to an imaginary line between buildings



*FSD: FIRE SEPARATION DISTANCE

Courtesy of ICC





- Table 704.8 prescribes the area limitations, as a percentage of exterior wall area, for both unprotected and protected openings, based upon separation distances, irrespective of construction class.
 - Compare to 1968 code Table 3-4
- Table 704.8 permits unprotected openings within separation distance of 15 feet
 - 1968 code permits the equivalent only for construction classes II-D and II-E

**TABLE 704.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS^{a,d}**

CLASSIFICATION OF OPENING	FIRE SEPARATION DISTANCE (feet)							
	0 to 3 ^{e,h}	Greater than 3 and not more than 5 ^b	Greater than 5 and not more than 10 ^{d,f}	Greater than 10 and not more than 15 ^{c,d,f}	Greater than 15 and not more than 20 ^{e,f}	Greater than 20 and not more than 25 ^{c,f}	Greater than 25 and not more than 30 ^{e,f}	Greater than 30
Unprotected	Not Permitted ^g	Not Permitted ^{b,g,k}	10%	15%	25%	45%	70%	No Limit
Protected	Not Permitted ^{l,j}	15% ^k	25% ^k	45% ^k	75% ^k	No Limit ^k	No Limit ^k	No Limit

**TABLE 715.3
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS**

TYPE OF ASSEMBLY	REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4	3
	3	3 ^a
	2	1½
	1½	1½
Fire barriers having a required fire-resistance rating of 1 hour: Shaft exit enclosure and exit passageway walls Other fire barriers	1	1
	1	¾
Fire partitions: Corridor walls Other partitions	1	¾
	1	¾
Exterior walls	3	1½
	2	1½
	1	¾

- a. Two doors, each with a fire protection rating of 1½ hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.

- Fire Separation of *Occupied Spaces*
 - **FIRE WALL**
 - **FIRE BARRIER**
 - **FIRE PARTITION**

- Smoke Separation of *Occupied Spaces*
 - **SMOKE BARRIER**
 - **SMOKE PARTITION**

- Separation of *Concealed Spaces*
 - **FIRESTOPPING**
 - **FIREBLOCKING**
 - **DRAFT STOP**



A fire resistance rated wall, with protected openings, extending continuously from the foundation through or to a roof assembly

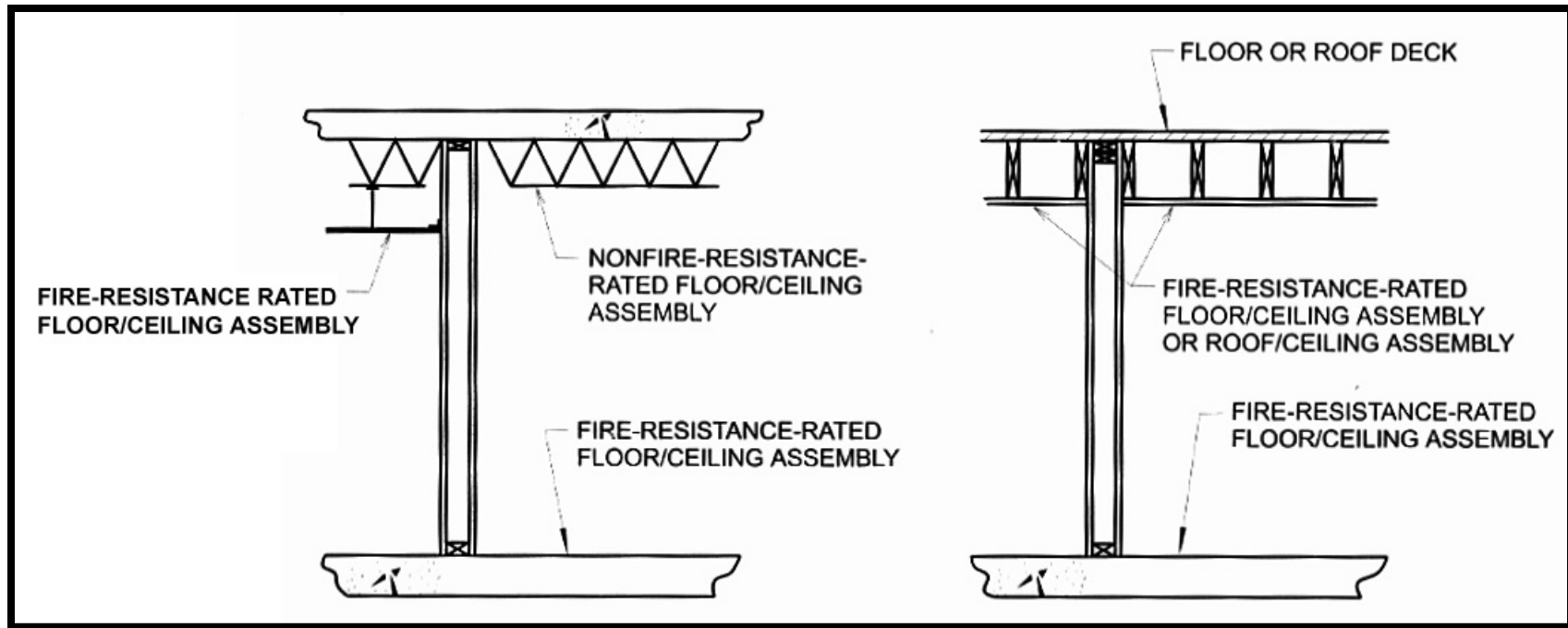
- Each portion of a building separated by fire walls shall be considered a separate building.
- Similar to (but not same as) 1968 code FIRE DIVISION
- Fire ratings based on occupancy, refer to Table 705.4
 - Minimum rating 2 hours
 - If mixed occupancy, most restrictive rating used

**TABLE 705.4
FIRE WALL FIRE-RESISTANCE RATINGS**

GROUP	FIRE-RESISTANCE RATING (hours)
A, B, E, H-4, I, R-1, R-2, U	3 ^a
F-1, H-3 ^b , H-5, M, S-1	3
H-1, H-2	4 ^b
F-2, S-2, R-3, R-4	2

a. Walls shall be not less than 2-hour fire-resistance rated where separating buildings of Type II or V construction.
 b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

A fire resistance rated horizontal or vertical assembly with protected openings. A fire barrier wall must extend from the floor below, through any concealed spaces, to the underside of the floor or roof slab above.





For separating

- Fire Areas
- Public corridors
- Incidental Use Areas
- Shafts
- Hazardous Material Control Areas

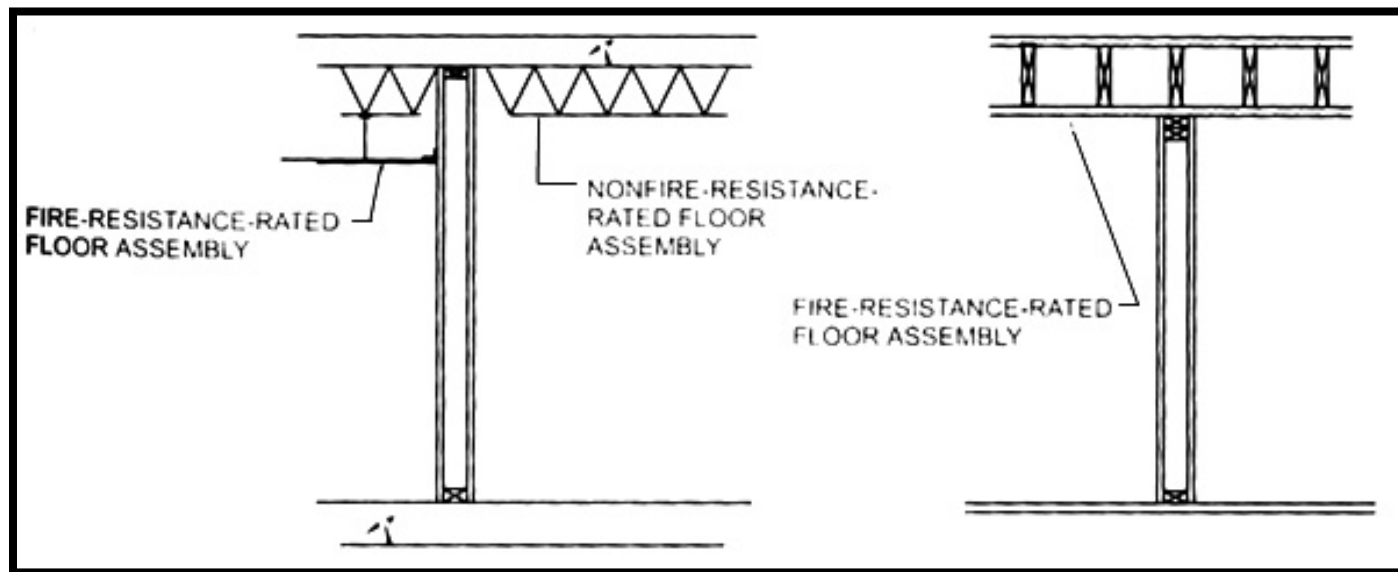


Table 508.3.3 (Partial)

REQUIRED SEPARATION OF OCCUPANCIE

USE	A-1	A-2	A-3	A-4	A-5	E ^b	E	F-1	F-2	H-1	H-2	H-3	H-4	H-5
A-1	—	2	2	2	2	2	2	3	2	NP	4	3	2	4
A-2 ^a	—	—	2	2	2	2	2	3	2	NP	4	3	2	4
A-3	—	—	—	2	2	2	2	3	2	NP	4	3	2	4
A-4	—	—	—	—	2	2	2	3	2	NP	4	3	2	4
A-5	—	—	—	—	—	2	2	3	2	NP	4	3	2	4
E ^b	—	—	—	—	—	—	2	3	2	NP	2	1	1	1
E	—	—	—	—	—	—	—	3	2	NP	4	3	2	3
F-1	—	—	—	—	—	—	—	—	3	NP	2	1	1	1
F-2	—	—	—	—	—	—	—	—	—	NP	2	1	1	1
H-1	—	—	—	—	—	—	—	—	—	—	NP	NP	NP	NP
H-2	—	—	—	—	—	—	—	—	—	—	—	1	2	2
H-3	—	—	—	—	—	—	—	—	—	—	—	—	1	1
H-4	—	—	—	—	—	—	—	—	—	—	—	—	—	1
H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—

- 1 hour fire-resistance-rated
- A vertical assembly with protected openings.
A fire partition need not extend through any concealed spaces provided that the partition intersects a fire-rated ceiling assembly and the concealed space is fire blocked or draft stopped at the partition line





For separating

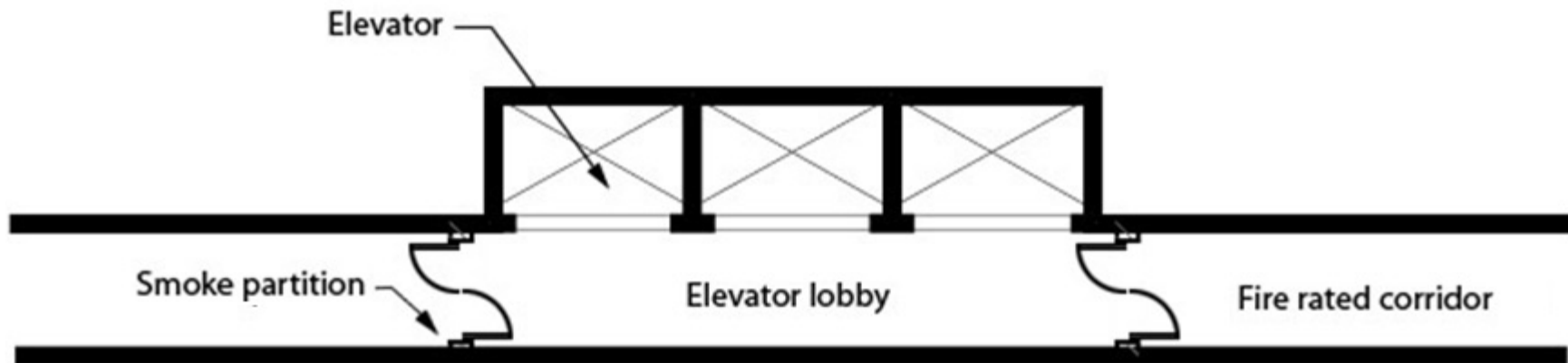
- Interior corridors
- Tenant separations in fully sprinklered covered mall buildings

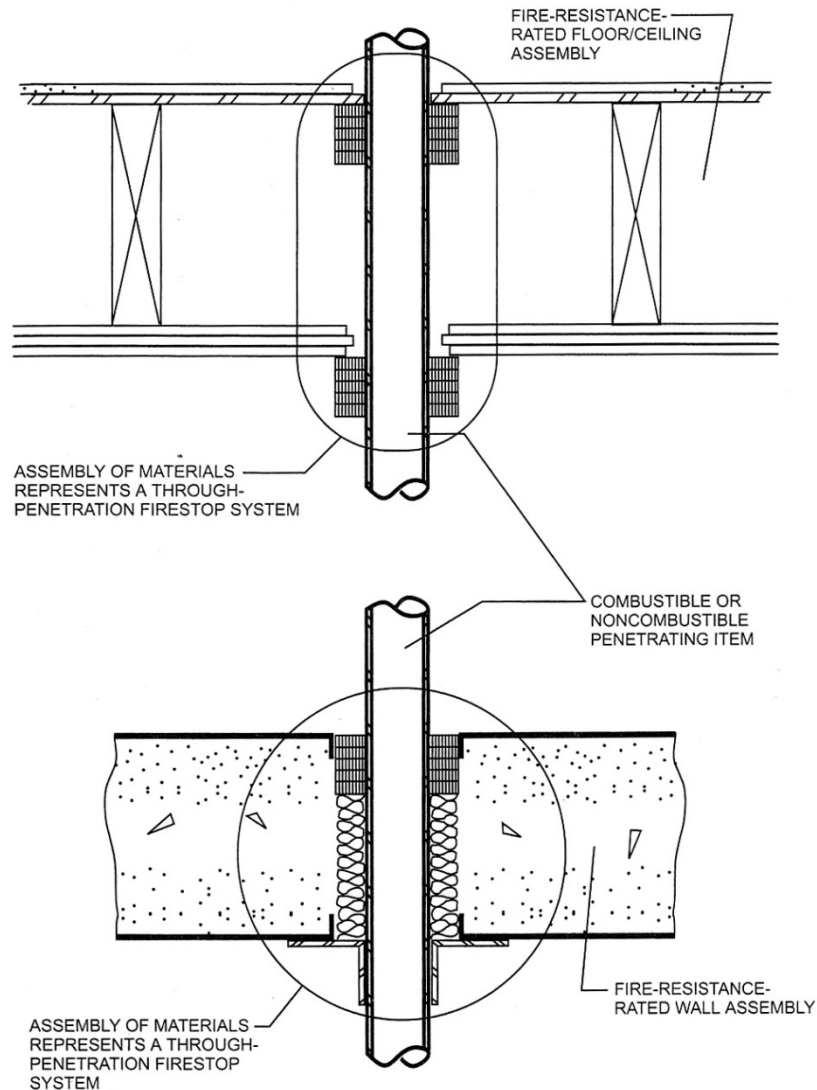


Smoke separation of occupied spaces

- **SMOKE BARRIER (Section 709)**
 - Either vertical or horizontal
 - A 1 hour fire-resistance-rated membrane, designed to restrict the movement of smoke.
- **SMOKE PARTITION (Section 710)**
 - A vertical membrane designed to restrict the movement of smoke.
 - Not necessarily required to be fire-resistance rated

- No fire rating required because occupancy is required to be protected by auto sprinklers
- For use in corridors in special I-2 Occupancies
- For use in constructing smokeproof elevator lobbies in high-rise construction





FIRESTOPPING

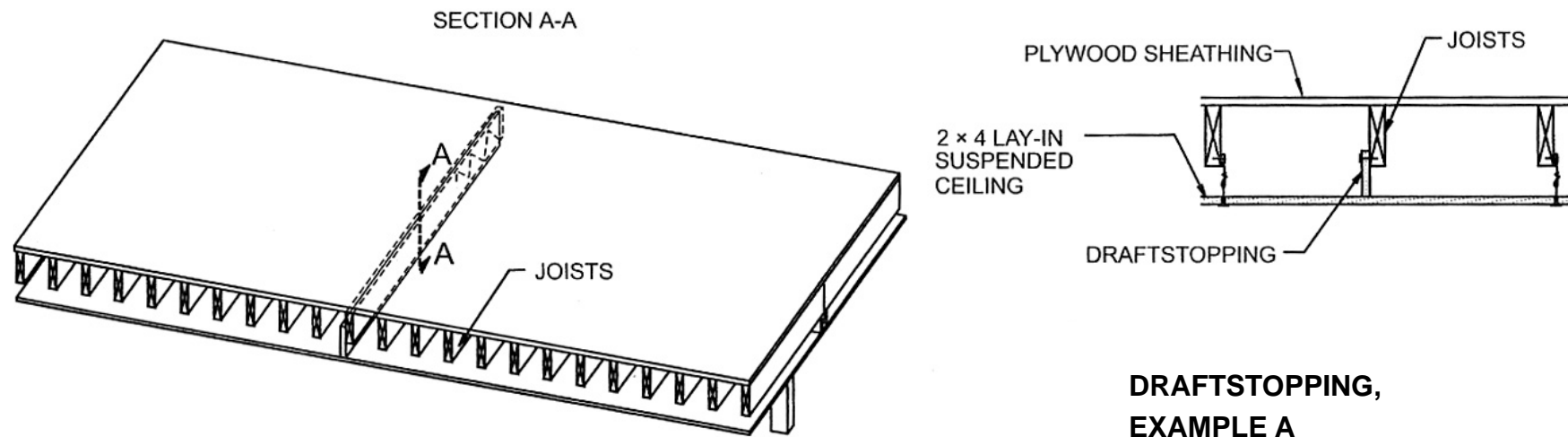
- A fire-resistance-rated assembly of materials installed to resist the free passage of flame or hot gases
- Generally applied to penetrations of fire-resistance rated construction (Section 712)

FIREBLOCKING

- An assembly of materials installed to resist the free passage of flame or hot gases.
- Not necessarily required to be fire-resistance rated

DRAFT STOP

- An assembly of materials installed to resist the free passage of air in concealed spaces.
- Not required to be fire-resistance rated
- Horizontal Only
- Relies on the insular capacity of large open spaces to retard smoke and gas travel



Chapter 9

Fire Protection Systems

Which code applies for alterations?

Alteration applications may comply with the 1968 Code, except that the following must comply with the 2008 Codes:

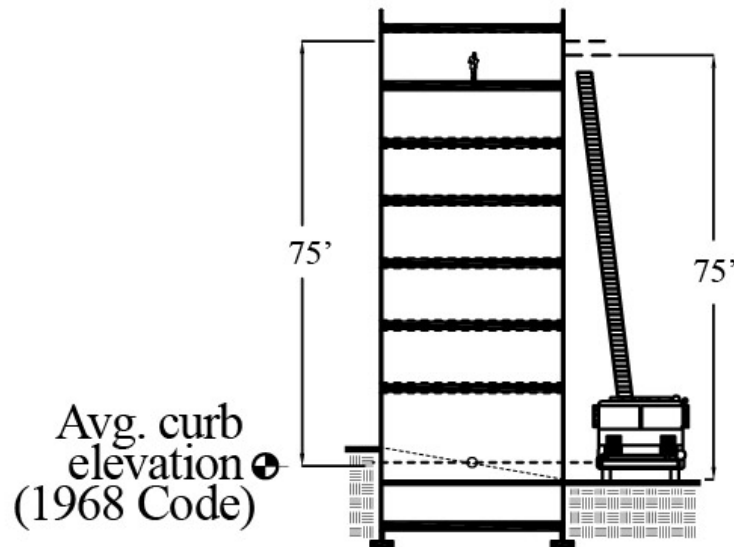
- Administration, including fees, approvals, permits, C of Os, inspections, and use of materials
- Enforcement, violations, fines, penalties
- Safety of public and property during construction (Ch. 33)
- Plumbing work (Plumbing Code)
- Fuel gas work (Fuel Gas Code)
- Mechanical work (Mechanical Code)
- Fire protection (sprinkler, standpipe, alarms) (Ch. 9)
- Elevators, conveyors, and amusement rides (Ch. 30)
- Accessibility (when exceeding 50% of building value or changing main use)
- Encroachments into the public right of way (Ch. 32)



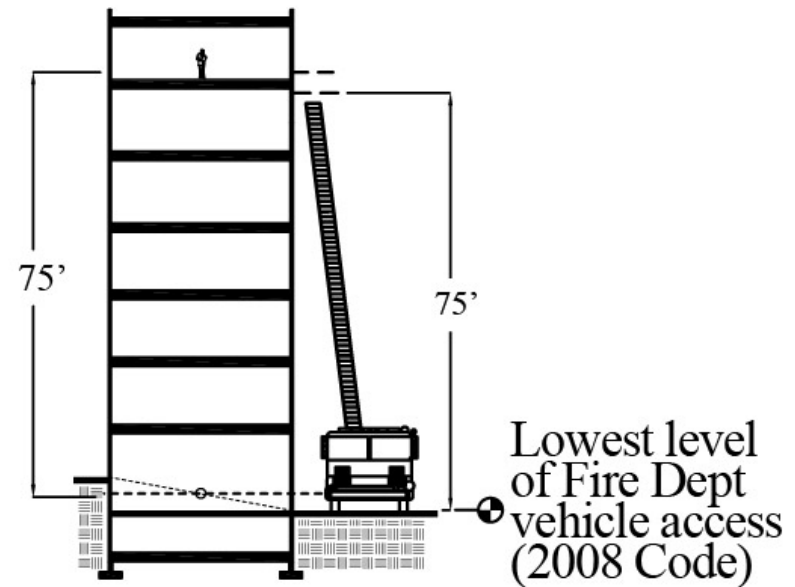
Sprinkler requirements based on:

- Occupancy classification of Fire Area
- Size of Fire Area
- Aggregate size of multiple Fire Areas
- Location of Fire Area relative to Lowest Level of Fire Department Vehicle access
- Special occupancies
 - e.g. high-rise, atrium, underground structures
- To meet height/area for desired construction type per Chapter 5

- ✓ = Yes, it *is* a high rise
- ✗ = No, it's *not* a high rise



1968 Code: ✓
2008 Code: ✗



1968 Code: ✓
2008 Code: ✓

EXAMPLE: Automatic sprinkler system required for:

Assembly Groups A-1, A-2, A-3 and A-4 throughout the floor area where located, and all floors between the Group A occupancy and the level of exit discharge where:

- Fire area > 12,000 sq. ft. (5,000 sq. ft. in A-2).
- Fire area has an occupant load of 300 or more.
- The aggregate occupant load of all fire areas by Group A, located on any given floor other than level of exit discharge, is 300 or more.
- Group A-1 fire area contains a multi-theater complex.
- Group A-2 occupancy used as a cabaret.

EXAMPLE: Automatic sprinkler system required for:

Mercantile Group M

throughout the fire area containing a Group M occupancy where :

- Fire area > 7,500 sq. ft.
- Fire area of any size is located more than 3 stories above grade.
- Fire area of any size is located in a high-rise building.
- Fire area of any size contains an unenclosed stair or escalator connecting two or more floors.



Automatic sprinkler system required throughout spaces and throughout buildings with a main use or dominant occupancy of:

- High-Hazard Group H fire areas
- Institutional Group I fire area
- Residential Group R fire area
 - Exceptions:
 - Detached one- and two-family dwellings < 4 stories
 - Attached one-family dwellings (townhouses) < 4 stories

Buildings Over 55 Feet in Height

Automatic sprinkler system required throughout buildings with a floor level having an **occupant load of 30 or more that is located 55 feet** or more above the lowest level of fire department vehicle access.



- Covered malls
- Special amusement buildings
- High-rise buildings
- Atriums
- Group H-2
- Flammable finishes
- Underground buildings
- Unlimited area buildings
- Group I-2
- Stages



Sprinkler systems designed, installed and maintained in accordance with:

- NFPA 13 – 2002, as modified for NYC
- NFPA 13R – 2002, as modified for NYC
- NFPA 13D – 2002, as modified for NYC

Testing and maintenance per NYC Fire Code



Secondary Water Supply (§ 903.5.2)

A secondary on-site water supply equal to the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for:

1. High-rise building in Seismic Design Category C or D
2. High-rise building greater than 300 feet in height

Automatic fire-extinguishing systems, other than automatic sprinkler systems (i.e. water-based), shall be designed, installed, inspected, tested and maintained in accordance with the *Fire Code*.

Except: **Commercial cooking systems** are required to be protected by carbon dioxide or wet-chemical extinguishing systems as per the *Building Code*



- This section provides the conditions where standpipe systems are required and the locations for hose connections.
- Standpipe systems installed in accordance with this section and NFPA 14 as modified in Appendix Q.
- Standpipe systems are permitted to be combined with automatic sprinkler systems.



Standpipe systems shall be installed throughout the following buildings:

- Buildings > 2 stories and floor area > 10,000 sq. ft. on any story;
- Buildings > 3 stories and floor area > 7,500 sq. ft. on any story;
- Buildings of any size with an occupant load of 30 or more on a floor located > 55 feet above the lowest level of fire department vehicle access;
- All high-rise buildings



Standpipe systems shall be installed throughout the following buildings:

- Nonsprinklered Group A with occupant load > 1,000
- Covered mall buildings
- Stages
- Underground buildings
- Helistops

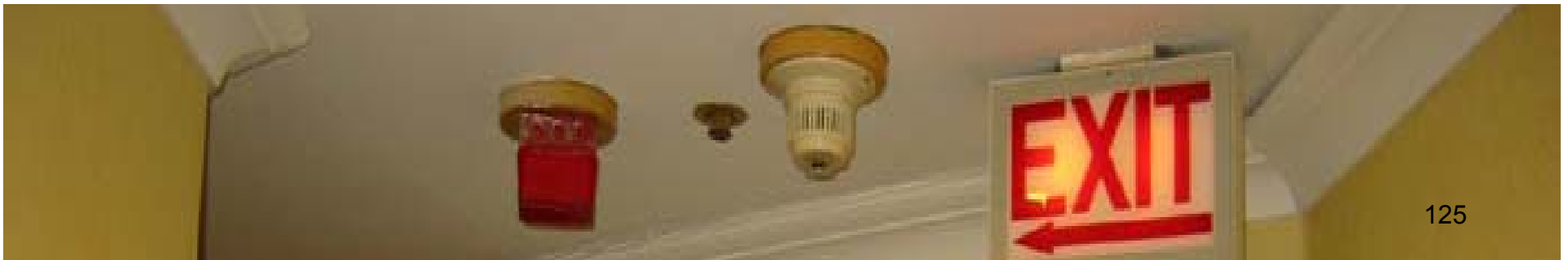


A few highlights of the new code:

- Installations in accordance with NFPA 72, as modified for NYC in Appendix Q
- Mechanical and electrical equipment rooms of any size must be equipped with smoke detectors connected to a fire alarm system
- Smoke detectors must be installed in elevator lobbies.

Fire alarm requirements based on:

- Occupancy classification of Fire Area
- Occupant load of Fire Area
- Location of Fire Area relative to Lowest Level of Fire Department Vehicle access
- Special occupancies
 - e.g. high-rise, underground structures



Where an automatic fire alarm system is required, selective coverage **smoke detectors** shall be located as follows, unless partial or total coverage automatic detection is specified:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room, in elevator machine rooms, and in elevator lobbies.
2. In air distribution systems (see Section 606 of the *Mechanical Code*).



A manual and automatic fire alarm system shall be installed in:

- Group A with occupant load of 300 or more
- Group B and M with an occupant load > 500 , or > 100 above or below lowest level of exit discharge
- Group E occupancies
- Group F occupancies > 2 stories and occupant load > 100 , or when > 25 persons above/below lowest level of exit discharge
- High-Hazard Group H
- Institutional Group I
- Mercantile Group M
- Residential Group R (with exceptions)

Smoke detectors in R-2 occupancies

An automatic fire alarm system without alarm notification in Group R-2 occupancies, other than student apartments.

The activation of any detector shall initiate a signal at a central station or a constantly attended location. Smoke detectors located as follows:

1. Mechanical equipment, electrical, transformer, telephone equipment or similar room greater than 75 sq. ft.
2. In air distribution systems per *NYC Mechanical Code*.
3. In elevator machine rooms and in elevator lobbies.



An emergency voice/alarm communications system required in:

- Group A with occupant load > 1,000
- Special amusement buildings
- Covered mall buildings
- Atriums
- High-rise buildings
 - Exceptions:
 1. Group I-1 and I-2 occupancies
 2. Group R-2 occupancies*



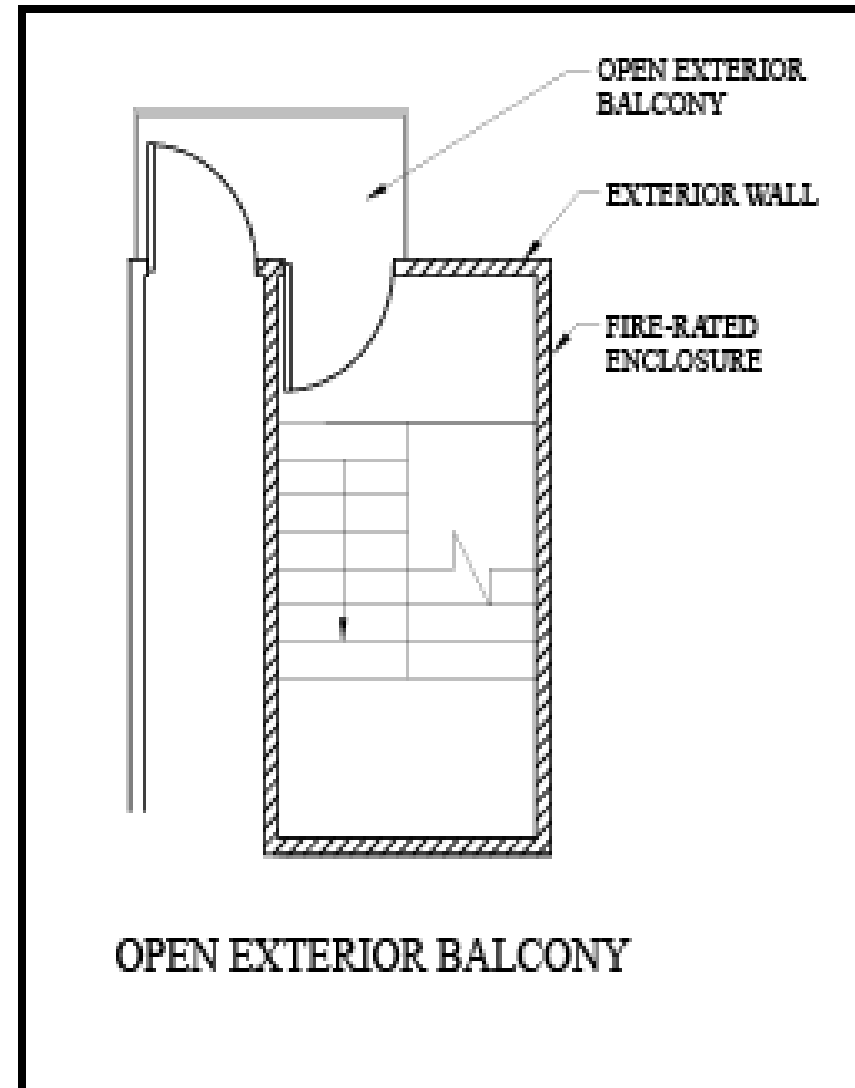
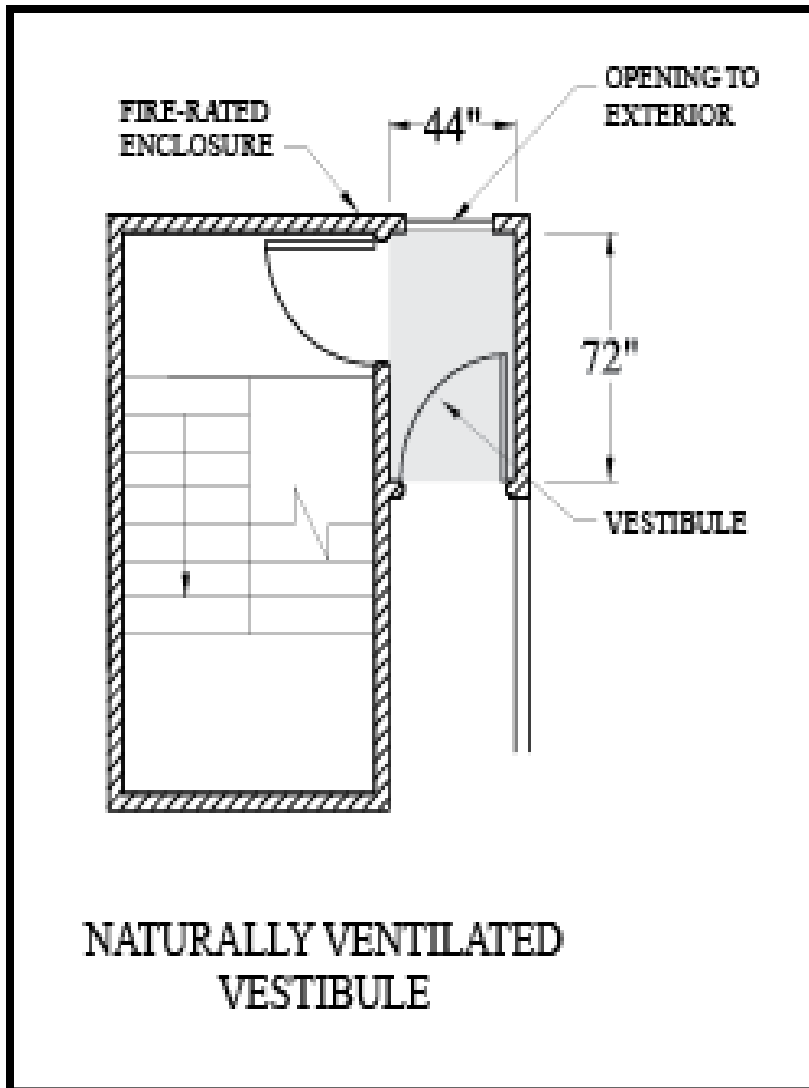
This section provides the requirements for smoke control systems in the following conditions:

- Atrium buildings
- Covered malls
- Stages
- Underground buildings
- Smokeproof enclosures



Smokeproof enclosures in high-rise buildings consisting of an enclosed interior exit stairways, each provided with one of the following:

- An open exterior balcony
- A naturally ventilated vestibule (2 hr rated)
- A mechanically ventilated vestibule (2 hr rated)
- Pressurization within the stairway





- Capability to exhaust smoke from occupied spaces via dedicated equipment, the HVAC system or other openings
- Required in the following occupancies:
 - High-rise buildings
 - Exception for R-2 with operable windows or smokeproof enclosures
 - Buildings with any story > 50,000 sq. ft.
 - Spaces > 100 ft. from natural ventilation openings.
 - High piled stock or rack storage (see Fire Code).



Appendix Q – Modified National Standards for Automatic Sprinkler, Standpipe, and Fire Alarm Systems

- **NFPA 13**
Standard for the Installation of Sprinkler Systems
- **NFPA 13D**
Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes
- **NFPA 13R**
Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and including Six Stories in Height
- **NFPA 14**
Standard for the Installation of Standpipe and Hose Systems
- **NFPA 72**
National Fire Alarm Code



In addition, buildings constructed or altered inside the fire district must comply with both Chapter 6 and Appendix D-Fire Districts, whichever is more restrictive



Construction Type V are generally not permitted in fire district, however, Section D 105.1 of Appendix D provides a number of exceptions:

- Detached or semi-detached 1- and 2-family of Type VA construction is permitted in fire district where such building is (See Section D 105.1, Item 9):
 - 2 stories or less in height
 - 2,500 SF or less in area, and
 - Located in Zoning District R-2 through R-5
- Or if the building is damaged, damaged portion may be constructed of Construction Type VA

- Intended as a maintenance and operations code
- The “new” Fire Code is in effect
- Grandfathered in pre-2009 structures
- Some construction related requirements
 - Section 503 – Fire apparatus roads
see FAQ #3 under Chapter 5 on FDNY website:
<http://www.nyc.gov/html/fdny/html/firecode/faq.shtml>
 - Section 504 – Access to buildings and roofs
 - Section 508 – Private fire hydrants required when main front entrance is more than 250 feet from a hydrant