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

Code and Zoning Representative
Training Module 9.6
Fire Alarm - Applicable Codes

- 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
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

Code and Zoning Representative
Training Module 9.3 & 9.4
**Quick View Chart**

- **Typical Cross Connection Floor**
  - Stairway A
  - Stairway B
  - Cross Connections at lowest floor
  - Fire Pump Room

**Siamese Color Code**
- Red: Standpipe
- Green: Sprinkler
- Yellow: Combination
- A Blue Collar on a Siamese Connection Denotes a Dry System

**Orientation of OS&Y Valves**
- Stem out valve is OPEN
- Stem in Valve is Closed

**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
Standpipe Definitions

• **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.
Types of Systems

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.
Classes of Standpipe Systems

**BC 902**

**Class I system.** A system providing 21/2-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 11/2-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 11/2-inch (38 mm) hose stations to supply water for use by building occupants and 21/2-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
Fire Department Connection Color Codes

**Red Standpipe**

**Yellow Combination Sprinkler/Standpipe**

**Green Sprinkler**
Fire Department Connection
Siamese Color Codes

- **Blue Collar** tells FDNY this has been changed to a Dry System
Special Siamese Color Codes

- **White Collar** tells FDNY this System is Temporary or Permanently out of service
Color Coding of Sprinkler and Standpipe

- 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
Required DOB Inspections

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*
Sprinkler Heads

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

SADDLE FITTINGS
Approved Material

MECHANICAL TEE
Standpipe Concealed
Dry Pipe Valve
Water Service SP / SD
Fire Pump
New Local Laws

STANDPIPES + SPRINKLERS
New Safety Regulations

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 MOU: For demolitions and gut rehabs, 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.)

Pressure Testing
Fusing 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 Stays: 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.

Standpipe Pressurized Alarm Systems
- 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.
Violation to be Written

NOTICE OF VIOLATION AND HEARING

COMMISSIONER OF THE DEPARTMENT OF BUILDINGS
OF THE CITY OF NEW YORK, PETITIONER, AGAINST

First name (for entity name)

Additional mailing to be sent (agent, care of, other):

Commissioner’s Order To Correct Violations

Upon physical inspection, said sprinkler system removed partially from ceiling and floors 1-6 due to demolition process without permit and TONY approval.

Stop Work Order issued for floors 1-6 where sprinkler was removed.

Remedy:

The Commission of the Department of Buildings orders that you correct these conditions and file a certificate of such correction.

Resolution Options

The hearing date above is mandatory. If you are either charged with a Class 1 violation, or the violation is marked as an approved violation, all Class 1 violations are considered as a Class 1 violation.

For more information, please visit NYC.gov/Buildings.

Issuing Officer's Signature

New York, NY 10012

Issuing officer's name, first initial (print)

Bldg. no.

Hearing Date

Environmental Control Board hearing locations:

Environmental Control Board hearing locations:

Tony's

Issuing officer's signature

ISSUING UNIT COPY

ECB-PC (Rev. 8/07)

[Figure: Violation Details]
FDNY Approval Letter

November 14, 2011

Page 2 of 2


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,

[Signature]

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. Marrano, Staten Island Borough Commander, FDNY
Louis Condagorta, 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

3 valve manifold

water tank

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

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 GREEN

cross connection piping painted RED

main to fire suppression systems painted RED

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

hose valve handle NOT PAINTED

siamese connection with caps painted RED

SD riser control valve handle painted RED
cross connection piping painted RED

build safe | live safe 39
Local Law 58/09

- Standpipe Hose Valve
- Sprinkler Control Valve

NYC Buildings
Local Law 58/09

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
Fire Extinguishing Systems

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
Fire 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.
Fire Extinguishing Systems

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

Parts of interest
Typical Commercial cooking Extinguishing Systems

Manual activation switch

Automatically activated nozzles
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
All gas valves and associated gas piping and equipment are subjected to DOB plan examination, inspections and tests.
Fire Extinguishing Systems

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!
Occupancies, fire protection, and egress

Chapter 3 Use and Occupancy Classifications
Chapter 4 Special Uses and Occupancies
Chapter 5 Height & Area Limitations
Chapter 6 Types of Construction
Chapter 7 Fire resistance rated Construction
Chapter 8 Fire Protection Systems
Chapter 9 Means of Egress
# Use and Occupancy Classifications

<table>
<thead>
<tr>
<th>2008 Code</th>
<th>1968 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Assembly: Groups A-1, A-2, A-3, A-4, and A-5</td>
<td>F</td>
</tr>
<tr>
<td>A-1 with fixed seating, intended for production and viewing of the performance arts or motion pictures.</td>
<td>F-1a</td>
</tr>
<tr>
<td>A-2 food and/or drink consumption.</td>
<td>F-4</td>
</tr>
<tr>
<td>A-3 worship, recreation or amusement (physically active), and other assembly uses not classified elsewhere in Group A.</td>
<td>F-3, F-1b, F-4</td>
</tr>
<tr>
<td>A-4 indoor sporting events with spectator seating.</td>
<td>F-1b</td>
</tr>
<tr>
<td>A-5 participation in or viewing outdoor activities.</td>
<td>F-2</td>
</tr>
<tr>
<td><strong>B</strong> Business: office, professional, service-type transaction, public or civic services.</td>
<td>E</td>
</tr>
<tr>
<td><strong>E</strong> Educational: 5 or more persons at any time for educational purposes.</td>
<td>G</td>
</tr>
<tr>
<td><strong>F</strong> Factory and industrial: Groups F-1 and F-2</td>
<td>D</td>
</tr>
<tr>
<td>F-1 moderate-hazard.</td>
<td>D-1</td>
</tr>
<tr>
<td>F-2 involve non-combustible, non-flammable materials, or low-hazardous production.</td>
<td>D-2</td>
</tr>
<tr>
<td><strong>H</strong> High Hazard: Groups H-1, H-2, H-3, H-4, and H-5</td>
<td>A</td>
</tr>
<tr>
<td>H-1 materials that present a detonation hazard.</td>
<td>A</td>
</tr>
<tr>
<td>H-2 uses present a deflagration hazard or a hazard from accelerated burning.</td>
<td>A</td>
</tr>
<tr>
<td>H-3 materials that readily support combustion or present a physical hazard.</td>
<td>A</td>
</tr>
<tr>
<td>H-4 materials that are health hazards.</td>
<td>none</td>
</tr>
<tr>
<td>H-5 semiconductor fabrication facilities using hazardous production materials (HPM) in excess of the permitted aggregate quantity.</td>
<td>D-1</td>
</tr>
<tr>
<td>2008 Code</td>
<td>1968 Code</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td><strong>H, J-2</strong></td>
</tr>
<tr>
<td><strong>I-1</strong></td>
<td>Housing persons, on a <strong>24-hour basis, capable of self-preservation</strong> and responding to an emergency situation without physical assistance from staff. <strong>J-2</strong></td>
</tr>
<tr>
<td><strong>I-2</strong></td>
<td>Medical, surgical, nursing or custodial care, on a <strong>24-hour basis</strong>, of more than 3 persons, who are not capable of self-preservation or responding to an emergency situation without physical assistance from staff. <strong>H-2</strong></td>
</tr>
<tr>
<td><strong>I-3</strong></td>
<td>More than 5 persons who are detained under restraint or security reason. <strong>H-1</strong></td>
</tr>
<tr>
<td><strong>I-4</strong></td>
<td>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. <strong>H-2</strong></td>
</tr>
<tr>
<td><strong>M</strong></td>
<td>Mercantile: display and sale of merchandise. <strong>C</strong></td>
</tr>
<tr>
<td><strong>R</strong></td>
<td>Residential: Groups R-1, R-2, and R-3 <strong>J</strong></td>
</tr>
<tr>
<td><strong>R-1</strong></td>
<td>Occupied transiently (for less than one month) and student dormitories. <strong>J-1</strong></td>
</tr>
<tr>
<td><strong>R-2</strong></td>
<td>More than 2 dwelling units on a long term basis (for a month or more). <strong>J-2</strong></td>
</tr>
<tr>
<td><strong>R-3</strong></td>
<td>Not more than 2 apartments on a long term basis (for a month or more). <strong>J-3</strong></td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>Storage: Groups S-1, and S-2 <strong>B</strong></td>
</tr>
<tr>
<td><strong>S-1</strong></td>
<td>Moderate-hazard storage occupancy for any flammable or combustible materials. <strong>B-1</strong></td>
</tr>
<tr>
<td><strong>S-2</strong></td>
<td>Low-hazard storage occupancy for non-combustible materials. <strong>B-2</strong></td>
</tr>
<tr>
<td><strong>U</strong></td>
<td>Utility and Miscellaneous: structures of an accessory character, or not classified in any specific occupancy. <strong>K</strong></td>
</tr>
</tbody>
</table>
### Schedule A

#### Existing Legal Use

<table>
<thead>
<tr>
<th>Floor</th>
<th>Maximum Number of Persons</th>
<th>Live Load (psf)</th>
<th>2008 Code Designations?</th>
<th>Building Code Occupancy Group(s)</th>
<th>Dwelling/Rooming Units (BC)</th>
<th>Zoning Use Group(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Proposed Use

*Use 2008 Code equivalents only even for older Codes.*

<table>
<thead>
<tr>
<th>Maximum Number of Persons</th>
<th>Live Load (psf)</th>
<th>2008 Code Designations only*</th>
<th>Building Code Occupancy Group(s)</th>
<th>Dwelling/Rooming Units (BC)</th>
<th>Zoning Use Group(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Height and Area Limitations

## TABLE 503
### ALLOWABLE HEIGHT AND BUILDING AREAS

**Height limitations shown as stories and feet above grade plane.**

**Area limitations as determined by the definition of “Area, building,” per floor.**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>TYPE OF CONSTRUCTION</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
<th>TYPE V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td><strong>Hgt(feet)</strong></td>
<td><strong>Hgt($)$</strong></td>
<td>UL</td>
<td>160°</td>
<td>65</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>A-1</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>17,500</td>
<td>10,500</td>
<td>14,700</td>
</tr>
<tr>
<td>A-2</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>17,500</td>
<td>9,500</td>
<td>14,000</td>
</tr>
<tr>
<td>A-3</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>17,500</td>
<td>9,500</td>
<td>14,000</td>
</tr>
<tr>
<td>A-4</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>17,500</td>
<td>9,500</td>
<td>14,000</td>
</tr>
<tr>
<td>A-5</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>UL</td>
<td>UL</td>
<td>UL</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>37,500</td>
<td>10,500</td>
<td>28,000</td>
</tr>
<tr>
<td>E</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>26,000</td>
<td>10,500</td>
<td>23,000</td>
</tr>
<tr>
<td>F-1</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>12,500</td>
<td>7,500</td>
<td>7,500</td>
</tr>
<tr>
<td>F-2</td>
<td>S</td>
<td>UL</td>
<td>UL</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>UL</td>
<td>UL</td>
<td>37,500</td>
<td>10,500</td>
<td>28,000</td>
</tr>
</tbody>
</table>

*Not permitted in Fire District*

*Not permitted in Fire District without sprinklers*
## Height and Area Limitations

### Conversion Factor Calculation

1. **1.0 (Given by Table 503)**
2. **Frontage Increase Factor**
3. **Sprinkler Increase Factor**

\[
\text{Conversion Factor} \times \text{Tabular Area} = \text{Allowable Area}
\]

<table>
<thead>
<tr>
<th>OCCUPANCY GROUP</th>
<th>CONSTRUCTION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABULAR AREA</td>
<td></td>
</tr>
</tbody>
</table>

---

*Copyright © 2010 by NYC Department of Buildings*
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
<table>
<thead>
<tr>
<th>Classification</th>
<th>Subclassification</th>
<th>Description of building elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>noncombustible</td>
<td>TYPE I</td>
<td>TYPE IA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TYPE IB</td>
</tr>
<tr>
<td></td>
<td>TYPE II</td>
<td>TYPE IIA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TYPE IIB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noncombustible building elements</td>
</tr>
<tr>
<td>combustible</td>
<td>TYPE III</td>
<td>TYPE IIIA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TYPE IIIB</td>
</tr>
<tr>
<td></td>
<td>TYPE IV</td>
<td>TYPE IV</td>
</tr>
<tr>
<td></td>
<td>TYPE V</td>
<td>TYPE VA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TYPE VB</td>
</tr>
</tbody>
</table>

- Noncombustible exterior walls
- Combustible or noncombustible interior elements
- Combustible building elements permitted by the code
### Types of Construction

#### TABLE 601

FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENT (hours)

<table>
<thead>
<tr>
<th>BUILDING ELEMENT</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
<th>TYPE V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A&lt;sup&gt;d&lt;/sup&gt;</td>
<td>B</td>
<td>A&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Structural frame&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Including columns, girders, trusses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearing walls</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Exterior&lt;sup&gt;f,g&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Nonbearing walls and partitions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exterior</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nonbearing walls and partitions&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nonbearing walls and partitions&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Floor construction&lt;sup&gt;h&lt;/sup&gt;</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Including supporting beams and joists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof construction&lt;sup&gt;h&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including supporting beams and joists</td>
<td>1 1/2&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0</td>
<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

*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*
## Types of Construction

<table>
<thead>
<tr>
<th>2008 Code construction types</th>
<th>Similar 1968 code construction classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type IA</td>
<td>Class I-B</td>
</tr>
<tr>
<td>Type IB</td>
<td>Class I-C</td>
</tr>
<tr>
<td>Type IIA</td>
<td>Class I-D</td>
</tr>
<tr>
<td>Type IIB</td>
<td>Class I-E</td>
</tr>
<tr>
<td>Type IIIA</td>
<td>Class II-B</td>
</tr>
<tr>
<td>Type IIIB</td>
<td>Class II-C</td>
</tr>
<tr>
<td>Type IV</td>
<td>Class II-A</td>
</tr>
<tr>
<td>Type VA</td>
<td>Class II-D</td>
</tr>
<tr>
<td>Type VB</td>
<td>Class II-E</td>
</tr>
</tbody>
</table>
Combustible Materials in Types I & II

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
Mixed Occupancies

- Single Use
- Incidental Use
- Mixed Use
  - Accessory
  - Nonseparated
  - Separated
- Separated Buildings
### Table 508.2

| ROOM OR AREA                                                                 | SEPARATION  
|------------------------------------------------------------------------------|-----------------------------------------------
| 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

**Note:**
- Incidental Use Areas are areas used for purposes other than those required for the primary use of the building. They are typically small or temporary in nature. The regulations for these areas vary depending on the specific use and the building code requirements.
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

| USE  | A-1 | A-2 | A-3 | A-4 | A-5 | R² | E  | F-1 | F-2 | H-1 | H-2 | H-3 | H-4 | H-5 | L-1 | L-2 | L-3 | L-4 | M² | R-1 | R-2 | R-3, R-4 | S-1 | S-2² | 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  |
| A-2  | —   | —   | 2   | 2   | 2   | 2  | 2  | 3   | 2   | NP  | 4   | 3   | 2   | 4   | 2   | 2   | 2   | 2   | 2  | 2     | 2  | 2     | 3  |
| A-3  | —   | —   | —   | 2   | 2   | 2   | 2  | 3   | 2   | NP  | 4   | 3   | 2   | 4   | 2   | 2   | 2   | 2   | 2  | 2     | 2  | 2     | 3  |
| A-4  | —   | —   | —   | —   | 2   | 2   | 2   | 3   | 2   | NP  | 4   | 3   | 2   | 4   | 2   | 2   | 2   | 2   | 2  | 2     | 2  | 2     | 3  |
| A-5  | —   | —   | —   | —   | —   | 2   | 2   | 3   | 2   | NP  | 4   | 3   | 2   | 4   | 2   | 2   | 2   | 2   | 2  | 2     | 2  | 2     | 3  |
| B²   | —   | —   | —   | —   | —   | —   | 2  | 3   | 2   | NP  | 2   | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2  | 2     | 2  | 2     | 3  |
| E    | —   | —   | —   | —   | —   | —   | —  | 3   | 2   | NP  | 4   | 3   | 2   | 3   | 2   | 2   | 2   | 2   | 2  | 2     | 2  | 2     | 3  |
| F-1  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | NP  | 2   | 1   | 1   | 1   | 3   | 5   | 3   | 3   | 3   | 3     | —   | —     | —  |
| F-2  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | NP  | 2   | 1   | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2     | 3   | —     | —  |
| H-1  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | NP  | NP  | NP  | NP  | NP  | NP  | NP     | NP  | NP     | —  |
| H-2  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | NP  | NP     | —  |
| H-3  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| H-4  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| H-5  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| I-1  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| I-2  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| I-3  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| I-4  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| M²   | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| E-1  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| E-2  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| R3, R-4 | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| S-1  | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |
| S-2² | —   | —   | —   | —   | —   | —   | —  | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —   | —     | —   | —     | —  |

Required Separation of Occupancies (Hours)

build safe | live safe

75
Mixed Occupancies

- Accessory occupancies
- Nonseparated occupancies
- Separated occupancies
Accessory 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)

**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.

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

MAIN OCCUPANCY
GROUP M
4,500 SqFt

ACCESSORY OCCUPANCY
GROUP B
500 SqFt

TOTAL FLOOR AREA = 5,000 SqFt

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

build safe | live safe
### Accessory Occupancies

<table>
<thead>
<tr>
<th>Separation</th>
<th>Occupancy Group</th>
<th>Allowable Height &amp; Area</th>
<th>Code requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>No separation required</td>
<td>Individually classified</td>
<td>1. <strong>Building ht. &amp; area:</strong> Based on main occupancy</td>
<td>Each fire area must comply with the code based on the occupancy classification of such fire area.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. <strong>Accessory occupancies ht. &amp; area:</strong> Each accessory occupancy cannot exceed the tabular values of Table 503 (Height and area increases for frontages and sprinklers are not to be factored)</td>
<td>Other code requirements (means of egress, design occupant load, exterior wall rating, etc.) shall be based on the actual occupancy of the accessory space.</td>
</tr>
</tbody>
</table>

---

*build safe | live safe*
Nonseparated Occupancies

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

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

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)

<table>
<thead>
<tr>
<th>USE</th>
<th>A-1</th>
<th>A-2</th>
<th>A-3</th>
<th>A-4</th>
<th>A-5</th>
<th>B&lt;sup&gt;b&lt;/sup&gt;</th>
<th>E</th>
<th>F-1</th>
<th>F-2</th>
<th>H-1</th>
<th>H-2</th>
<th>H-3</th>
<th>H-4</th>
<th>H-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>—</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>A-2&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>A-3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>A-4</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>A-5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>B&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>2</td>
<td>NP</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>F-1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>F-2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H-1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td>H-2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>H-3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>H-4</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>H-5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
Separated Occupancies

- Main Occupancy: Group S - 5,500 SqFt
- Main Occupancy: Group M - 3,500 SqFt
- Accessory Occupancy Group B - 500 SqFt

Total Floor Area = 10,000 SqFt

Total Fire Areas = 6,000 Sq. Ft, Group S
4,000 Sq. Ft, Group M
<table>
<thead>
<tr>
<th>Separation</th>
<th>Occupancy Group</th>
<th>Allowable Height &amp; Area</th>
<th>Code requirements</th>
</tr>
</thead>
</table>
| As per Table 508.3.3 | Individually classified | Allowable Height: Each occupancy must comply with height limitations based on the type of construction of the building  
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 | Each fire area must comply with the code based on the occupancy classification of such fire area |
• 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.

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
Incidental Use Occupancies

Fire-resistance Rated Construction

Chapter 7
Exterior Walls

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)

<table>
<thead>
<tr>
<th>BUILDING ELEMENT</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
<th>TYPE V&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A&lt;sup&gt;d&lt;/sup&gt;</td>
<td>B</td>
<td>A&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Structural frame&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including columns, girders, trusses</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Bearing walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exterior&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Interior</td>
<td>3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Nonbearing walls and partitions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exterior</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nonbearing walls and partitions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor construction&lt;sup&gt;h&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including supporting beams and joists</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Roof construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including supporting beams and joists</td>
<td>1 1/2&lt;sup&gt;e&lt;/sup&gt;</td>
<td>1&lt;sup&gt;e&lt;/sup&gt;</td>
<td>1&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0</td>
<td>1&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

### TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE<sup>a,d,e</sup>

<table>
<thead>
<tr>
<th>FIRE SEPARATION DISTANCE (feet)</th>
<th>TYPE OF CONSTRUCTION</th>
<th>GROUP H</th>
<th>GROUP F-1, M, S-1</th>
<th>GROUP A, B, E, F-2, I, R&lt;sup&gt;b&lt;/sup&gt;, S-2, U</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5&lt;sup&gt;c&lt;/sup&gt;</td>
<td>All</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>≥ 5</td>
<td>IA</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 10</td>
<td>Others</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>≥ 10</td>
<td>IA, IB</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>IIB, VB</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>≥ 30</td>
<td>All</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Fire Separation Distance

- 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

<table>
<thead>
<tr>
<th>Fire Separation Distance</th>
<th>Construction Types</th>
<th>Occupancy Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Table 602</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRE SEPARATION DISTANCE (feet)</th>
<th>TYPE OF CONSTRUCTION</th>
<th>GROUP H</th>
<th>GROUP F-1, M, S-1</th>
<th>GROUP A, B, E, F-2, I, Rb, S-2, U</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>All</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>≥ 5 &lt; 10</td>
<td>IA</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 10</td>
<td>Others</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>≥ 10 &lt; 30</td>
<td>IA, IB</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>IIB, VB</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>≥ 30</td>
<td>Others</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

build safe | live safe
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.
Fire Separation Distance

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

Courtesy of ICC
Fire Separation Distance

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

Courtesy of ICC
Fire Separation Distance

Buildings on the same tax lot

Fire separation distance measured to an imaginary line between buildings

*FSD: FIRE SEPARATION DISTANCE

 Courtesy of ICC

build safe | live safe
Fire Separation Distance

[Diagram showing the required distances for fire separation between buildings X and Y, with specific measurements indicated.]
Exterior Walls

- 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>
<thead>
<tr>
<th>CLASSIFICATION OF OPENING</th>
<th>FIRE SEPARATION DISTANCE (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to 3 3\textsuperscript{c,d}</td>
</tr>
<tr>
<td>Unprotected</td>
<td>Not Permitted\textsuperscript{g}</td>
</tr>
<tr>
<td>Protected</td>
<td>Not Permitted\textsuperscript{l}</td>
</tr>
</tbody>
</table>
### Table 715.3
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS

<table>
<thead>
<tr>
<th>TYPE OF ASSEMBLY</th>
<th>REQUIRED ASSEMBLY RATING (hours)</th>
<th>MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour</td>
<td>4  3  2  1½</td>
<td>3  3½  1½  1½</td>
</tr>
<tr>
<td>Fire barriers having a required fire-resistance rating of 1 hour:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft exit enclosure and exit passageway walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other fire barriers</td>
<td>1  1</td>
<td>1  ½</td>
</tr>
<tr>
<td>Fire partitions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corridor walls</td>
<td>1</td>
<td>½</td>
</tr>
<tr>
<td>Other partitions</td>
<td>1</td>
<td>½</td>
</tr>
<tr>
<td>Exterior walls</td>
<td>3  2  1</td>
<td>1½  1½  ½</td>
</tr>
</tbody>
</table>

---

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.
Interior Elements

- 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

<table>
<thead>
<tr>
<th>GROUP</th>
<th>FIRE-RESISTANCE RATING (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B, E, H-4, I, R-1, R-2, U</td>
<td>3&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>F-1, H-3&lt;sup&gt;b&lt;/sup&gt;, H-5, M, S-1</td>
<td>3</td>
</tr>
<tr>
<td>H-1, H-2</td>
<td>4&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>F-2, S-2, R-3, R-4</td>
<td>2</td>
</tr>
</tbody>
</table>

<sup>a</sup> Walls shall be not less than 2-hour fire-resistance rated where separating buildings of Type II or V construction.

<sup>b</sup> 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.
Fire Barrier

For separating

- Fire Areas
- Public corridors
- Incidental Use Areas
- Shafts
- Hazardous Material Control Areas
### Table 508.3.3 (Partial)

<table>
<thead>
<tr>
<th>USE</th>
<th>A-1</th>
<th>A-2</th>
<th>A-3</th>
<th>A-4</th>
<th>A-5</th>
<th>B&lt;sup&gt;b&lt;/sup&gt;</th>
<th>E</th>
<th>F-1</th>
<th>F-2</th>
<th>H-1</th>
<th>H-2</th>
<th>H-3</th>
<th>H-4</th>
<th>H-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>—</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>A-2&lt;sup&gt;e&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>A-3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>A-4</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>A-5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>B&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3</td>
<td>2</td>
<td>NP</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F-1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>F-2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>H-1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td></td>
</tr>
<tr>
<td>H-2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-4</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>H-5</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

*build safe | live safe*
Fire Partitions

- 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
Fire Partitions

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
Smoke Partitions

- 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
Separation of Concealed Spaces

**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.
Separation of Concealed Spaces

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
agination of the

Copyright © 2010 by NYC Department of Buildings

High-rise buildings

= Yes, it is a high rise
= No, it’s not a high rise

Avg. curb elevation (1968 Code)

1968 Code: ✔
2008 Code: ✗

Lowest level of Fire Dept vehicle access (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.
Automatic Sprinkler Protection

- 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.
Standpipe Systems

- 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 Systems

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
Smoke Control Systems

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
Smoke Purge Systems

- 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
  • 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