

# CHICAGO FIRE DEPARTMENT FIRE SAFETY DIRECTOR STUDY GUIDE



## **Fire Safety Director**

In its commitment to high-rise life safety, the Chicago Fire Department, has instituted a new program to aid building owners in complying with Municipal Code 13-78. Buildings that are classified as Category One, Two, Three or Four (those over 275 feet in height) require a Fire Safety Director who is the center of the life safety team for the building. These buildings are also required to have a Deputy Fire Safety Director. The Fire Safety Director and Deputy Fire Safety Director are required to maintain an Emergency Preparedness Certificate issued by the Chicago Fire Department's Bureau of Fire Prevention.

The first Emergency Preparedness Certificates (EPCs) were issued in 2002. Over the past several years, building management, tenants, and residents have provided invaluable feedback, which has prompted the expansion of the requirements to sit for the EPC examination. In response to this the Chicago Fire Department has developed a college level classroom program. This class will give an individual the necessary education and training to sit for the new EPC examination. To better address the skills required by a Fire Safety Director (FSD) and Deputy Fire Safety Director (DFSD), the examination itself has also been expanded. The result of this restructuring is that the certification procedure will now consist of three linked phases: specific classroom instruction, a formal written examination, and a field practical.

This course will cover topics ranging from exit requirements to team building. The FSD is the keystone of the Life Safety Team and needs to have a variety of skills in order to effectively lead the team. The information provided through the course is elemental to the function of a FSD. To be eligible to sit for the EPC examination, successful completion of the class with a passing grade will be required. Prior certificate holders will also need to take the course in order to gain critical skills that are vital to their role on the Life Safety Team.

The EPC examination is offered through the Chicago Fire Department.

The Chicago Fire Department's Public Education Unit has been conducting in-building practical examinations of prospective Fire Safety Directors. This practice will continue with the student working one-on-one with an examiner from Public Education. The proctor will be able to ensure that the student has the familiarity necessary with their specific building to function as an effective FSD and DFSD.

The result of this process is that building owners, tenants, residents, and visitors can be assured that the head of their Life Safety Team is a competent professional with the necessary skills and education to assist in the establishment of preventative measures and evacuation procedures. The Chicago Fire Department will also persist in its commitment to ensuring that high-rise buildings continue to be some of the safest structures in the city.

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## Introduction

Egyptian and Mayan pyramids represent the earliest examples of high-rise buildings. For millennia, the use of brick, stone, and wood as building materials, caused a limit on the ability to build functional structures beyond ten stories. Gravity itself would crush the structure unless the majority of the building was solid. However, in the late 1800s new processes for mass-producing steel initiated a revolution in building construction. Engineers grasped hold of new technologies and began to build upward at an unprecedented pace. Chicago was particularly notable as a site where the demands of businesses to be in the center of the city caused architects to design new buildings that would scrape the sky.

Skyscrapers present some serious challenges beyond physical building design. In the event of an emergency, rescue activities are stressed by the very structures that make these buildings so amazing. Emergency activities require a coordinated effort from public agencies, building owners, and building occupants. The Chicago Fire Department is dedicated to continuing to work intensely with local building owners, engineers and nationwide experts to enhance its response to high-rise emergencies. Part of this concerted effort has been to stress the importance of building a *life safety team* within every high-rise structure. Different buildings require different types of teams, but common to all high-rise buildings is the need for a *Fire Safety Director*.

It is intended that this study guide be used in conjunction with a Chicago Fire Department recognized course of instruction to enable you to be qualified to receive an Emergency Preparedness Certificate. This certificate is required to be a Fire Safety Director within a high-rise building. A Fire Safety Director is expected to maintain an understanding of life safety guidelines, safety inspection criteria, fire procedures, and evacuation of people, including those with disabilities. The individual works directly with the Chicago Fire Department to assist in conducting drills and managing the life safety team within the building. Active participation by each Fire Safety Director is a vital part of ensuring the safety of every high rise building owner, tenant, employee and visitor. The Chicago Fire Department thanks you for your commitment

## High-Rise Buildings – Emergency Procedure

- A high rise building can be defined as any new or existing structure over 80 ft. above grade which is also of occupancy classification: *A* (Residential), *C* (Assembly), *D* (Open Air Assembly), *E* (Business), *F* (Mercantile), or *G* (Industrial).
- A *Category 1* high-rise building is over 780 ft. above grade.
- A *Category 2* high-rise building is over 540 ft. above grade
- A *Category 3* high-rise building is over 275 ft. above grade.
- A *Category 4* high-rise building is over 80 ft. above grade (up to and including 275 ft.)
- The owner of any *Category 1 and Category 2* building and the owner of each *Category 3 and Category 4* building which is of assembly or open air assembly classification must file a copy of the building's procedure plan with the City's *Office of Emergency Communications*.
- Once a plan has been filed, a copy of an updated or amended plan must be filed with the City's *Office of Emergency Communications* when the existing plan is updated or amended.
- In *Category 1* high rise buildings, each plan shall require safety drills to be carried out twice a year under the direction of the Fire Safety Director (FSD).
- Safety drills in non-residential high-rise buildings will include all employees, tenants and other occupants.
- Safety drills may occur on a floor-by-floor basis, and a drill may conclude when all participating occupants have fully entered and have begun using the designated stairwells.
- In *Category 3 and Category 4* high rise buildings that are residential or business usage, safety drills are encouraged but not required.
- In *Category 2* high rise buildings that are classified as residential or business, safety drills shall be carried out at least once a year.
- Any violation of any provision of this chapter shall subject the owner, tenant or other responsible party to a penalty of between \$500.00 and \$1,000.00 for each separate and distinct offense.
- Identification lettering for stairwells and rescue assistance areas shall be permanent and a minimum of six (6) inches in height.
- Alphabetical and directional letter identification for the stairwell and the floor number to which the door opens is to be provided within every interior stairwell enclosure at every floor adjacent to the stairwell door.

- Identification lettering for stairwells and rescue assistance areas shall comply with the *Americans With Disabilities Act* accessibility guidelines.
- In a *Category 4* high rise building, other than *C* (Assembly) or *D* (Open Air Assembly), a certified F.S.D. and one or more certified deputy FSDs are encouraged but not required.
- Each plan for *Category 1* buildings shall include a Certified Fire Safety Director.
- Each plan for *Category 2* buildings shall include the same designated personnel as required for *Category 1* buildings, with the exception of Fire Wardens, who are encouraged but not mandatory.
- In a residential building, the building evacuation supervisor may be a resident of that building.
- In a residential building, the emergency evacuation team may include residents of that building.

### **Category 1 - Over 780 feet**

Each Category 1 building shall include the following required designated personnel:

Fire Safety Director (FSD) - In a residential building, the FSD may be an employee or resident of that building, and in a non-residential building the FSD may be an employee or tenant of that building. The FSD must occupy the building's fire command station in an emergency, conduct operations in an emergency evacuation, direct evacuation and report conditions, including the designated refuge or rescue locations of occupants who have identified the need for assistance, to first-arriving fire companies;

Deputy Fire Safety Director (DFSD) - In a residential building, one (1) or more Deputy FSDs may be residents of that building, and in a non-residential building, one (1) or more Deputy FSDs may be tenants of that building;

Building Evacuation Supervisor - In a residential building, the Building Evacuation Supervisor may be a resident of that building. In a non-residential building, the Building Evacuation Supervisor must be an employee of that building;

Fire Wardens - In a residential building, some or all of the Fire Wardens may be residents of that building. In a non-residential building, some or all of the Fire Wardens may be employees of that building, providing however, that if the owner does not wish to supply one (1) or more Fire Wardens, then such Fire Wardens shall be supplied by the building tenants, in numbers proportionate to tenant size; and

Emergency Evacuation Team - The Emergency Evacuation Team may include or be composed of residents of that building. In a non-residential building, the Emergency Evacuation Team may include or be composed of employees of that building; provided however, that if the owner does not wish to supply one (1) or more members of an Emergency Evacuation Team, then such members shall be supplied by the building tenants, in numbers proportionate to tenant size.

## **Category 2 - Over 540 ft. up to and including 780 ft.**

Each Category 2 building shall include the same designated personnel as required for Category 1 buildings, with the exception of Fire Wardens.

## **Category 3 - Over 275 ft. up to and including 540 ft.**

Each Category 3 building, which is of occupancy classification C (Assembly) or D (Open Air Assembly unit), shall include the same designated personnel as required for Category 1 buildings, with the exception of Fire Wardens, who are encouraged but not mandatory. Each Category 3 building that is of occupancy classification A (Residential), E (Business), F (Mercantile), or G (Industrial) shall include the following required designated personnel:

The building must designate a FSD. In a residential building, the FSD may be an employee or resident of that building, and in a non-residential building, the FSD may be an employee or tenant of that building.

## **Category 4 - 80 ft. and over, up to and including 275 ft.**

Each Category 4 building, which is of occupancy classification C (Assembly) or D (Open air Assembly unit), shall include the same designated personnel as required for Category 1 buildings, with the exception of Fire Wardens, who are encouraged but not required.

### **Required Designated Personnel - On-Site Presence**

Non-residential high-rise buildings, which are occupancy classification E (Business), F (Mercantile) or G (Industrial):

From 7:00 a.m. to 7:00 p.m., and also at any other time when more than 50% of the high-rise building's regular occupants are present, the FSD or a Deputy FSD, if required, shall be present on-site at the high-rise building. At such times, an Emergency Evacuation Team, if required, shall also be present upon each occupied floor. At such times, a Fire Warden, if required, shall also be present upon each occupied floor; provided however; that where a single occupied floor contains more than 25,000 square feet, one (1) Fire Warden shall be present for each 25,000 square feet; and

At all other times, if the FSD or Deputy FSD is not present on-site, a Building Evacuation Supervisor, if required, must be present on-site.

# The Fire Safety Director

The Fire Safety Director (FSD) serves as the head of a building's Life Safety Team. Municipal Code 13-78-070(a) lists six duties that are the responsibility of the FSD:

1. *Occupy the building's fire command station in an emergency, conduct operations in an emergency evacuation, direct evacuation and report conditions, including the designated refuge or rescue locations of occupants who have identified the need for assistance, to first-arriving fire companies;*
2. *Conduct monthly building safety inspections to detect hazards and impediments to egress;*
3. *Design procedures for emergency evacuation and drills;*
4. *Direct emergency evacuations and drills;*
5. *Assign Fire Wardens, if required by the plan pursuant to Section 13-78-050, for each occupied floor;*
6. *Assign Emergency Evacuation Team(s), if required by the plan pursuant to Section 13-78-050, for each occupied floor.*

The duties of a FSD fall into two broad categories: administrative, and operative. Operative Duties consist of conducting safety inspections, directing drills, and assisting the Chicago Fire Department (CFD) in the event of a building emergency. Administrative duties include the development of Life Safety Teams and evacuation procedures. The FSD needs to know what outside resources should be utilized for the development of such teams and procedures.

## Safety Inspections

Should evacuation of a building be necessary, it is vitally important that exits are properly designed, clearly marked, and not blocked in any way. A FSD must have a familiarity with building exit code and understand how the code is designed to allow for the safe exit from the FSD's building. Hazards may be as easily corrected as empty boxes in front of an exit door to issues as significant as stairwell doors that don't comply with municipal exit codes. Such issues would need to be addressed with the appropriate building management immediately to avert a potential life safety threat.

## Directing Drills

*The frequency of safety drills is specific to the class of building the FSD is responsible for. Drills are often performed in conjunction with the Chicago Fire Department.*

## **Building Emergencies**

The FSD is an integral liaison to the Chicago Fire Department in the event of a building emergency. The FSD should be able to relate important information to the responding CFD fire fighters and assist as instructed in building evacuations, should it be necessary. As emergencies can occur 24 hours a day, 7 days a week, the FSD needs to designate a sufficient number of deputy FSDs and/or Building Evacuation Supervisors so that at all times, the safety of the building's occupants is ensured.

### ***The Life Safety Team***

A properly designed Life Safety Team will ensure the smooth and efficient evacuation of a building. The actual number of positions within a Life Safety Team will be particular to each building. A Life Safety Team may contain the following:

1. **Fire Safety Director (FSD)** – Holds an emergency preparedness certificate and heads the Life Safety Team.
2. **Deputy FSD** – Holds an emergency preparedness certificate and functions as the FSD in his/her absence.
3. **Building Evacuation Supervisor** – Present during periods of low building occupancy to assist the Fire Department should a building emergency occur.
4. **Fire Wardens** – Familiar with building exits and able to assist in evacuation procedures.
5. **Other Personnel** – Positions such as Searcher, Elevator Monitor, Stairwell Monitor, and Disabled Person's Aide, may need to be assigned.

### ***Evacuation Procedures***

A Life Safety Plan contains specific information on how an evacuation of a building should be conducted. An evacuation may be limited to a few floors surrounding a fire incident or include every resident of the building. The FSD must understand the components of the Life Safety Plan and be able to assist the responding fire department with plan specific information.

# Life Safety Guidelines for Commercial High-Rise Buildings

Ensuring the safety of every commercial high-rise building owner, tenant, employee and visitor is a number one priority for the Chicago Fire Department. Through the Fire Department's Life Safety Program, members of the Public Education Unit will conduct seminars providing valuable fire safety information and assist with fire drills in your building. This brochure includes important safety tips that will help lead people to safety should a fire occur in your building. As you receive this information, please share it with your co-workers and other building occupants. By working together, the Fire Department can make your building a safer place to work.

## Life Safety Objectives

The Chicago Fire Department (CFD) Life Safety Program's goal is to educate, train and instruct high-rise building management, tenants, and employees about life safety guidelines.

- Educate high-rise building management on fire safety protection systems.
- Train high-rise employees on emergency preparedness
- Instruct the high-rise community on the Chicago Fire Department's Emergency Guidelines

## CALM

When an emergency strikes, people tend to panic. Keeping calm in an emergency will help lead you to safety because it allows you to think clearly and take action. To help you remember the important steps that need to be taken in a high-rise fire situation, the CFD developed the acronym CALM, which stands for Call, Alert, Listen and Move. By remembering the meaning of CALM and putting it to work, you and your coworkers can help the fire department keep you safe.

### **C.A.L.M.**

Call 911 First

**A**lert Building Management/Security

**L**isten for instruction/ Public Address System

**M**ove to Safety and Evacuate If You Are In Danger

**CALL 911** first because every minute counts. When calling 911, remember to provide accurate information such as: address, office number, and the location of the fire or potential emergency.

**ALERT** building management, security, maintenance and your co-workers only after calling 911. Provide building personnel accurate information about the fire or emergency because they will provide that information to the fire department when they arrive on the scene.

**LISTEN** to safety instructions transmitted over the public address system. Once the fire department arrives on the scene the instructions may change. It is important to listen and follow those instructions.

**MOVE** to a safe area or evacuate only if you are in immediate danger. Depending on the location of the fire, you may be asked to move away from the fire floor, evacuate the building and/or go to the lobby, or you may be told to stay where you are. Being asked to stay where you are can often be the safest thing to do, so remember to stay CALM.

## **Statistics**

According to national statistics, high-rise fire deaths are at an all-time low. Today's high-rise buildings are constructed with fire resistive materials making them among the safest types of buildings in the event of a fire.

- Only 1% of all fire deaths, nation-wide, occur in high-rise buildings.
- 82% of high-rise fires originate in non-office areas (restrooms, kitchens, storerooms and copy rooms)
- 94% of high-rise fires are confined to the room of origin.
- 98% of fires in buildings equipped with sprinkler systems are extinguished prior to the arrival of the fire department.

## **Building's Fire Protection System**

High-rise buildings may be equipped with safety systems that help keep you safe. In cases where a building doesn't have every system in place, know that your building is still very safe because the materials used in constructing a high-rise building help confine fires to the area of origin.

The building fire protection system may include:

- Sprinklers
- Smoke/Heat/Fire Detectors
- Public Address System
- Enclosed Stairwells
- Fire Extinguisher
- Ventilation/Smoke Towers

## **Building Evacuation Preparedness**

According to the Municipal Code of Chicago, high-rise buildings must have a plan in place with designated personnel trained on emergency preparedness. The plan may be initiated and implemented by the property manager, chief engineer, and/or the director of security who are responsible for the fire evacuation and fire drill safety training of all building occupants. In the event of a fire, these individuals will fulfill the role of Fire Safety Director/Deputy Fire Safety Director and will be responsible for assembling the evacuation teams, or "Life Safety" teams, to prepare for a high-rise fire emergency.

**The Life Safety Team may include:**

- Fire Safety Director/Deputy Fire Safety Director
- Wardens/Assistant Floor Wardens
- Searcher
- Stairwell Monitor
- Elevator Monitor
- Disabled Person's Aide

Duties for the Team:

**Fire Safety Director and/or Deputy Fire Safety Director**

- Secure fire safety evacuation training
- Train Employee Evacuation Teams on floors

**Floor Warden and Assistant Floor Wardens**

- Assign employees to teams on floors
- Are responsible for evacuating their respective floor areas.
- Maintain up-to-date floor roster and report to lobby control

**Searcher**

- Conducts search of the entire floor including offices restrooms, conference rooms and storerooms
- Closes each room that is searched, without locking it, and marks it with a post-it note.
- Evacuates non-employees on the floor

**Elevator Monitor**

- Directs personnel to appropriate stairwell and away from elevators
- Is familiar with evacuation plan and location of stairwells

**Stairwell Monitor**

- Is designated at assigned stairwell door and inspects stairwell door for heat or smoke conditions
- Directs people to proper safety floor
- Encourages calmness and orderliness

**Disabled Person's Aide**

- Keeps list of physically challenged employees
- Assists in evacuating physically challenged employees using the "buddy system"

**Fire Department Arrives**

The Chicago Fire Department arrives on the scene minutes after the call is placed to 911. Those minutes are critical, so remain CALM and keep yourself and your coworkers safe. When the fire department crews arrive on the scene they will:

- Assume control of the building
- Evacuate the building if required
- Facilitate search and rescue
- Treat and transport victims
- Extinguish the fire

## **Emergency Evacuation**

In the event of a high-rise fire, an evacuation can mean moving to a safe location or exiting the building, but in many situations you may be safer staying in place. If the fire is confined to one floor, you may be instructed to move a few floors below the fire. A full building evacuation will take place only if instructed by the fire department. When executing an emergency evacuation plan, it is important to remain CALM. However, if you are several floors away from the fire and are on a safe floor, you may be asked to stay where you are at. Practicing these important safety tips and always remembering Call, Alert, Listen and Move, will help keep you and building employees safe.

- Call the Fire Department immediately from a safe area.
- Alert building management/security/employees after the fire department has been notified
- Listen for instructions coming from the public address system or a fire alarm.
- Move to a safe area, evacuate if you are in immediate danger or stay where you are.

## **Evacuation Announcement**

- Once an evacuation is initiated, a message from proper authorities will provide safety instruction through the public address system.
- This message will be repeated several times as needed.
- It is important to LISTEN to instructions that will guide every action that building occupants need to take.
- If your building does not have a public address system, listen for the fire alarm, move to a safe area, and call the fire department and tell them your location.

## **Fire Drill**

City ordinance requires buildings over 540 feet a minimum of one fire drill annually. As part of our Life Safety Program, a fire/safety drill can take place annually. As part of our Life Safety Program, a fire/safety drill can take place within one week of the Life Safety Seminar to educate building occupants what to do in case of a fire. The Fire Safety Director and/or the Deputy Fire Safety Director will be in charge of notifying all the employees and organizing the fire drill. The CFD will observe the drill and provide important safety points throughout the practice fire drill.

## **Three Don'ts**

Three important things that should never be done in a fire situation:

- Don't go to the roof
- Don't take elevators
- Don't break windows

## **In Summary**

By practicing these tips, you and your co-workers can be better prepared to act in case of a fire in your building. By remembering to practice CALM: Call, Alert, Listen and Move, you can help the Chicago Fire Department keep you and your co-workers safe.

For additional information about these guidelines or to schedule a Life Safety Seminar and Fire Drill, contact the Chicago Fire Department's Public Education Unit at (312) 747-6691 or by email at [fireeducation@cityofchicago.org](mailto:fireeducation@cityofchicago.org). You may also visit us on-line at [www.cityofchicago.org/fire](http://www.cityofchicago.org/fire).

# Fire Safety Guidelines for Residential High-Rise Buildings

The Chicago Fire Department wants you to know that high-rise buildings are constructed with fire resistant materials, making them among the safest types of buildings in the event of a fire.

Most often, high-rise fires are contained to a single room or apartment.

For that reason, you should remain calm if there is a fire in your building.

Long before a fire strikes, it is important that residents familiarize themselves with their surroundings. Know the floor plan and the location of all the exits, especially the stairwells and which one to use in the event of an emergency.

The Chicago Fire Department offers these general fire safety guidelines for high-rise residents.

If a fire occurs in your apartment:

LEAVE IMMEDIATELY and close the door behind you. Exit from the safest stairwell. When you reach a safe area, call 9-1-1. Give the Fire Department your address, floor and apartment number.

DO NOT USE THE ELEVATORS. They are not reliable during a fire and can only be used by firefighters

Once in the stairwell, begin to head down to the lobby. Do not head upstairs or to the roof because smoke and heat rise and this can complicate fire rescue operations.

If a fire occurs on the floor where you live:

Immediately call 9-1-1 and your building security office to report the fire and give them the address and floor where the fire is.

The Fire Department recommends that you stay in your apartment unless directed otherwise. Due to the fire resistive construction of high-rise buildings, your apartment is usually the safest place to be. Keep the door closed and seal the door.

If conditions worsen in your apartment, call 9-1-1 and your building security office to inform them of your problem and your apartment. If heat and smoke start to build up, open the window slightly and wait for the Fire Department to reach you. If your windows do not open, stay low to the ground.

Please remember these are general guidelines for fire safety in residential high-rises. All fires behave differently and different conditions require different responses. That's why it is imperative that you familiarize yourself with your surroundings and the exits in your building.

Make sure your smoke detector has batteries and is working. It's a good idea to test it once a month.

## CHAPTER 13-160 Exit Requirements (13-160)

### 13-160-020 Definitions

- **Exit** An “exit” is a means of egress from a building or structure including outside exits, vertical exits, horizontal exits and exit connections as herein defined.
- **Vertical Exit** A “vertical exit” is a means of exit used for ascension or dissension between two or more levels including stairways, smoke-proof towers, ramps, escalators and fire escapes.
- **Horizontal Exit** A protected opening through a two-hour fire partition through over or around a firewall or bridge connecting two buildings.
- **Outside Exit** An exit from the building to a public way, to an open area leading to a public way, or to an enclosed fire-resistive passage leading to a public way.
- **Exit Connections** Doorways, aisles, corridors, foyers, lobbies and other horizontal means of exit leading to a vertical, horizontal or outside exit.
- **Stairways** One or more flights of stairs with connecting landings.
  - (1) **“Enclosed Stairway”** Means a stairway separated by fire-resistive partitions from the rest of the building.
  - (2) **“Exterior Stairway”** Means a stairway on the outside of a building or structure.
  - (3) **“Interior Stairway”** Means a stairway within a building or structure.

### 13-160-030 Exit Types – Requirements

All required means of exit shall be continuous means of egress to the outside and shall consist of vertical, horizontal and outside exits together with the exit connections leading thereto, and shall be arranged, located and constructed as required in this chapter.

### 13-160-040 Exit Types – Above or Below Grade

Exits from a story above or below grade shall consist of interior stairways except as otherwise required in this section.

- **Smoke-proof Towers.** A smoke-proof tower may be used in lieu of any required interior stairway. At least one (1) smoke-proof tower shall be provided in every building, having a height exceeding **264 feet**.

**Horizontal Exits.** A horizontal exit may be used in lieu of an interior stairway when there is not less than one interior stairway or outside exit in each fire area connected by the horizontal exit, provided that no greater than 50 percent of the exits in any fire area shall be horizontal exits.

- **Escalators.** An escalator may be used in lieu of one of three required interior stairways.
- **Exterior Stairways.** Exterior stairways may be used in lieu of not more than 50 percent of the required interior stairways; provided that the vertical distance from grade to the highest floor served by an exterior stairway shall not exceed 30 feet.
- **Ramps.** Ramps complying with the requirements of Section 13-160-340 may be used in lieu of any required stairway.
- **Elevators.** Elevators shall be provided in all new public buildings with emergency hold open buttons and the emergency communications no higher than four feet from the floor, except in buildings which provide ramps for the handicapped as noted in Section 13-160-470 of the Code.
- **Obstructions prohibited.** There shall be no obstruction in any exit way that may hamper travel and evacuation.
- **Continuous means of exit required.** Required exits in a building or structure shall provide continuous and uninterrupted means of egress from one story to an outside exit.
- **Hardware.** All doors used in connection with exits shall be arranged so that they can be readily opened without the use of a key from the side from which egress is made.
- Exit doors serving more than **200 persons** shall be equipped with approved latches or bolts that release under a pressure of **15 pounds**.

**13-160-700                    Exit, Stairway, Fire Escape and Directional Signs**

Exit, stairway, fire escape and directional signs, illuminated by electricity, shall be installed and maintained in all existing buildings and buildings hereafter erected, altered or converted, in accordance with the provisions of Sections 13-160-710 through 13-160-770.

**13-160-710                    Directional Signs – Where required**

Exit, stairway, fire escape and directional signs shall be installed to mark all ways of egress in the following buildings or parts of buildings in the case of multiple occupancies:

- (a) Multiple dwellings of the corridor type two stories or more in height
- (b) Institutional buildings two stories or more in height
- (c) Assembly units
- (d) Schools
- (e) Intermediate care facilities for the developmentally disabled – 15 or less

- (f) Business, mercantile, industrial, storage and hazardous use units that are two stories or less in height, having a ground area of 10,000 square feet or more.
- (g) Theatres
- (h) Churches
- (i) Open air assembly units with a capacity exceeding 250 persons, where such a unit is used at any time that natural light does not clearly indicate all means of egress

**13-160-720          Directional Signs – Fixture requirement**

Every such sign shall consist of a flat sided glass globe, a rectangular 20 U.S. gauge sheet metal box provided with channels to hold a glass sign or plastic edge glow type of sign, bearing the lettering hereinafter required.

**13-160-730          Directional Signs – Illumination**

Every such sign shall be internally illuminated by a ten-watt or larger incandescent electric lamp.

**13-160-740          Directional Signs – Location**

Exit signs shall be located over or immediately adjoining every opening to a horizontal means of egress or ramp leading out of a building; also over every opening leading from a public assembly room to a mezzanine floor, corridor or hallway.

Stairway or exit signs shall be located at every stairway on every floor in existing buildings. In buildings hereafter erected, stairway signs only shall be located at every stairway on every floor.

Fire escape signs shall be located over or immediately adjoining every doorway or opening to a fire escape.

All such signs shall be clearly visible from all means of approach to such ways of egress.

Directional signs shall be located where the path of exit travel or the location of the exit is not clear and unmistakable due to bridges, tunnels, intersections of hallways, intervening partitions or turns in the corridors.



## **Emergency Evacuation for People With Disabilities**

The provisions of these sections reflect minimum requirements which are not intended to restrict owners from implementing additional measures as warranted, provided that they do not conflict with provisions of the Americans with Disabilities Act.

List of name(s) and normal floor location(s) of regular occupants who have voluntarily self-identified as needing assistance and the type of assistance required to swiftly exit the high rise building in case of emergency.

### **1. Identifying Those In Need of Assistance**

The FSD and DFSD must, at all times, ensure that the Emergency Evacuation Plan includes the most updated list of individuals who have voluntarily self-identified the need for assistance. This list must also include the type of assistance those individuals would need to safely exit a building in the case of an emergency.

In commercial buildings, building owners should obtain their lists from employers or tenants who have undertaken the following procedures for identifying employees or regular occupants requiring assistance in the case of an emergency:

- a. All employees, after a job offer has been made, should be asked if they will need assistance in the case of an emergency.
- b. To update and maintain lists, employers or tenants should survey all of their current employees or regular occupants, with or without disabilities, to determine whether they will require assistance in case of an emergency, as long as the employer makes it clear that self-identification is voluntary and explains the purpose for requesting the information.
- c. Employees or regular occupants should be surveyed on an annual basis through the distribution of a confidential questionnaire asking if they will require assistance, and what type of assistance they need.

In residential buildings, building owners are responsible for contacting all regular occupants, with or without disabilities, to inform them of the procedure by which they may voluntarily self-identify that they need assistance, and the type of

assistance they require to exit a building in the case of an emergency. The method for contacting tenants should be through the distribution of a confidential questionnaire.

- a. Regular occupants shall be informed of the procedure upon moving into the building and on an annual basis thereafter.
- b. Regular occupants needing assistance should also be urged to contact the Chicago Fire Department to inform them of any assistance needed in the case of an emergency or to request the Chicago Fire Department Registration Card.

## 2. ***Confidentiality***

While individuals listed in the “Plan” have voluntarily self-identified that they would need assistance in the case of an emergency, the information they have provided must be kept confidential and shared only with those who have responsibilities under the emergency evacuation plan.

- a. The employers or building owner shall inform all individuals who have self-identified the need for assistance that the information provided will be kept confidential and separate from the personnel files and shared only with those who have responsibilities under the emergency evacuation plan.
- b. Lists must be made available to emergency personnel, but otherwise held in the strictest of confidentiality.

## 3. ***The Need for Assistance***

Once identified, individuals must be consulted about what specific assistance they would need and how it can best be provided.

- a. An employer or building owner must ask individuals who indicate a need for assistance, what type of assistance they will need.
- b. The employer or building owner shall meet with an individual who has requested assistance to obtain more detailed information regarding the method of evacuation. Methods for accommodation and assistive devices should be selected and discussed. Examples of assistance are evacuation chairs, evacuation assistants, specific information about areas of refuge or rescue, tactile/vibratory pagers for individuals who are deaf or hard of hearing, and guides for individuals who are blind or visually impaired.

- c. The employer or building owner is entitled only to the information necessary to fulfill its responsibilities under the Emergency Evacuation Plan.

#### 4. *Types of Requested Assistance*

When individuals voluntarily self-identify that they need assistance, they will be asked to identify the specific type of evacuation assistance they need. Those options may include, but are not limited to, the following:

- a. *Evacuation Assistants*

For each such occupant, the Emergency Evacuation Plan shall identify an individual who is either one of the designated personnel such as FSD, DFS, Building Evacuation Supervisor, Fire Warden and Emergency Evacuation Team members, or is otherwise assigned to assist such occupant during an evacuation or safety drill.

Evacuation assistants can be either designated by the employer, tenant, building owner or can be selected by the individual requiring assistance, provided that the evacuation assistant selected is in agreement. Scheduled emergency plan reviews should include checking the status of evacuation assistants.

- b. *Evacuation Chairs*

Evacuation chairs are assistive devices in which individuals who use wheelchairs or have other mobility impairment that make the use of stairs difficult, are securely seated as they are moved during an evacuation. All evacuation chairs require the assistance of at least one other individual who has been trained in its use. For more information about evacuation chairs, please refer to the Access Board website at <http://www.access-board.gov> or contact the Mayor's Office for People with Disabilities at (312) 744-4495.

- c. Guides for individuals who are blind, visually impaired, cognitively impaired or mentally ill.

- d. Tactile/Vibratory pagers for individuals who are deaf or hard of hearing

## **Description of the designated location(s) areas of refuge or rescue assistance, if any, for all building occupants in an emergency**

### 1. Areas of Refuge or Rescue Assistance

An area, which has direct access to an exit, where people who are unable to use stairs may remain temporarily in safety to await further instructions or assistance during emergency evacuation.

Places of refuge or rescue must comply with Chicago Building Code 18-11-1109.18.5 Areas of Refuge.

### 2. Signage

During an emergency evacuation, signage is imperative in directing large numbers of people out of a building in an orderly fashion.

All signage must comply with ICC/ANSI A117.1-2003, Section 703 Signs. (See Appendix)

a. Stairwell Identification

b. Areas of Rescue Assistance

## **After Working Hours**

Most office fire fatalities occur outside of normal working hours. Fires can grow unnoticed and persons working alone can be cut off from their normal egress route. In many buildings, only a few people working late and the housekeeping staff are present at night. Building managers should ensure that there is a process in place for employees who may need assistance to alert building security upon entering the building, or when remaining in the building after normal working hours. Someone will then be ready to search for and/or assist the individual to safety, if needed. Alternatively, the person could be instructed to telephone the fire department as to their location when an emergency occurs.

## **Common Communication Skills & Assistance Techniques for People with Disabilities (Source: Federal Emergency Management Agency)**

People with disabilities are frequently misrepresented due to inappropriate and unrealistic portrayals by the media. Some disabilities are highly visible, while others are invisible. Following general guidelines on how to effectively communicate with people with all types of disabilities is crucial during an evacuation. Regardless of the disability, all people with disabilities should be treated as people - not as objects.

## **Areas of Refuge or Rescue Assistance**

### **Signage Guidelines**

#### **Stairwell identification**

There shall be posted and maintained within every interior stairwell enclosure at every floor, adjacent to the stairwell door, alphabetical or directional letter identification for the stairwell and the number of the floor to which the door opens. Lettering shall be permanent and a minimum of six inches in height and comply with ICC/ANSI A117.1-2003, Section 703.2 Visual and Section 703.3 Tactile, (Section 703.2.4. Height is not applicable).

Adjacent to every stairwell door there shall be posted, on the occupancy side, information showing which floors have re-entry locations. All lettering required by this section shall comply with ICC/ANSI A117.1-2003, Section 703.2 Visual and 703.3 Tactile.

#### **Area of rescue assistance identification**

Each area of refuge or rescue assistance shall be identified by a sign, which states “AREA OF RESCUE ASSISTANCE” and displays the international symbol of accessibility. Lettering shall be permanent and a minimum of three inches in height and comply with ICC/ANSI A117.1-2003, Section 703 Signs. Additionally, tactile signage complying with ICC/ANSI A117.1-2003 Section 703 Signs shall be located at each door to an area of refuge.

If exit sign illumination is required by Chapter 13-160, the area of refuge sign shall be illuminated. See Chicago Building Code Section 18-11-1109.18.5.5 Identification. Illumination may originate from within the sign or from an external light source. The area of refuge shall comply with the illumination level and power source requirements of Chapter 13-160 for exit signs.

Informational signage, in compliance with ICC/ANSI A117.1-2003, Section 703.2 Visual Characters, shall also be installed at all inaccessible exits and where otherwise necessary to clearly indicate the direction to areas of rescue assistance.

# **Guidelines for Communicating with and Assisting People with Disabilities**

## **1. Blind or Visual Impairments**

When assisting persons who are blind or visually impaired, there are some basic rules to follow in order to be effective.

- Announce your presence; speak out when entering the work area.
- Speak naturally and directly to the individual and NOT through a third party. Do not shout.
- Don't be afraid to use words like "see", "look", or "blind."
- Offer assistance but let the person explain what help is needed.
- Describe the action to be taken in advance.
- Let the individual grasp your arm or shoulder lightly for guidance. He/she may choose to walk slightly behind you to gauge your body reactions to obstacles; be sure to mention stairs, doorways, narrow passages, ramps, etc.
- When guiding to a seat, place the person's hand on the back of the chair.
- If leading several individuals who are blind or visually impaired at the same time, ask them to hold each other's hands.
- You should ensure that after exiting the building individuals who are blind or visually impaired are not "abandoned" but are led to a place of safety, where a colleague(s) should remain with them until the emergency is over.

## **2. Suggestions When Assisting Owners with Service Animals**

- When the dog is wearing its harness, he is on duty; if you want the dog not to guide its owner, explain this to the owner and have the person remove the dog's harness.
- Plan for the dog to be evacuated with the owner.
- In the event you are asked to take the dog while assisting the individual, it is recommended that you (the helper) hold the leash and not the dog's harness.

## **3. Deaf or Hard-of-Hearing**

When assisting persons who are deaf or hard of hearing, there are also some things to keep in mind.

- Flick the lights when entering the work area to get the person's attention.
- Establish eye contact with the individual, even if an interpreter is present.
- Face the light, do not cover or turn your face away, and never chew gum.

- Use facial expressions and hand gestures as visual cues.
- Check to see if you have been understood and repeat if necessary.
- Offer pencil and paper. Write slowly and let the individual read as you write. Written communication may be especially important if you are unable to understand the individual's speech.
- Do not allow others to interrupt or joke with you while conveying the emergency information.
- Be patient; the individual may have difficulty comprehending the urgency of your message.
- Provide the individual with a flashlight for signaling their location in the event that they are separated from the rescuing team or buddy and need to facilitate lip reading in the dark.

#### **4. Learning Disabilities**

Persons with learning disabilities may have difficulty in recognizing or being motivated to act in an emergency by untrained rescuers. They may also have difficulty in responding to instructions that involve more than a small number of simple actions.

Some suggestions for assisting such persons include:

- Their visual perception of written instructions or signs may be confused.
- Their sense of direction may be limited, requiring someone to accompany them.
- Directions or information may need to be broken down into simple steps. Be patient.
- Simple signals and/or symbols should be used (e.g., the graphics used throughout this section).
- A person's ability to understand speech is often more developed than his/her own vocabulary. Do not talk about a person to others in front of him/her. The individual should be treated as an adult who happens to have a cognitive or learning disability. Do not talk down to them or treat them as children.

#### **5. Physical Disabilities or Mobility Limitations**

- First ask, "How can I help you?"
- Someone using a crutch or a cane might be able to negotiate stairs independently. One hand is used to grasp the handrail the other hand is used for the crutch or cane. Here, it is best NOT to interfere with this person's movement. You might be of assistance by offering to carry the extra crutch. Also, if the stairs are crowded, you can act as a buffer and "run interference."
- Wheelchair users are trained in special techniques to transfer from one chair to another.

- Depending on their upper body strength, they may be able to do much of the work themselves. If you assist a wheelchair user, avoid putting pressure on the person's extremities and chest. Such pressure might cause spasms, pain and even restrict breathing. Carrying someone slung over your shoulders (something like the so called fireman's carry) is like sitting on their chest and poses danger for several individuals who fall within categories of neurological and orthopedic disabilities.
- ***To Assist in Moving a Wheelchair Downstairs***

When descending stairs, stand behind the chair grasping the pushing grips. Tilt the chair backwards until a balance is achieved. Descend forward. Stand one step above the chair, keeping your center of gravity low, and let the back wheels gradually lower to the next step. Be careful to keep the chair tilted back. If possible, have another person assist by holding the frame of the wheelchair and pushing in from the front. But do not lift the chair, as this creates an imbalance that will make moving the individual more difficult.

## 6. Carry Techniques

In the absence of an evacuation chair or area of refuge or rescue, carrying someone needing evacuation assistance may be necessary. The following are recommended techniques:

- *One-Person Carry Technique*

The Cradle Lift is the preferred method when the person to be carried has little or no arm strength. It is safer if the person being carried weighs less than the carrier's weight.

- *Two-Person Carry Technique - The Swing or Chair Carry*

### **To use this technique:**

1. Carriers stand on opposite sides of the individual.
2. Take the arm on your side and wrap it around your shoulder.
3. Grasp your carry partner's forearm behind the person in the small of the back.
4. Reach under the person's knees to grasp the wrist of your carry partner's other hand.
5. Both carry partners should then lean in close to the person, and lift on the count of three.
6. Continue pressing into the person being carried for additional support in the carry.

The advantage of this carry is that partners can support (with practice and coordination) a person whose weight is the same or greater than their own weight. This disadvantage is increased awkwardness in vertical travel (stair descent) due to the increased complexity of the two person carry. Three persons abreast may exceed the effective width of the stairway.

## Accessibility (Section 18)

### Enclosed Exit Stairways.

**18-11-1009.18.2** To be considered part of an accessible means of egress, an enclosed exit stairway shall have a clear width of 48 inches (1219mm) minimum between handrails and shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge complying with Sections 18-11-1109.18.5 or a horizontal exit.

#### Exceptions:

1. Stairways serving a single guestroom or dwelling unit.
2. The clear width of 48 inches (1219 mm) between handrails is not required at exit stairways in buildings of facilities equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13 or NFPA 13R.
3. The clear width of 48 inches (1219 mm) between handrails is not required for enclosed exit stairways accessed from a horizontal exit.
4. The clear width of 48 inches (1219 mm) between handrails is not required at exit stairways in multiple buildings.

### Elevators.

**18-11-1009.18.3.** Elevators shall be limited in their use as a means of egress as set forth in Chapter 13-160, but may serve as part of an accessible means of egress under the conditions set forth in this Section. To be considered part of an accessible means of egress, an elevator shall comply with the emergency operation and signaling devices requirements of Chapter 18-30, and shall also be provided with standby power. The elevator shall be accessed from either an area of refuge complying with Sections 18-11-1109.18.5 or a horizontal exit.

### Platform Lifts.

**18-11-1009.18.4** Platform lifts shall not serve as part of an accessible means of egress except if allowed as part of an accessible route in Section 18-11-1109.7. Platform lifts shall be installed in accordance with Chapter 18-30.

### Areas of Refuge.

**18-11-1109.18.5** Every required area of refuge shall be accessible from the space it serves by an accessible means of egress. The maximum travel distance from any accessible space to an area of refuge shall not exceed the travel distance permitted for the occupancy in accordance with Chapter 13-160. Every required area of refuge shall have direct access to an enclosed stairway complying with Section 18-11-1109.18.2 and Chapter 13-160 or to an elevator lobby without traveling through any other intervening space. If an elevator lobby is used as an area of refuge, the shaft and lobby shall comply with Chapter 13-160 for smoke-proof enclosure except if the elevators are in area of refuge formed by a horizontal exit or smoke barrier.

#### Exception:

In buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13 or NFPA 13R, each floor of the building other than the level of exit discharge shall be provided with either an area of refuge formed by a horizontal exit, or an area of refuge complying with this Section within each enclosed exit stairway.

# **MAYOR'S OFFICE FOR PEOPLE WITH DISABILITIES**

## **EMERGENCY EVACUATION PLAN**

### **Frequently Asked Questions**

1. **Who is responsible for compiling “lists” of people identifying as needing assistance? Who is responsible for ensuring that it is routinely updated?**

In commercial buildings, it is the responsibility of the building owner to obtain their lists from employers or tenants who have undertaken proper procedures for identifying employees or regular occupants needing assistance. In residential buildings, building owners are responsible for directly contacting all regular occupants, with or without disabilities, to inform them of the process by which they may self-identify as needing assistance.

The FSD and DFSD must, at all times, ensure that the Emergency Evacuation Plan includes the most updated list of those individuals.

2. **Which personnel can be assigned to be evacuation assistants?**

For a regular occupant who needs assistance, the Emergency Evacuation Plan shall identify an individual who is either one of the designated personnel such as FSD, DFSD, Building Evacuation Supervisor, Fire Wardens and Emergency Evacuation Team members, or is otherwise assigned to assist such occupants during an evacuation or safety drill.

3. **Who is responsible for developing a plan by which employees, working after hours and needing assistance, will be notified in the case of an emergency?**

Building managers should ensure that there is a process in place for employees who may need assistance to alert security upon entering the building or when remaining in the building after normal working hours.

4. **How often should regular occupants in a residential building be informed of the process by which they may self-identify as needing assistance?**

Regular occupants in a residential building should be informed of the procedure by which they may voluntarily self-identify as needing assistance upon moving into the building and on an annual basis thereafter.

5. **Should all people needing assistance be directed to an area of rescue?**

No. All individuals who are unable to use stairs should be directed to an area of rescue and may remain temporarily to await further instructions or assistance during an emergency evacuation.

6. **Can a building owner or employer determine unilaterally what kind of assistance someone may need?**

No. The employer or building owner shall meet with the individual who has requested assistance to obtain more detailed information regarding the method of evacuation. Methods for accommodation and assistive devices should be selected specifically for that person.

7. **If a regular occupant participates in the Chicago Fire Department Registration Card Program, do they still need to have an assistant assigned to them?**

Yes. Regular occupants needing assistance should be urged to participate in the Chicago Fire Department Registration Card Program as well as being on their respective building's list.

8. **In the case of an emergency, how does one get the attention of a person who is blind or visually impaired? Or someone who is deaf or hard-of-hearing?**

It is appropriate to get the attention of a person who is blind or visually impaired by announcing your presence, along with anyone else with you, upon entering the area. To get the attention of a person who is deaf or hard-of-hearing it is acceptable to flick the lights when entering the area to get his/her attention. It may also be necessary to tap the person on the shoulder or wave your hand.

9. **If a person with a mobility impairment needs to evacuate, what should I do with their mobility device?**

First of all, always ask a person with a disability how you can assist them. Then, listen carefully and follow their instructions. The person may feel more comfortable using their own mobility aid (for example a cane, crutch or service animal) while evacuating. If a person must be carried, the recommended techniques include a one-person lift (Cradle Lift) or a two-person lift (Chair Carry).

10. **In an emergency evacuation situation, can I give instructions to an assistant or interpreter present instead of the person with a disability?**

The most efficient and appropriate way to communicate is to speak directly to the person with a disability. You can tell by their reaction if your message is understood. It may be necessary to repeat the message or to write it down.

11. **How should I communicate with an individual who initially doesn't seem to understand my instructions?**

If a person appears to be having difficulty recognizing or being motivated to act in an emergency, use simple signals and/or symbols. Directions or information may need to be broken down into simple steps. It may be important for someone to accompany the individual.

12. **If my building provides evacuation chairs, who should know how to use them?**

The FSD, DFSD, Evacuation Assistants, and anyone else who may potentially be involved in the evacuation of a person needing an evacuation chair, should be trained in their use. It is very important that all individuals regularly practice with a volunteer in the chair to gain experience in maneuvering the chair down the stairwell as well as transferring individuals into and out of the chairs.

# **Fire Detection & Suppression Systems** **And Other Life Safety Requirements for High Rise Buildings**

- Fire Alarms
- Automatic Sprinkler, Standpipe, and Fire Pump
- Smoke-proof Tower
- Elevator Recall

## **I. FIRE DETECTION SYSTEMS**

### **A. HIGH RISE FIRE ALARM SYSTEM**

A high-rise fire alarm system contains a series of panels and components which make up the fire command life safety system. The entire system is supervised and monitored by an Underwriters Laboratory (UL)- listed central station monitoring service that notifies the fire department when a water flow is indicated in the sprinkler system or when the heat or smoke detectors are activated.

### **B. SMOKE DETECTORS**

Are required in:

1. Fan and electrical rooms
2. Return air ducts and plenums
3. Elevator lobbies
4. Corridors on each floor
5. In residential dwelling units within 15 feet of the entrance to all sleeping rooms

### **C. HEAT DETECTORS**

Are required in:

1. Storage rooms
2. Boiler rooms
3. Furnace rooms

### **D. VOICE COMMUNICATION SYSTEM**

A two-way voice communication system is required for firefighters' use to communicate with the incident commander in the event of a fire or emergency. Firefighter phones are installed on every fifth floor throughout the building's stairwells.

A speaker is required between the fire command panel and the following locations:

1. Elevators and elevator lobbies
2. All required stairwells, one (1) speaker on every fifth floor
3. Office areas exceeding five thousand (5000) square feet
4. In corridors, at intervals of at least 75 feet and at the exit stair doors.

#### **E. MECHANICAL VENTILATION**

Where required, the building's mechanical ventilation system is controlled by the life safety system and also by the activation of the smoke detectors installed within the building's duct work and air plenums. This will shut down the ventilation system to prevent the spread of smoke.

## **II. FIRE SUPPRESSION SYSTEMS**

### **A. AUTOMATIC SPRINKLER SYSTEM**

An automatic sprinkler system is a system of water pipes, discharge nozzles and control valves, designed to activate during a fire to automatically discharge enough water to control or extinguish a fire.

Sprinkler systems have an extremely high degree of reliability, but despite this high degree of reliability, sprinklers can fail to control or extinguish a fire because of the following factors:

- Closed valves
- Frozen water supplies
- Inadequate water supply
- Obstructed sprinkler discharge
- Damaged sprinkler heads

In order for a sprinkler system to function properly, it must be designed, installed and maintained properly.

Water is supplied to the sprinkler system by the suppression system's fire pump and is augmented by the Siamese (fire department) connection at street level.

Typically, for normal applications, wet and dry sprinkler systems are installed.

**Wet pipe system:** Automatic sprinkler system in which the pipes are constantly filled with water under pressure. This type of system is installed in heated buildings and where freezing temperatures are not an issue.

**Dry pipe system:** Fire protection sprinkler system that has air in the piping instead of water under pressure. Dry systems are installed in areas subject to freezing.

## **B. STANDPIPE SYSTEM**

Standpipe systems are fixed piping systems with equipment that provide a means to transport water to designated areas of a building where hoses can be deployed for fire fighting.

As with the sprinkler system, water is supplied to the standpipe system by the suppression system's fire pump and is augmented by the Siamese (fire department) connection at street level. This connection is made by fire department pumpers.

The standpipe system runs the total height of the stairwell. Standpipe outlets can also be found in different locations throughout the building, where required. These systems have 2½ inch threaded port outlets which firefighters use to connect fire hoses to extinguish fires on the upper floors of high-rise buildings. Some high-rise buildings are required to have 1½-inch hose lines in addition to the 2½-inch port outlets. Buildings over 275 feet in height are required to have a two - zone system.

Sprinkler and standpipe control valves are usually located in the basement. This is the lifeline of the fire protection system. A sprinkler or standpipe that is out of service can give a false sense of security to the occupants of a high-rise building. Both should be in full operation. Building management is required to give prior notice to the fire department in the event of any sprinkler or standpipe repairs or emergency shut down.

## **C. FIRE PUMP**

Whenever a building's existing water supply, whether it is a public main or other source, is insufficient to meet the demands of its fire protection system, a fire pump is installed. Fire pumps are used to provide or enhance the water supply pressure available from the public water mains.

Fire pumps are an important component of the fire protection system. The Chicago Fire Codes require that these pumps be tested annually and that these tests are witnessed by the Chicago Fire Department. Fire pumps must perform to their rated gallons per minute and pressure to ensure proper and adequate flow of water supply.

As with sprinklers and standpipe systems, building management is required to give prior notice to the fire department in the event of any fire pump repairs or emergency shut down.

### **III. SMOKE-PROOF TOWERS**

A smoke-proof tower is an enclosed stairwell designed to limit the penetration of smoke, heat and toxic gases, providing a safer atmosphere for occupant evacuation in the event of a fire.

A smoke-proof tower may be used in lieu of any required interior stairwell. At least one smoke-proof tower is required in every high-rise building that exceeds 264 feet in height. These towers are constructed with a three (3) hour fire resistive rating. If more than one (1) smoke-proof tower is provided, this rating can be reduced to two (2) hours.

### **IV. ELEVATOR RECALL**

Elevator emergency recall is a system which is programmed into the elevator to send it non-stop to the main floor so the fire department can take control of the elevator in a fire situation or emergency. This control of the elevator is called *fireman service mode*. When elevators are in the *fireman service mode*, they cannot be used by anyone but firefighters.

Keys used by firefighters to recall the elevators are found in the fireman's recall box, installed in a conspicuous location on the main floor of the elevator lobby. The size of the box, the construction, and the type of lock must be approved by the Chicago Fire Department.

## Portable Fire Extinguishers

Portable fire extinguishers can save lives and property by putting out a small fire or suppressing it until the fire department arrives; however, portable extinguishers have limitations. They are not designed to fight large or fast-spreading fires. Most portable extinguishers have a short range (6-10 feet) and completely discharge in a very short time (8-10 seconds). As a general rule, firefighting should be left to the professionals. The Chicago Fire Department recommends that they be called in the event of any fire.

Modern fire extinguishers can put out small fires, but using a portable fire extinguisher is a good idea only under certain conditions. All fires are unpredictable and should be approached with caution. No step-by-step list can take the place of experience and training. Anyone who uses a fire extinguisher should be trained and familiar with them. With that in mind, before you consider fighting a small fire, you should know the following:

- Y Make sure the Fire Department is notified. As soon as you know there is a fire call 9-1-1.**
- Y Never fight a fire unless you are sure you have the proper type and size of extinguisher and that you know how to use it.**
- Y Begin fighting the fire from a safe distance.**
- Y Never let the fire get between you and your exit.**
- Y Use the buddy system. Always work in pairs.**
- Y Even if you extinguish the fire, the area should be inspected by the fire department.**
- Y The extinguisher must be rated for the type of fire you are fighting.**  
Extinguishers are designed to fight specific classes of fires. What type of extinguisher to use depends on what is burning.
- Y The extinguisher must be large enough to put out the fire.**  
Extinguishers come in various sizes. Larger models can handle larger fires.
- Y The extinguisher must be within easy reach.**  
Never move through a fire to get your extinguisher.
- Y The extinguisher must be fully charged.**  
If an extinguisher is not fully charged it will not do its job.
- Y The operator must be trained to use the extinguisher.**  
During a fire is not the time to learn to use an extinguisher. You should be familiar with each type of extinguisher available to you.

When operating portable extinguishers, personal safety and the safety of others are the most important factors in deciding to fight a small fire. Before fighting a fire be sure of the following:

- Everyone has left, or is leaving the building/area and the fire department has been called.
- The fire is confined to a small area.
- There is an unobstructed exit available. Don't let the fire get between you and your exit.
- Stay low because the room will rapidly fill with smoke.
- If in doubt, leave the area immediately. Close off the area to slow the spread of the fire.



Fires require fuel, heat, oxygen, and a molecular chain reaction. Once a fire has started, it will continue to burn because of the reactions created between these four components. Fire experts call this model the “Fire Tetrahedron”. Removing any one of these components will cause the fire to be extinguished. Fire extinguishers put out fires by combinations of three basic methods:

- ◇ Cooling the fuel below the temperature at which it will burn
- ◇ Cutting off the oxygen supply
- ◇ Interrupting the chemical reactions that keep the fire going

Class B&C, carbon dioxide extinguishers, are common where electrical equipment is prevalent. When activated, carbon dioxide is expelled under pressure through a horn at the end of a short hose. The fire is extinguished by reducing the amount of oxygen in the air around the fire.

Class A, B & C, multipurpose dry-chemical extinguishers, are common in office and home settings. Dry-chemical (ammonium phosphate) is stored in the cylinder and expelled through a nozzle or short hose. The fire is extinguished by interrupting the chain reaction that keeps the fire burning.

There are four basic steps to operating a fire extinguisher. An easy way to remember the procedure is to think of the word "*PASS*"

### **PULL THE PIN**

Holding the extinguisher with the nozzle pointing away from you, pull the pin, which is located below the trigger.

### **AIM LOW**

Standing 6-8 feet away from the fire, point the nozzle at the base of the fire. Always hold the extinguisher vertically. Never hold it horizontally or at an angle.

### **SQUEEZE THE TRIGGER**

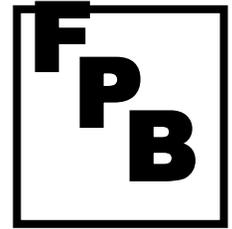
Squeeze the trigger slowly and evenly. This will expel the extinguishing agent.

### **SWEEP FROM SIDE TO SIDE**

As the agent is being expelled, sweep the nozzle from side to side. As the fire begins to go out, move closer to the fire and continue the sweeping motion until the fire is extinguished. If the fire does not diminish or it grows, get out of the building. Close any doors in order to contain the fire to the immediate area.



Chicago Fire Department  
Division of Training



# PORTABLE EXTINGUISHERS

Extinguishing agents suppress fires by eliminating one or more of the four elements of the fire tetrahedron.

There are five classes of fires. All fire extinguishers are labeled using standard symbols for the class of fire on which they can be used. A red slash through any of the symbols tells you the extinguisher cannot be used on that class of fire. A missing symbol tells you only that the extinguisher has not been tested for a given class of fire, but may be used if an extinguisher labeled for that class of fire is not available.

The different fire classes, the fuel source for each class and the type of extinguishing agent for each class is listed below.



### Class A

A fire extinguisher labeled with **letter "A" (Green Triangle)** is for use on Class A fires. Class A fires are fires that involve ordinary combustible materials such as cloth, wood, paper, rubber, and many plastics.



### Class B

A fire extinguisher labeled with **letter "B" (Red Square)** is for use on Class B fires. Class B fires are fires that involve flammable and combustible liquids such as gasoline, alcohol, diesel oil, oil-based paints, lacquers, etc., and flammable gases.



### Class C

A fire extinguisher labeled with **letter "C" (Blue Circle)** is for use on Class C fires. Class C fires are fires that involve energized electrical equipment.



### Class D

A fire extinguisher labeled with **letter "D" (Yellow Star)** is for use on Class D fires. Class D fires are fires that involve combustible metals such as magnesium, titanium, and sodium.



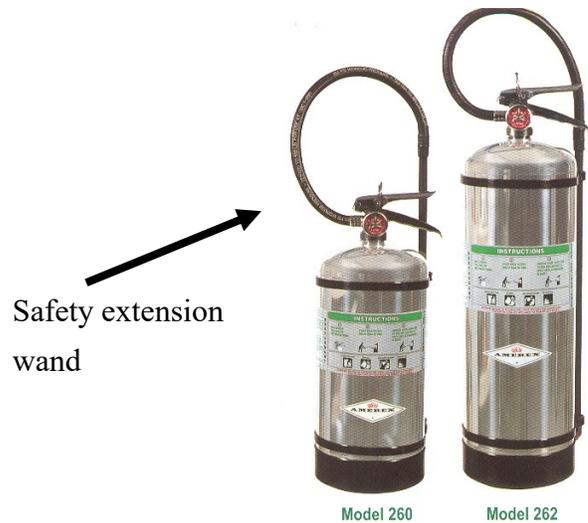
### Class K

A fire extinguisher labeled with **letter "K"** is for use on Class K fires. Class K fires are fires that involve vegetable oils, animal oils, or fats in cooking appliances. This is for commercial kitchens, including those found in restaurants, cafeterias, and caterers.



NFPA – 10 Standard recommends the Class K fire extinguisher for protection of restaurant kitchen fires. An exception to this standard is extinguishers installed specifically for these hazards prior to June 30, 1998. As of this date N.F.P.A. has removed Grease from Class B description. A Class B extinguisher is still accepted for this type of hazard and need not be written for Class K replacement.

**Class K fire extinguisher.** Primary extinguishing agent is Potassium Acetate mixed with water. Approved uses are recognized by a symbol of a frying pan on fire.



## FIRE EXTINGUISHER REQUIREMENTS

When conducting In Service Inspections, the following requirements for portable extinguishers should be checked: With the exception of Hazardous Use Occupancies, fire extinguishers are not required in business, mercantile, industrial, and storage units under 3000 square feet.

The square footage (length x width) of a building can be determined with a reasonable degree of accuracy by a number of ways:

- Pace off the building with your normal stride, which in most cases is equal to approximately three feet.
- If the sidewalk is running alongside the building count the squares, which are equal to approximately five feet.
- City lots are normally 125' deep. Determine how much of the lot is occupied by the building.
- The tile used for floor covering in many commercial occupancies is 12" wide. Count the squares.
- Your most accurate dimensions would be obtained with the use of a tapeline.

# LOCATION OF EXTINGUISHERS

Fire extinguishers must be mounted in an approved bracket. The extinguisher or its location marker must be visible from a distance of 50 feet. The Travel distance to a fire extinguisher shall not exceed 75 feet.

If an extinguisher has a gross weight of more than 40 pounds, the top of the extinguisher must be mounted no higher than 3 ½' from the floor.

If the extinguisher has a gross weight not exceeding 40 pounds, the top of the extinguisher must be mounted no higher than 5 feet from the floor.

16 lbs.  
extinguisher

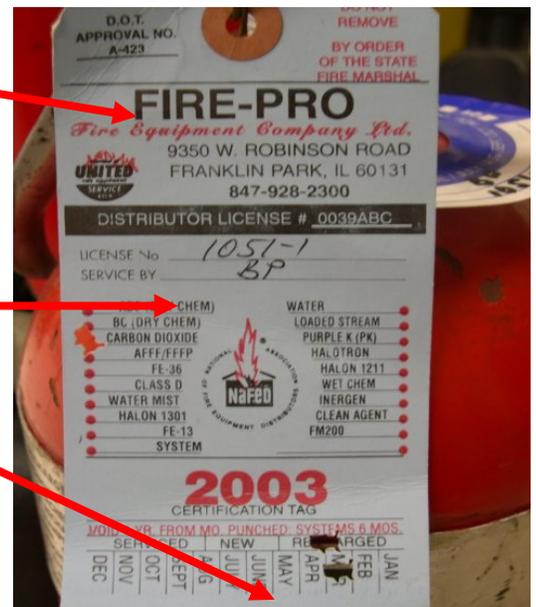


Five feet from floor to top of extinguisher

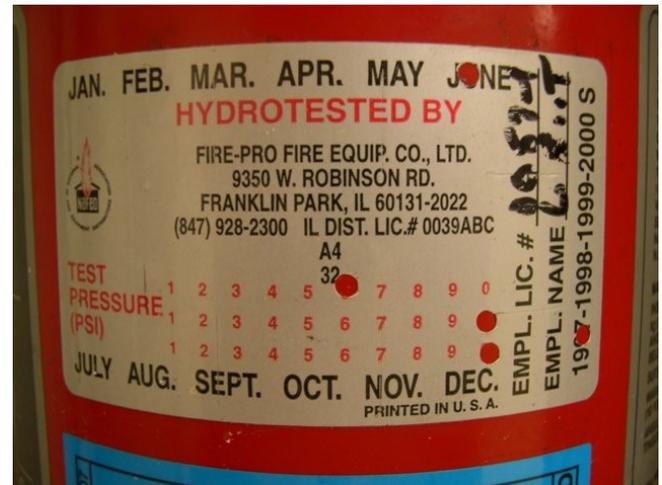
# IDENTIFICATION REQUIREMENTS

When an extinguisher is required it must meet the following criteria:

- Every standard fire extinguisher shall have attached the label of an approved testing laboratory licensed by the City of Chicago.
- Every standard fire extinguisher shall have attached a service tag showing the extinguisher has been inspected and serviced during the last **12 months** by a licensed serviced person.
- Look also at the gauge to make sure the extinguisher is charged.



- A label should be stamped on the shell showing it has been hydrostatically tested within the prescribed test period (Most extinguishers require hydrostatic testing every 5 years).



These markings illustrate and convey the following information:

- The approved testing laboratory is Fire Pro
- The extinguisher was recharged in March of 2003
- The licensed person was BP (initials) license number 1051-1
- Hydrostatic tested on June of 1997 at a test pressure of 600psi



## **Chapter 13-76 (High Rise Buildings)**

13-76-010	Scope of provisions
13-76-020	Fire safety – Compartmentation
13-76-030	Fire command panel location
13-76-040	Combustion detector, sounding device, and heat detector system
13-76-050	Voice communication systems
13-76-060	Mechanical ventilation
13-76-070	Stairwell door locking devices
13-76-075	Stairwell identification
13-76-076	Area of rescue assistance identification
13-76-080	Emergency electrical systems
13-76-090	Roof access
13-76-100	Exceptions
13-76-110	Plans submitted for approval to include drawings
13-76-120	Fire protection system-Annual test required
13-76-130	Fire department emergency access elevator
13-76-140	Product standards
13-76-150	Penalty for violation
13-76-160	Severability

### **13-76-010            Scope of provisions**

The provisions of this chapter in addition to other applicable requirements of this Code shall apply to all new buildings more than 80 feet above grade.

(Prior code § 62.1-1)

### **13-76-020            Fire safety-Compartmentation**

Compartmentation shall be provided in every building to provide areas of fire safety for the building occupants except as provided in Section 13-76-100 of this Code. This shall be provided by one of the following methods in (a) or (b). All mercantile, industrial, and storage occupancies are to comply with Section 13-76-100 of this Code.

- (a) There shall be installed a slab-to-slab continuous vertical two-hour fire rated assembly with horizontal exits dividing each floor into two or more compartments in an area ratio not to exceed three to one and not to exceed 30,240 square feet per area. This two-hour rated assembly shall serve as an effective smoke barrier. There shall be at least one stairwell with separate exits at grade in each compartment. There shall be separate elevators in each compartment or separate elevator compartment may be provided for elevators only, directly accessible to all other compartments. This elevator compartment would not be subject to the provision of Section 13-76-060 of this Code. The area separations in Section 15-8-240(a) (2) of this Code will not be required.

No compartmentation will be required on any floor that is completely sprinklered, provided the integrity of the smoke control and compartmentation of the remaining compartmented portions of the building are maintained.

- (b) The building shall be subdivided into five-story compartments by providing a fire and smoke barrier floor system at each compartment level. All stairwells and other vertical shafts are to be interrupted at each compartment level with effective smoke barriers or are to be protected with smoke-proof towers. Enclosures are to be provided for all stairwells or other vertical shafts, which will minimize the movement of smoke from one compartment to another. Exterior wall openings in separate compartments shall be separated vertically with a 10-foot intervening two-hour wall, a 10-foot floor setback, a 10-foot projection, a 10-foot combination of projection and setback, or an approved deluge system.
- (c) Separate mechanical air handling systems shall be provided for each compartment described in Section 13-76-020(a) and (b), and as required in Section 13-76-060 of this Code.

(Prior code § 62.1-2)

### **13-76-030 Fire command panel location**

A fire command panel shall be provided in a location approved by the fire department. It shall contain the following listed facilities:

- (a) Fire detection system panel (as required by Section 13-76-040 of this Code) annunciated visually and audibly for each individual floor
- (b) Status indicators for air handling systems (as required by Section 13-156-460 of this Code)
- (c) Status indicator and controls for elevators, or where an elevator control panel is provided containing required indicators and controls, that panel must be in close proximity to the fire command panel
- (d) Sprinkler valves and sprinkler water flow detector indicators, annunciated for each individual zone
- (e) Emergency power status indicator
- (f) Exit stairwell door unlocking system
- (g) Voice communication system panels and equipment

(Prior code § 62.1-3)

### **13-76-040 Combustion detector, sounding device and heat detector system**

An approved system including products of combustion detectors, sounding devices and heat detectors shall be required. The systems are to be monitored by a U.L. Listed Central Station, U.L. 827-72 or as required by N.F.P.A. 72D.

System devices shall be located and installed as approved by the Bureau of Fire Prevention as follows:

- (a) Automatic products of combustion detectors will be required in the following locations:
  - (1) Fan and electrical equipment rooms
  - (2) Return air ducts and plenums of heating, ventilating and air conditioning systems serving floors other than the floor on which the heating, ventilating and air condition and equipment is located. The detectors shall be located at each opening into the vertical return air duct or shaft.
  - (3) Elevator lobbies and corridor at each floor
  - (4) In all dwelling units and also connected to an alarm in the unit. The detectors shall be located within 15 feet of the entrance to all sleeping rooms with a minimum of one per apartment floor level.
  
- (b) Heat detectors will be required in the following locations:
  - 1. Storerooms
  - 2. Boiler rooms
  - 3. Furnace rooms

(Prior § 62.1-4)

### **13-76-050            Voice communication systems**

There shall be two voice communication systems as follows:

- (a) A two-way fire department communication system providing emergency two-way stations in each required stairwell and not less than every 5<sup>th</sup> floor and at the fire command panel
  
- (b) A selective one-way communication system between the fire command panel and the following areas:
  - (1) Elevators, elevator lobbies, and in all required stairwells; one speaker each 5<sup>th</sup> floor in stairwells
  - (2) Office areas exceeding 5,000 square feet
  - (3) In corridors at intervals not to exceed 75 feet and at the exit stair doors

The two-way fire department communication system may be combined with the one-way system when approved by the Bureau of Fire Prevention.

(Prior code § 62.1-5)

### **13-76-060            Mechanical ventilation**

Mechanical ventilation shall be provided in every story and shall be as follows except as provided in Section 13-76-700 of this Code.

- (a) Residential. Public corridor supplies shall be designed for a capacity equal to 100% of the total kitchen and toilet exhaust requirements in the non-fire side compartment and shut-off both supply and exhaust in the fire side compartment; controls to be operated by approved heat detectors and products of combustion detectors as required in Section 13-76-040 of this Code.
- (b) Business. In a non-fire side compartment, the mechanical system shall be designed to operate the supply with a minimum of 40% of its capacity to be outside air. In a fire-side compartment, a mechanical system shall be designed to shut off the supply system and allow the exhaust to operate at 100% of its capacity. All re-circulation dampers are to be shut. Controls are to be operated by heat detectors and approved products of combustion detectors as required in Section 13-76-040 of this Code.
- (c) Mercantile Industrial and Storage. See Sections 13-76-020 and 13-76-100(b) of this Code
- (d) Industrial and Assembly. Mechanical systems are to be designed to maintain a positive differential pressure from the non-fire side compartment as approved by the Department of Construction and Permits (“DCAP”) and Fire Department. Controls are to be operated by approved products combustion detectors.

(§ 62.1; Amend Coun. J. 9-13-89, p.4604; amend Coun. J3-5-03, p. 104990, 22

**13-76-070 Stairwell door locking devices**

All stairwell doors, which are to be locked from the stairwell side shall have electrically controlled locking devices which can be automatically unlocked upon a signal from the fire command panel. A stairwell door at the main exit level shall not be locked from the stairwell side.

(Prior code § 62.1-7)

**13-76-075 Stairwell identification**

There shall be posted and maintained, within every interior stairwell enclosure at every floor, adjacent to the stairwell door, alphabetical or directional letter identification for the stairwell and the number of the floor to which the door opens. Lettering shall be permanent, a minimum of 6 inches in height and comply with A.D.A.A.G. (American with Disabilities Act Accessibilities Guidelines) 4.30.1 General, 4.30.4 Raised and Braille Characters and Pictorial Symbol Signs, 4.30.5 Finish and Contrast, and 4.30.6 Mounting Location and Height.

Adjacent to every stairwell door there shall be posted, on the occupancy side, information showing which floors have re-entry locations. Lettering shall be permanent and comply with A.D.A.A.G. 4.30.1 General, 4.30.4 Raised and Braille Characters and Pictorial Symbol signs, 4.30.5 Finish and Contrast, and 4.30.6 Mounting Location and Height.

(Added Coun. J. 10-31-01, p 71183, 2; Amend Coun. J. 5-1-02. p 84027, 2)

### **13-76-076 Area of rescue assistance identification**

Each area of rescue assistance shall be identified by a sign, which states “area of rescue assistance” and displays the international symbol of accessibility. Lettering shall be permanent and comply with A.D.A.A.G. 4.30 (American with Disabilities Act Accessibilities Guidelines).

(Added Coun. J. 10-31-01, p 71183, 2; Amend Cound. J. 5-1-02, p. 84027, 1)

### **13-76-080 Emergency electrical systems**

Emergency electrical systems shall be provided in buildings as follows:

- (a) All buildings included in this chapter shall be supplied by a System 2 emergency system that shall supply the elevator required by Section 13-76-130 of this Code, all emergency and exit lights, the communication systems required by Section 13-76-050 of this Code, the fire command panel required by Section 13-76-030 of this Code, and the fire alarm system require by Section 13-76-040 of this Code, The System 2 emergency system shall conform with all applicable provisions of Section 14-48-010 of this Code.
- (b) All buildings over 400 feet above grade shall have a diesel driven emergency generator to supply the fire pumps required by Sections 15-16-770 and 15-16-780 of this Code and the elevator required by Section 13-76-130 of this Code. The fire pump may be diesel engine operated.
- (c) Emergency generators, fire pumps, and their controls are to be in a separate two-hour-fire-rated pump room, which also may contain the domestic booster pumps. In addition, the electrical controls are to be encased in drip proof enclosures.
- (d) All main electric service equipment shall be installed in vaults or approved outdoor locations. The main electric service vaults and main service switch rooms shall be enclosed with three-hour-fire-rated construction. Distribution switchboard rooms shall be enclosed with two-hour-fire-rated construction.
- (e) All electric service vaults and main service switchboard rooms located on the lowest level shall be equipped with a sump pump connected to the emergency electrical supply.
- (f) All electric risers and shafts serving elevators, emergency and exit lights, voice communication systems, and smoke control fans are to be enclosed with two-hour construction and are to include continuous three inch high water stops on all sides. Mineral insulated cable having a two-hour fire resistive classification from a recognized third party electrical testing laboratory shall be acceptable in retrofit work, provided that distribution panels and control panels are enclosed with construction providing two-hour protection.
- (g) All existing and newly constructed buildings used in whole or in part for residential occupancy, which are more than 80 feet above grade, shall provide an auxiliary source of current supply from either an approved, on-site generator in accordance with Section 14-48-100, an approved unit battery system, or approved central battery system in accordance with Section 14-48-090(b) and (c) to supply all required emergency lights through-out the building. The fuel source for on-site generators installed in buildings over 80 feet in height and under 400 feet in height may be natural gas or diesel fuel.

The fuel for on-site generators installed in buildings over 400 feet shall be diesel, in accordance with the provisions of Section 13-76-080(b) of this Code. Two complete sets of plans shall be submitted to the Bureau of Electrical Inspection for review and approval before any work is started on the installation on such systems. All buildings which conform to the requirements of this section at the time this section is enacted shall not be required to provide plans as required herein. All buildings required by this chapter to provide an auxiliary source of current supply for required emergency lighting shall comply no later than July 1, 1999.

(Prior code § 62.1-8; Amend Coun. J. 10-2-95 p. 8026; Amend Coun. J. 2-5-98, p. 1781)

### **13-76-090 Roof access**

Access shall be provided to the roof for the occupants of the building and there shall be a clear area of 50 feet in diameter above the building to coordinate emergency evacuation by helicopter.

(Prior code § 62.1-9)

### **13-76-100 Exceptions**

Buildings designed in accordance with this section are not subject to the provisions of Section 13-76-020, Section 13-76-040, Section 13-76-060 and Section 13-76-090 of this Code.

- (a) An approved standard automatic sprinkler shall be provided throughout the building. The system shall be designed in accordance with Chapter 15-16 of this Code and shall be provided with a two-source water supply when the building height exceeds three hundred feet.
- (b) The mechanical air handling equipment serving the fire zone shall be designed to provide maximum exhaust without re-circulation and to be activated by the water flow device serving that fire zone. This requirement will not apply to residential occupancies.
- (c) When a standard sprinkler system is installed the following are permitted:
  - (1) The floor construction fire rating may be reduced to one hour for Types I-A and I-B construction from the present requirement of table 49-8 codified in Section 13-60-100 of this Code. Floor construction for the purposes of this section shall meet the following requirements:
    - (A) For concrete construction as provided for in Chapter 13-136 of this code, the minimum slab thickness shall be three inches for lightweight concrete and four inches for stone concrete construction.
    - (B) For steel deck construction as provided for in Chapter 13-148 of this Code, the minimum depth of concrete above the upper-most surface of the steel deck shall be two and one half inches for lightweight concrete and three and one-half inches for stone concrete.
  - (2) The public corridor partition fire rating may be reduced to noncombustible from the present requirements of Section 15-8-240(a)(1) of this Code;

- (3) The area separations may be eliminated as presently required in section 15-8-240(a)(2) of this Code
- (4) Atriums are allowed when provided with automatic smoke and heat venting activated by approved products of combustion detectors. Size of vents shall be calculated as follows:  
  

$$A = 0.14 PH \text{ divided } HID$$

Where  
A = Vent area requires  
P = Perimeter of atrium  
H = Distance from floor of atrium to roof of atrium to first enclosed window  
D = Distance from floor of atrium to roof of atrium minus H
- (5) The elevator shaft enclosure may be eliminated when the elevators are incorporated in atriums
- (6) The fire rating of exterior non-bearing walls of building of Types I-A, I-B and I-C may be reduced to non-combustible from the present requirements of Table 489-8(d) codified in Section 13-60-100 of this Code
- (7) Smoke-proof towers as presently required in Section 13-160-360 of this Code may be eliminated
- (8) Fire dampers will not be required in mechanical heating, ventilation and air conditioning systems
- (9) The 1 ½ inch hose connection and valve presently required in Sections 15-16-370 and 15-16-400 of this Code may be eliminated.

(Prior code § 62.1-10; amend Coun. J. 4-25-84, p. 6189; Amend Coun. J. 1-18-89, p. 23794; Amend Coun. J. 6-14-95, p. 2841; Amend Coun. J. 10-30-96, p. 31216)

**13-76-110 Plans Submitted for Approval to Include Drawings**

All plans submitted for approval for a permit as required by Chapter 13-40 of the Municipal code of Chicago shall include specific drawings showing compliance with this chapter.

(Prior code § 62.1-11)

**13-76-120 Fire Protection System-Annual Test Required**

The entire fire protection system as required by this chapter shall be tested on an annual basis by an individual or organization approved by the Bureau of Fire Prevention. Reports of these tests shall be submitted and approved by the Bureau of Fire Prevention.

(Prior code § 62.1-12)

**13-76-130**                    **Fire Department Emergency Access Elevator**

At least one elevator is to be provided for Fire Department emergency access to all floors of a building. All elevators shall be equipped with fireman's control as required in Section 13-156-460 of this Code.

(Prior code § 62.1-13)

**13-76-140**                    **Product Standards**

Products of combustion detectors are to comply with the provisions of U.L. 168-1971, or U.L. 167-1974. Heat detectors are to comply with the provisions of U.L. 521-1974.

(Prior code § 62.1-14)

**13-76-150**                    **Penalty for Violation**

Any person found guilty of violating any of the provisions of this chapter, upon conviction thereof shall be punished by a fine of not less than \$300.00 nor more than \$500.00 for each offense. A separate and distinct offense shall be regarded as committed each day on which such person shall continue or permit any such violation. In addition to such fines and penalties, any license or permit issued to such violator or offending party by the City of Chicago may be revoked. Notwithstanding any fines imposed by the City shall have the right to seek mandatory compliance with the provisions of this chapter or in the alternative to seek demolition of a building not in compliance with the provisions of this chapter.

(Prior code § 62.1-15)

**13-76-160**                    **Severability**

In the event any provision or application of this chapter is held to be invalid, it is the legislative intent that the other provisions and applications hereof shall not be affected.

(Prior code § 62.1-16)

## **CHAPTER 13-78 (HIGH-RISE BUILDINGS – EMERGENCY PROCEDURE)**

13-78-010	Definitions
13-78-020	Buildings categorized by height
13-78-030	Mixed-occupancy high-rise buildings
13-78-040	Creation and filing of plan
13-78-050	Required designated personnel
13-78-060	Required designated personnel – On-site presence
13-78-070	Required designated personnel – Duties
13-78-080	Minimum plan requirements
13-78-090	Safety drills
13-78-100	Distribution of information
13-78-110	Enforcement, rules and regulations, and penalties

### **13-78-010 Definitions**

For purposes of this chapter, the following terms shall be defined as follows:

- (a) “Emergency preparedness certificate” or “certificate” is a certificate issued by the fire department upon receipt of: (1) adequate proof that the applicant for the certificate is able and qualified to assume the duties required, and (2) proof of payment to the department of revenue of a fee adequate to cover administrative costs. Such certificate shall be valid for one year from the date of issuance and shall be renewable annually.
- (b) “Emergency” is the existence of a condition or the occurrence of an event within, upon or near a high-rise building, which poses a direct and immediate threat to occupant life and necessitates the deployment of fire department resources for purposes of its mitigation. “Emergency” does not include a medical emergency affecting a single individual.
- (c) “High-rise building” or “building” is any new or existing structure over eighty (80) feet above grade, which is also of occupancy class A (Residential), C (Assembly), D (Open Air Assembly unit), E (Business), F (Mercantile) or G (Industrial), as further defined in Chapter 13-56 of this Code.

“Non-residential high-rise building” or “non-residential building” is a high-rise building of occupancy classification C, D, E, F or G.

“Residential high-rise building” or “residential building” is a high-rise building of occupancy classification A.

- (d) “Occupant” is any person present within a high-rise building. “Occupant” shall include building staff, tenants and visitors.

“Regular occupant” is every occupant except for occasional visitors, who are not present in the building on a regular basis and whose presence in the building cannot be predicted.

- (e) “Owner” includes the owner, manager, agent or other person in charge, possession, or control of a high-rise building. Where an owner is in charge, possession, or control of only a portion of a building, the requirements of this Chapter applicable to owners shall apply only to that portion.
- (f) “Plan” is a written emergency evacuation plan for occupancy emergency evacuation and drill, prepared and maintained in compliance with this Chapter.

(Added Coun. J. 10-31-02, p. 71183, § 1)

### **13-78-020 Buildings categorized by height**

High-rise buildings subject to this chapter shall be categorized as follows, according to building height above grade:

- Category 1 Over 780 feet
- Category 2 Over 540 feet, up to and including 780 feet
- Category 3 Over 275 feet, up to and including 540 feet
- Category 4 80 feet and over, up to and including 275 feet

(Added Coun. J. 10-31-01, p. 71183, § 1)

### **13-78-040 Mixed-occupancy high-rise buildings**

With respect to a high-rise building that has both residential and non-residential occupancy, the residential portion(s) of such building shall be governed by those provisions of this chapter applicable to residential high-rise buildings, and the non-residential portion(s) of such building shall be governed by those provisions of this chapter applicable to non-residential high-rise buildings.

(Added Coun. J. 10-31-01, p. 71183, § 1)

### **13-78-040 Creation and filing of plan**

- (a) Every high-rise building shall have a plan in place. The owner shall be responsible for creating, implementing, maintaining, and updating a plan for that building. The owner shall review the plan annually and as a result of such annual review, shall amend or update the plan as necessary to ensure that it is accurate and complete. The plan shall be made available upon request to personnel of the department of buildings, the office of emergency management and communications, the fire department, and the department of police. Upon any change of ownership or management of a high-rise building, the previous owner shall provide all copies of the plan required by this chapter to the new owner.
- (b) The owner of each Category 1 and Category 2 building, and the owner of each Category 3 and Category 4 building which is also of occupancy classifications C (Assembly) or D (Open Air Assembly unit), shall be responsible for filing a copy of that building’s plan with the city’s office of emergency management and communications. The owner of each Category 3 and Category 4 building which is also of occupancy classification A (Residential), E (Business), F (Mercantile) or G (Industrial) is encouraged, but not required, to file a copy of that building’s plan with the city’s office of emergency management and communications. Any plan filed with the city’s office of emergency management and communications shall be in such form(s) and format(s) as that office requires.

- (c) For all high-rise buildings with a plan on file with the city's office of emergency management and communications, in the event the plan is amended or updated as a result of an annual review or more frequently on an owner's initiative, a copy of the amended or updated plan must be filed with the city's office of emergency management and communications.
- (d) Consistent with applicable law, the city shall treat all plans submitted as confidential, and shall provide the owner with a copy of any appeal, received by the office of emergency management and communications, of the office of emergency management and communications' notice of denial provided to a third party seeking inspection and copies of that owner's plan.
- (e) If a high-rise building has two or more owners, the owners may create, implement, maintain, amend, and update a single plan for that building on a collective basis or through the delegation of one owner for such purposes, or such owners may create, implement, maintain, amend, and update separate plans covering their respective portions of the building.

(Added Coun. J. 10-31-01, p. 71183, § 1; Amend Coun. J. 12-4-02, p. 99026, § 8.10)

### **13-78-050                      Required designated personnel**

- (a) Each plan for Category 1 buildings shall include the following required designated personnel:
  - (1) *Fire Safety Director ("FSD")*. The plan must designate a FSD. The FSD must be an employee of that building. The FSD shall obtain and maintain an emergency preparedness certificate, and shall provide said certificate for inspection upon request to personnel of the department of buildings, the office of emergency management and communications, the fire department and the department of police.
  - (2) *Deputy(s) FSD*. The plan must designate one or more deputies FSD to serve as required by Section 13-78-060 in the absence of the FSD. Each deputy FSD must be an employee of that building. Each deputy FSD shall obtain and maintain an emergency preparedness certificate, and shall provide said certificate for inspection upon request to personnel of the Department of Buildings, the Office of Emergency Management and Communications, the Fire Department, and the Department of Police.
  - (3) *Building Evacuation Supervisor*. The plan must designate a building evacuation supervisor. In a residential building, the building evacuation supervisor may be a resident of that building. In a non-residential building, the building evacuation supervisor must be an employee of that building.
  - (4) *Fire Wardens*. The plan must designate fire wardens in sufficient numbers to carry out their duties as required by this chapter. In a residential building, some or all fire wardens may be residents of that building. In a non-residential building, some or all of the fire wardens may be employees of that building; provided, however, that if the owner does not wish to supply one or more fire wardens, then such fire wardens shall be supplied by building tenants, in numbers appropriate to tenant size.

- (5) *Emergency Evacuation Team.* The plan must designate an emergency evacuation team. In a residential building, the emergency evacuation team may include or be composed of residents of that building. In a non-residential building, the Emergency Evacuation Team may include or be composed of employees of that building; provided, however, that if the owner does not wish to supply one or more members of an emergency evacuation team. Then such members shall be supplied by building tenants, in numbers proportionate to tenant size.
- (b) Each plan for Category 2 buildings, and for Category 3 and Category 4 buildings, which are also of occupancy classification C (Assembly) or D (Open-Air Assembly unit), shall include the same designated personnel as required for Category 1 buildings, with the exception of fire wardens, who are encouraged but not mandatory.
- (c) Each plan for Category 3 buildings, which are not of occupancy classification C or D, shall include the following required personnel:
- (1) *Fire Safety Director ("FSD").* The plan must designate a FSD. In a residential building, the FSD may be an employee or resident of that building, and in a non-residential building, the FSD may be an employee or tenant of that building. The FSD shall obtain and maintain an emergency preparedness certificate, and shall provide said certificate for inspection upon request to personnel of the department of buildings, the office of emergency management and communications, the fire department and the department of police.
- (2) *Deputy(s) FSD* The plan must designate as many deputies FSD as necessary to serve as required by Section 13-78-060 in the absence of the FSD. In a residential building, one or more deputies FSD may be residents of that building, and in a non-residential building, one or more deputies FSD may be tenants of that building. Each deputy FSD shall obtain and maintain an emergency preparedness certificate, and shall provide said certificate for inspection upon request to personnel of the Department of Buildings, the Office of Emergency Management and Communications, the Fire Department, and the Department of Police.
- (d) Each plan for Category 4 buildings which are not of occupancy classification C or D shall include such designated personnel, in such capacities, as in the judgment of the owner are necessary to effectively carry out the purposes of the plan. A certified FSD and one or more certified deputies FSD are encouraged but not required.
- (e) Upon being certified, FSDs may provide the necessary training to enable deputies FSD and other designated personnel, except for other FSDs to become certified.
- (f) Whenever there is a change in personnel who are designated pursuant to this section, building management shall provide appropriate training to newly designated personnel to carry out their required duties.
- (g) The designated personnel required by this section may concurrently hold regular employment or be engaged in other capacities in addition to their duties required by this chapter. Provided, however, that an individual may serve in only one of the capacities designated by subsections (a) through (d) of this section at any given time.

- (h) For purposes of this section, the term “employee” shall include employees of an owner, property manager or contractor.

(Added Coun. J. 10-31-01, p. 71183, § 1; Amend Coun. J. 12-4-02, p. 99026, § 8.10)

### **13-78-060 Required designated personnel – On-site presence**

- (a) As used in this section, the phrase “if required” shall mean “if that particular category of designated personnel is required by the plan pursuant to Section 13-78-050.”

- (b) With regard to non-residential high-rise buildings which are of occupancy classification E (Business), F (Mercantile) or G (Industrial):

1. From 7:00 a.m. to 7:00 p.m., and also at any other time when more than 50 percent of the high-rise building’s regular occupants re present, the FSD or a deputy FSD, if required, shall be present on-site at the high-rise building. At such times, an emergency evacuation team, if required, shall also be present upon each occupied floor. At such times, a fire warden, if required, shall also be present upon each occupied floor; provided, however, that where a single occupied floor contains more that 25,000 square feet, one fire warden shall be present for each 25,000 square feet.
2. At all other times, if the FSD or a deputy is not present on-site, a building evacuation supervisor, if required, must be present on-site.

- (c) With regard to non-residential high-rise buildings which are of occupancy classification C (Assembly) or D (Open Air Assembly Unit):

1. At any time when more than 25 percent of the building’s staff and other employees are present and the occupancy of the building is at less that 20 percent of capacity, the FSD, deputy FSD, or building evacuation supervisor shall be present on-site at the building.
2. At any time when the occupancy of the building is at 20 percent of capacity or greater, the FSD or a Deputy FSD shall be present on-site at the building. At such times, an emergency evacuation team shall also be present on each occupied floor.

- (d) With regard to residential high-rise buildings:

1. From 7:00 p.m. to 7:00 a.m., the FSD or a deputy FSD, if required, shall be present on-site at the building.
2. At all other times, if the FSD or a deputy FSD is not present on-site, a building evacuation supervisor, if required, must be present on-site.

(Added Coun. J. 10-31-01, p. 71183, § 1)

**13-78-070****Required designated personnel – Duties**

The designated personnel required by Section 13-78-050 shall have, at a minimum, the following duties:

(a) The FSD and deputies FSD shall:

1. Occupy the building's fire command station in an emergency, conduct operations in an emergency evacuation, direct evacuation and report conditions, including the designated refuge or rescue locations of occupants who have identified the need for assistance, to first-arriving fire companies
2. Conduct monthly building safety inspections to detect hazards and impediments to egress
3. Design procedures for emergency evacuation and drills
4. Direct emergency evacuations and drills
5. Assign fire wardens, if required by the plan pursuant to Section 13-78-050 for each occupied floor
6. Assign emergency evacuation team(s), if required by the plan pursuant to Section 13-78-050, for each occupied floor

(b) The building evacuation supervisor shall:

Occupy the building's fire command station in an emergency if the FSD or a deputy FSD is not present, conduct operations including placement of a call to 911, direct evacuations, and report conditions to first-arriving fire companies.

(c) Fire wardens shall:

1. Know the locations of all exits leading from occupied areas and train as prescribed under the plan
2. Direct emergency evacuations and drills from their assigned floor in accordance with the plan.

(d) Emergency evacuation teams shall:

1. Know the location of all exits leading from occupied areas in accordance with the plan and as directed by a fire warden.
2. Lead emergency evacuations and drills from occupied areas in accordance with the plan and as directed by a fire warden.

(Added Coun. J. 10-31-01, p. 71183, § 1)

## **13-78-080 Minimum plan requirements**

The provisions of this section reflect minimum requirements which are not intended to restrict owners from implementing such additional measures as warranted.

- (a) Each plan shall contain a description of the actions all occupants should take in an emergency evacuation or drill during the regular business hours of the building and during non-regular business hours of the building. Each plan shall set out a procedure for an evacuation of five floors below and two floors above any emergency resulting from a fire on a certain floor, and shall also set out a procedure for a full evacuation of the building.
- (b) Each plan shall specify in detail the evacuation role and duties of the designated personnel required by Section 13-78-050, and shall state the names and in-house and wireless telephone and pager numbers for the FSD, deputies FSD, and building evacuation supervisor.
- (c) Each plan shall require the creation and posting, in all elevator lobbies, of the high-rise building's core floor plan, showing floor-by-floor corridors, stairways, evacuation routes, areas of rescue assistance and elevator lobbies. With respect to residential high-rise buildings, the core floor plan also shall be made available to each residential unit for posting inside the residential unit.
- (d) Each plan shall establish a fire command station in the building lobby or entrance level for operations management in an emergency by the FSD, deputy FSD, or for Category 4 buildings that have not designated an FSD or Deputy FSD, another appropriate person.
- (e) Each plan shall list the name and normal floor location of each regular occupant who has voluntarily self-identified that they need assistance and the type of assistance required to swiftly exit the high-rise building in case of an emergency. Each plan shall designate and describe the location of one or more places of refuge or rescue, if any, for all such occupants in an emergency. As to each such occupant, the plan shall provide for an individual who is one of the personnel designated pursuant to Section 13-78-050 to assist such occupant during an evacuation or safety drill.
- (f) Each plan shall be filed: (1) in the office of the high-rise building; (2) at the security desk; and (3) in the vicinity of the fireman's elevator recall key or life safety panel or, as to residential buildings, in an identifiable location in the fire pump room. The plan shall be made available to building staff and to the designated personnel required by Section 13-78-050 at all times.

(Added Coun. J. 10-31-01, p. 71183, § 1)

**13-78-090****Safety drills**

- (a) As to Category 1 high-rise buildings and all high-rise buildings which are of occupancy classification C (Assembly), or D (Open Air Assembly Unit), each plan shall require safety drills to be carried out under the direction of the FSD, not less frequently than twice a year. With regard to non-residential buildings, all employees, tenants and other occupants shall participate in such safety drills. With regard to residential buildings, all employees shall participate, and all residents shall be encouraged to participate. Drills may occur on a floor-by-floor basis, and a drill may conclude when all participating occupants have fully entered and have begun using the designated stairwells. On an annual basis, the owner shall file with the fire commissioner an affidavit certifying that at least two safety drills have taken place on all occupied floors during the past year.
- (b) As to Category 2 high-rise buildings, which are not of occupancy classification C or D, the requirements of subsection (a) shall apply, except that safety drills shall be carried out no less frequently than once a year.
- (c) As to Category 3 & Category 4 high-rise buildings, which are not of occupancy classification C or D, safety drills occurring with such frequency as will fully educate building occupants as to proper emergency procedure are encouraged but not required.

(Added Coun. J. 10-31-01, p. 71183, § 1)

**13-78-100****Distribution of information**

- (a) Non-residential high-rise buildings. The plan shall be distributed to all tenants of the building, who shall be responsible for distributing it or making it available to their employees, including, upon request, in alternative formats (e.g., Braille, large print and audio tape). Each plan shall require creation of a clear written description of the actions that building occupants should take in an emergency. A copy of this description shall be provided to every new tenant when that tenant moves into the high-rise building, and shall be further provided annually to every tenant. The tenant shall be responsible for distributing this description to all that tenant's employees.
- (b) Residential high-rise buildings. Each plan shall require creation of a clear written description of the actions that building occupants should take in an emergency. A copy of this description shall be provided to every new resident when that resident moves into the high-rise building, and shall be further provided annually to every residential unit. This description shall be available in alternative formats upon request (e.g., Braille, large print and audio tape).

(Added Coun. J. 10-31-01, p. 71183, § 1)

- (a) This chapter shall be enforceable by the department of buildings, the office of emergency management, and communications and the fire department.
- (b) The department of buildings, the office of emergency management and communications, the fire department and the mayor's office for people with disabilities are authorized to jointly promulgate rules and regulations to further effectuate the purposes of this chapter.
- (c) Any violation of any provision of this chapter shall subject the owner, tenant, or other responsible party to a penalty of not less than \$500.00 and not greater than \$10,000.00 for each separate and distinct offense. Each day that such violation continues shall be considered a separate and distinct offense.

(Added Coun. J. 10-31-01, p. 71183, § 1; Amend Coun. J. 5-1-02, p. 84027, § 3; Amend Coun. J. J. 12-4-02, p. 99026, § 8.10)

## **Chapter 13-160 (EXIT REQUIREMENTS)**

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### **13-160-010 General provisions.**

Every building or structure or part thereof, hereafter erected shall comply with the requirements of this chapter pertaining to exits. When there are special requirements as provided in Chapters 13-64, 13-68 and 13-80 through 13-112, inclusive, for specific occupancies which differ from the general requirements of this chapter, such special requirements shall take precedence.

(Prior code § 67-1)

### **13-160-020 Definitions.**

- (a) Exit. An "exit" is a means of egress from a building or structure including outside exits, vertical exits, horizontal exits and exit connections as herein defined.
- (b) Vertical Exit. A "vertical exit" is a means of exit used for ascension or descension between two or more levels including stairways, smoke-proof towers, ramps, escalators and fire escapes.
- (c) "Horizontal exit" means a protected opening through a two-hour fire partition through or over or around a fire wall or a bridge connecting two buildings.
- (d) "Outside exit" means an exit from the building to a public way, to an open area leading to a public way, or to an enclosed fire-resistive passage leading to a public way.
- (e) "Exit connections" means and includes doorways, aisles, corridors, foyers, lobbies and other horizontal means of exit leading to a vertical exit, a horizontal exit or an outside exit.
- (f) "Flight" means a series of steps between successive landings or between a landing and a floor.
- (g) "Landing" means a platform between two flights of stairs.
- (h) "Newel post" means an upright post at the end of a stair railing.
- (i) "Ramp" means an inclined passageway connecting two levels.
- (j) "Riser" means the vertical distance of a step between two successive treads or between a tread and a landing or floor.
- (k) "Stairways" means one or more flights of stairs with connecting landings.
  - (1) "Enclosed stairway" means a stairway separated by fire-resistive partitions from the rest of the building.
  - (2) "Exterior stairway" means a stairway on the outside of a building or structure.
  - (3) "Interior stairway" means a stairway within a building or structure.
- (l) "Tread" means the horizontal distance between two successive risers in a flight.

(Prior code § 67-2)

### **13-160-030 Exit types--Requirements.**

All required means of exit shall be continuous means of egress to the outside and shall consist of vertical exits, horizontal exits and outside exits together with the exit connections leading thereto, and shall be arranged, located and constructed as required in this chapter.

(Prior code § 67-3)

### **13-160-040 Exit types--Above or below grade.**

Exits from a story above or below grade shall consist of interior stairways except as otherwise required in this section.

- (a) Smoke-proof Towers. A smoke-proof tower may be used in lieu of any required interior stairway. At least one smoke-proof tower shall be provided in every building, having a height exceeding 264 feet.
- (b) Horizontal Exits. A horizontal exit may be used in lieu of an interior stairway when there is not less than one interior stairway or outside exit in each fire area connected by the horizontal exit, provided that no greater than 50 percent of the exits in any fire area shall be horizontal exits.
- (c) Escalators. An escalator may be used in lieu of one of three required interior stairways.
- (d) Exterior Stairways. Exterior stairways may be used in lieu of not more than 50 percent of the required interior stairways; provided, however, that the vertical distance from grade to the highest floor served by an exterior stairway shall not exceed 30 feet.
- (e) Ramps. Ramps complying with the requirements of Section 13-160-430 may be used in lieu of any required stairway.
- (f) Slide Pole. Slide poles as permitted by Section 13-160-050.
- (g) Elevators shall be provided in all new public buildings with emergency hold open buttons and the emergency communications no higher than four feet from the floor, except in buildings which provide ramps for the handicapped as noted in Section 13-160-470 of this Code.
- (h) Other means of exit such as collapsible escape ladders or other devices, may be permitted in unusual circumstances and shall comply with such requirements as the executive director shall prescribe.

(Prior code § 67-3.1; Amend Coun. J. 4-12-91, p. 32360; Amend Coun. J. 3-5-03, p. 104990, § 34)

### **13-160-050 Minimum number of exits.**

There shall be not less than two exits from every building, floor, space or room, except that one exit may be permitted from any room or space under the conditions outlined in subsection (a) through (b) of this section; and one exit may be permitted from a floor under the conditions outlined in subsections (c) through (o) of this section.

- (a) In all occupancies except hazardous use units, one exit shall be permitted from any room or space designed or used for an occupancy of not more than 50 persons and having an area not exceeding 1,200 square feet; or when used for business, mercantile, industrial and storage uses not exceeding 4,000 square feet provided the travel distance from the exit door to the most remote point in the room or space does not exceed 75 feet, or 115 feet if equipped throughout with a standard automatic sprinkler system as defined in Chapter 15-16 of this Code.

- (b) In all occupancies, one exit shall be permitted from any room or space having an area not exceeding 2,000 square feet and used exclusively for storage purposes with only incidental human occupancy.
- (c) In single-family dwellings and townhouses, one exit shall be permitted from any floor not more than one story above or below grade; provided that the area of such floor shall not exceed 1,500 square feet.
- (d) In multiple dwellings, one exit serving one family only shall be permitted from the first or second story, and one exit shall be permitted from a basement space provided that the area of such floor or basement shall not exceed 800 square feet.
- (e) In multiple dwellings, one exit shall be permitted to a public corridor from a dwelling unit when the travel distance to the most remote door within the unit does not exceed 35 feet and 55 feet from the most remote point of the dwelling unit. Two corridor exit doors are required when these distances are exceeded.
  - (1) When the dwelling unit is equipped with approved smoke detectors and/or automatic sprinklers the above travel distances may be increased to 40 feet and 60 feet respectively.
- (f) In multiple dwellings two stories high, except in buildings of Type III-C, IV-A or IV-B construction, one inside stairway from the second floor shall be permitted under the following conditions:
  - (1) The second floor shall have an area not exceeding 4,000 square feet and shall contain not more than four dwelling units.
  - (2) The stairway and public corridors leading thereto shall be enclosed by walls providing fire resistance of not less than one hour, and all openings in such walls shall be protected with doors having fire resistance not less than a solid wood door one and three-fourths inches thick.
  - (3) The stairway shall lead directly to an outside exit at grade.
  - (4) The stairs shall be constructed of noncombustible materials.
  - (5) The distance to the stairway from the exit door of any dwelling unit shall not exceed 20 feet.
- (g) In multiple dwellings of Types I-A, I-B and I-C construction not more than four stories high, one stairway shall be permitted under the following conditions:
  - (1) No floor served by such stairway shall have an area exceeding 4,000 square feet nor shall contain more than four dwelling units.
  - (2) The stairway shall be enclosed by walls providing fire resistance of not less than two hours, and all openings in such walls shall be protected with self-closing Class B fire doors.
  - (3) The stairway shall lead directly to an outside exit at grade.
  - (4) The stairway shall extend to the roof from which there shall be access to an adjoining roof of another building of the same occupancy, height and construction type and having a similar stairway arrangement.

- (5) The distance to the stairway from the exit door of any dwelling unit shall not exceed 20 feet.
- (h) In multiple dwellings and business units of Types I-A, I-B or I-C construction, not more than eight stories in height, one smoke-proof tower shall be permitted under the following conditions:
  - (1) No floor above the first floor shall have an area exceeding 6,000 square feet nor shall contain more than eight dwelling units.
  - (2) Public corridors leading to the smoke-proof tower shall be enclosed by walls providing fire resistance of not less than two hours, and all openings in such walls shall be protected with Class C fire doors.
- (i) In fire stations, one inside stairway shall be permitted from the second floor where there are not less than two slide poles in addition thereto.
- (j) In all public buildings there shall be no less than one primary entrance or exit for the handicapped from the property line to the building, accessible to, and usable by, individuals in wheel chairs, or those with major mobility limitations.
- (k) In all group homes there shall be two exits from each floor.
- (l) In intermediate care facilities for the developmentally disabled --15 or less, every floor containing areas or rooms used by residents shall have at least two exits remote from each other. At least one means of egress shall consist of an interior stairway, an enclosed outside stairway, or a horizontal exit.
- (m) In multiple and single-family dwellings of any construction type not over three stories in height, units having an area not over 1,500 square feet on the third floor and at least one interior stair serving exclusively that unit leading from the third floor to an exterior exit, may substitute for the second exit from the third floor of one of the following means of escape:
  - (1) A continuous exterior deck linking three or more units at the third floor level, with at least one hinged glazed door from each unit to the deck, provided such door has a glass light immediately above the lock rail, made of one or more panes of glass not thicker than double-strength glass, and the edge of the glass light is not further than nine inches from any locking devices in the door.
  - (2) A stair from each unit leading to the building roof through a penthouse and hinged door, provided the building consists of at least three units and each hinged penthouse door contains a glass light constructed as in paragraph (1) above. In the event that roof decks are provided for more than one-third of the units, an exterior stair or protected interior stair shall be provided from the roof to grade.
  - (3) An approved automatic sprinkler system complying with one of the following National Fire Prevention Association Standards: N.F.P.A. 13, 1994 Edition; N.F.P.A. 13R, 1991 Edition; or N.F.P.A. 13D, 1991 Edition.
- (n) In townhouse dwellings of IIIB construction or better up to four stories in height, units having an area not over 1,500 square feet on the highest story and having at least one interior stair serving exclusively that unit and leading from the highest story to an exterior exit, may substitute for the second exit required from the third or fourth stories a continuous exterior deck linking three or more units at the highest story, provided that:
  - (1) A clear unobstructed 3 foot wide path is reserved for egress to a stair leading directly to an outside exit at grade;

- (2) Each habitable room on the third and fourth floor is provided with at least one outside window having a sill height not higher than 44 inches above the finished floor and an operable sash with a clear opening of not less than 24 inches horizontally or 36 inches vertically and a minimum area of six square feet
- (3) All bedrooms are provided with 1 3/4 inch thick solid core doors and with solid 1 3/4 inch rabbetted door jambs.
- (o) In single-family dwellings and in two-unit multi-family dwellings not over three stories, the second exit from the third floor of a unit may be waived if:
  - (1) The third floor area of that unit is not over 800 square feet
  - (2) In addition to the interior stair, a second exit is provided from the second floor to an exterior porch or deck leading to finish grade
  - (3) Said porch or deck is not higher than 12 feet above finish grade
  - (4) Each habitable room on the third floor is provided with at least one outside operable window having a sill height not higher than 44 inches above the finished floor and a minimum clear opening of either 24 inches horizontally or 36 inches vertically, and a minimum area of six square feet
  - (5) All bedrooms are provided with 1 3/4 inch thick solid core doors and with 1 3/4 solid inch rabbetted door jambs
  - (6) Either the interior stair termination at the third floor is enclosed with a solid core door set in solid wood jambs as described in subsection (o)(5) of this section, or a balcony is provided at the third level with a minimum depth of three feet perpendicular to the exterior building wall.

(Prior code § 67-4; Amend Coun. J. 12-21-84, p. 12140; Amend Coun. J. 10-2-95, p. 8040; Amend Coun. J. 10-28-97, p. 54731)

**13-160-060 Arrangement and location of exits.**

The arrangement and location of exits shall comply with the provisions of Sections 13-160-070 through 13-160-100, inclusive.

(Prior code § 67-5)

**13-160-070 Obstructions prohibited.**

There shall be no obstruction in any exitway that may hamper travel and evacuation. This section does not prohibit the locking of a gate in a fence that secures a residential building, so long as the locked gate does not prevent egress from the building.

(Prior code § 67-5.1; Amend Coun. J. 1-12-94, p. 44841)

**13-160-080 Exits--Distance requirements.**

Where more than one means of exit is required from any room, space or floor of a building, they shall be arranged remote from one another so as to minimize the chance of both exits being blocked by smoke or fire.

(Prior code § 67-5.2)

**13-160-090 Exits in certain units to discharge in line of travel.**

Vertical exits in institutional and assembly units shall be arranged as to discharge occupants at grade level in the direction of travel to the outside.

(Prior code § 67-5.3)

**13-160-100 Continuous means of exit required.**

Required exits in a building or structure shall provide continuous and uninterrupted means of egress from one story to another and to an outside exit.

(Prior code § 67-5.4)

**13-160-110 Travel distance to exits.**

The travel distance to exits shall comply with the provisions of Sections 13-160-120 to 13-160-160, inclusive.  
(Prior code § 67-6)

**13-160-120 Travel distance--Defined.**

Travel distance is defined as the distance from a point in a floor of a building to a vertical exit, a horizontal exit or an outside exit measured along the line of travel, except that in one-story low or moderate hazard industrial and storage units, travel distance may be considered as the distance from any point to an aisle, passage or other exit connection.

(Prior code § 67-6.1)

**13-160-130 Travel distance--Measurement.**

Travel distance shall be measured from the most remote point in any floor except as follows:

When a floor of a residential or business unit is subdivided and contains a public corridor enclosed by walls providing fire resistance of not less than one hour, travel distance may be measured from a door leading from a room or space to such corridor. In no event, however, shall the travel distance from the most remote point in a floor exceed 150 percent of the maximum distance required in Sections 13-160-140 and 13-160-150.

(Prior code § 67-6.2)

**13-160-140 Maximum travel distances.**

Except as provided in Section 13-160-150, travel distances shall not exceed the following:

	<b>In Feet</b>
Residential units	100
Institutional units	100
Assembly units (except open plan schools)	
grade floors	150
other floors	150
Exhibition areas	150
Open plan schools (all floors)	100
Open air assembly units	150
Business units	150
Mercantile units	150
Industrial units	150
Storage units	150
Hazardous use units	75

(Prior code § 67-6.3)

**13-160-150 Maximum travel distances--Permitted increases.**

- (a) In a building equipped throughout with a standard sprinkler system as defined in Chapter 15-16 of this Code, the maximum travel distance in open plan schools, business, mercantile, industrial, exhibition areas, or storage units may be 50 percent greater than that established in Section 13-160-140 of this Code.
- (b) When the automatic sprinkler system described in Section 13-160-150(a) of this Code is supervised and provided with a two-source water supply, one of which shall be provided with an emergency power supply, the maximum travel distance in open plan schools, business, mercantile, industrial, assembly (including exhibition areas) and storage units, may be 100 percent greater than that established in Section 13-160-140 of this Code. If travel distance is increased pursuant to this section, an increase in exit capacity under Section 13-160-210(d) shall not be permitted.

(Prior code § 67-6.4; Amend Coun. J. 11-6-85, p. 21656)

**13-160-160 Maximum distance from end of corridor.**

The maximum travel distance to an exit from the end of a corridor shall be not more than 50 percent of the travel distance permitted in Sections 13-160-140 and 13-160-150, except that in Type I schools, such distance shall not exceed 20 feet, and in the case of nursing homes and sheltered care facilities as defined in Chapter 4-96 of this Code, and as further defined by the rules and regulations promulgated by the board of health under the authority of Section 4-96-130 of this Code, there shall be an exit at the end of each corridor.

(Prior code § 67-6.5; Amend Coun. J. 6-14-95, p. 2841)

**13-160-170 Width of exits.**

The width of exits shall comply with the provisions of Sections 13-160-180 to 13-160-220, inclusive.

(Prior code § 67-7)

**13-160-180 Occupancy content.**

Exit facilities shall be provided for the normal number of persons for which a floor area or part thereof is designed. In no case, however, shall the occupancy content be computed at a rate less than that established in Chapter 13-56.

(Prior code § 67-7.1)

**13-160-190 Unit of exit width.**

The unit of exit width, used as a measure of exit capacity, shall be 22 inches. Twelve inches clear width added to one or more units shall be considered as one-half unit of exit width.

(Prior code § 67-7.2)

### **13-160-200 Measurement of width.**

- (a) The width of doors shall be taken as the nominal width of the door leaf. The reduction of clear width of doorway opening resulting from door stops and thickness of door leaf when open shall not exceed two inches for each unit of exit width.
- (b) The width of stairs shall be the clear width between walls, railings or newel posts. Handrails may project not more than four inches on each side into the required width. When doors open onto a stair landing, 75 percent of the required exit width shall be maintained beyond the edge of such door when opened in any position.
- (c) The width of corridors shall be the clear, unobstructed width. Doors opening into a required exit corridor shall not restrict the required width when opened in any position.

(Prior code § 67-7.3)

### **13-160-210 Capacity of exits.**

- (a) Occupants per Unit Exit Width. The capacity of exits, except in assembly units and in open air assembly units, shall be computed as follows:
  - (1) Stairs and other vertical exits except smoke-proof towers: 40 persons per unit of exit width
  - (2) Smoke-proof towers: 60 persons per unit of exit width
  - (3) Doorways, outside exits, horizontal exits and exit connections: 60 persons per unit of exit width
- (b) Assembly Units. In assembly units the capacity of exits shall comply with the requirements of Chapter 13-84.
- (c) Open Air Assembly Units. In open air assembly units the capacity of exits shall comply with the requirements of Chapter 13-88.
- (d) Automatic Sprinklers. In buildings equipped throughout with an approved system of automatic sprinklers, the capacity of exits as established in this section and Section 13-84-180 (b) and (c) may be increased 50 percent.
- (e) Vertical Exits. The total width of vertical exits at any point shall be based on the requirements of the floor having the largest occupancy content which is served by such vertical exits. The required width of vertical exits serving more than one floor shall not be cumulative except as required by the provisions of Chapter 13-84 for assembly units and Chapter 13-88 for open air assembly units. Under no circumstances shall stairways decrease in width in the line of travel.
- (f) Grade Floor Exits. The width of outside exits at grade shall be determined by the required width of vertical exits discharging on the grade floor plus the exit width required for the grade floor occupancy content.
- (g) Mezzanine Floors. The occupancy content of a floor shall include the occupancy content of all mezzanine floors discharging thereon.

(Prior code § 67-7.4; Amend Coun. J. 11-6-85, p. 21656)

### **13-160-220 Minimum width of exits.**

The width of required exits shall comply with the requirements of Section 13-160-210 as to capacity, but in no case shall such width be less than the minimum widths required in this section.

- (a) Doors. All doors required as exits shall be not less than 36 inches wide with the following exceptions:
  - (1) In all occupancies, except in public buildings, exit doors from rooms or spaces having a capacity not exceeding 20 persons shall be not less than 28 inches in width.
  - (2) In residential units, exit doors serving only one dwelling unit shall be not less than 32 inches in width.
  - (3) In institutional units, exit doors from rooms and spaces serving bedridden patients shall be not less than 44 inches in width.
  - (4) To provide accessibility to the handicapped in all public buildings, doors to all rooms shall be a minimum width of 30 inches.
  - (5) In nursing homes and sheltered care facilities, all required exterior exit doors used in connection with exits from the building shall not be less than 44 inches in width.  
In existing licensed institutional homes that upgrade to a nursing home classification, the required exterior exit doors shall not be less than 36 inches in width.
  - (6) In nursing homes, hospitals, and sheltered care facilities, doors from patient bedrooms shall be not less than 44 inches in width. The doors shall not project into the corridor and shall be equipped with a positive latch or a roller latch. The roller latch shall operate at a minimum applied force of eight pounds.
  - (7) In nursing homes, hospitals, and sheltered care facilities, all exit door openings in stairwells shall have a minimum width of 44 inches, with an observation panel of standard clear wire glass one-quarter inch thick having exposed area not exceeding 100 square inches and a width or height not exceeding 12 inches.
  - (8) In nursing homes and sheltered care facilities toilet rooms other than employees and public shall have a minimum door width of 3 feet and the door shall swing out.
  - (9) In intermediate care facilities for the developmentally disabled --15 or less, all doors required as exterior exits shall have a minimum width of three feet and shall swing out.
- (b) Stairs and Corridors. All stairs and corridors required as exits shall be not less than 44 inches in width with the following exceptions:
  - (1) In all occupancies except nursing homes, hospitals and sheltered care facilities, stairs and corridors in buildings with a total occupancy of 50 persons or less above the grade level, as defined in Section 13-4-010, shall not be less than 36 inches wide.
  - (2) Within both single-family (A1) and multiple dwelling (A2) residential units, stairs and corridors serving only one dwelling unit shall be not less than 36 inches in width.
- (c) In open plan schools, all egress paths leading from individual teaching areas to all exits shall be not less than 60 inches in width.

- (d) The minimum width of a mall shall be 30'-0". A minimum clearance of ten feet shall be maintained from the furthest projection on a store front to any obstruction in the mall.
  - (1) Walls above ceilings between the covered mall and the tenant spaces shall be of noncombustible materials. Store fronts of tenant spaces shall be open or of noncombustible materials.
- (e) Mall levels above the lowest level existing on grade shall have floor openings with a minimum dimension of 12 feet clear. The opening in each floor in the upper levels shall be evenly distributed throughout, shall contain a minimum of 35 percent of that mall floor and shall be no less than 20 times the vent area required for the greatest mall area.

(Prior code § 67-7.5; Amend Coun. J. 12-21-84, p. 12140; Amend Coun. J. 10-28-97, p. 54731)

### **13-160-230 Outside exits.**

- (a) All outside exits at grade floor level shall lead to a public way directly or by way of a yard, court, or fire-resistive passageway enclosed with walls, floors and ceiling providing fire-resistance of not less than two hours. The width of such yards, courts or passageways shall be not less than the width of any exit leading thereto. When a yard, court or passageway serves more than one exit, the width shall be increased cumulatively in the direction of exit travel.
- (b) Where the grade floor is not more than six feet above the ground level outside the building access from an outside exit to a public way, yard, or court may be by way of an outside platform having a dimension in the direction of travel of not less than four feet and connecting to grade level with outside steps having treads, risers, and railings required in Section 13-160-290. In determining requirements for outside exits, terraces extending not less than 20 feet from a building wall may be considered as constituting grade.

(Prior code § 67-8)

### **13-160-240 Doors.**

All doors required as a means of exit shall comply with the provisions of Sections 13-160-250 to 13-160-270, inclusive.

(Prior code § 67-9)

### **13-160-250 Swing of doors--Exceptions.**

All doors required as exit doors shall swing in the direction of exit travel with the following exceptions:

- (a) In residential units, doors serving one dwelling unit, including horizontal sliding doors that can be readily opened without the use of a key from the side from which egress is made.
- (b) In residential, business, and mercantile units, outside exit doors serving not more than 50 persons
- (c) In Type I schools, doors to corridors from classrooms having a capacity not exceeding 50 persons, provided that there are direct exits to the outside from such classrooms

- (d) In business units, doors to corridors from offices having a capacity not exceeding 100 persons
- (e) In all other occupancies, except hazardous use units, doors to corridors from rooms having a capacity not exceeding 50 persons

Doors, when open, shall not project into a public way:

- (f) In nursing homes and sheltered care facilities, doors that open directly to a corridor from toilet rooms shall not project into the corridor;
- (g) In intermediate care facilities for the developmentally disabled -- 15 or less, other than exterior exit doors;
- (h) In self-service storage facilities not exceeding 300 square feet in area with only incidental human occupancy, a roll-up overhead or sliding door readily openable from the inside without a key or special knowledge may be used as the means of egress subject to the following conditions:
  - (1) No electrical outlets shall be provided in the storage spaces
  - (2) Electrical lights provided within the spaces shall be activated by an interlocking switch that turns off the light when the door is in a closed position
  - (3) No flammable liquids, whether in containers, equipment or machinery shall be stored in the spaces
  - (4) A visible and durable sign shall be conspicuously posted adjacent to each door which contains the following legend: "Door Shall Remain Open During Occupancy. Storage Space May Not Be Used As Work Area."

(Prior code § 67-9.1; Amend Coun. J. 12-21-84, p. 12140; Amend Coun. J. 6-28-89, p. 2598; Amend Coun. J. 10-28-97, p. 54731)

### **13-160-260 Hardware.**

- (a) All doors used in connection with exits shall be so arranged as to be readily opened without the use of a key from the side from which egress is made.
- (b) In assembly units, exit doors serving more than 200 persons shall be equipped with approved latches or bolts which release under a pressure of 15 pounds.
- (c) In rooms of institutional units used as jails or similar places of detention for more than ten persons, approved releasing devices with remote control shall be provided for emergency use.
- (d) Doors in public buildings opening into mechanical or electrical equipment rooms, stairs or entrances to vehicular traffic areas, shall have knurled handles to alert the blind.
- (e) In nursing homes, hospitals, day care centers as defined in chapter 4-72 that operate between the hours of 9:00 p.m. and 6:00 a.m., sheltered care facilities, and intermediate care facilities for the developmentally disabled -- 15 or less, required exterior exit doors and doors from stairways leading to main exit level shall be equipped with approved latches, bolts, or panic hardware which release under pressure of 15 pounds.

(Prior code § 67-9.2; Amend Coun. J. 12-21-84, p. 12140; Amend Coun. J. 11-19-97, p. 57850)

### 13-160-261 External exit doors--Electronic locking system.

- (a) In exhibition facilities consisting of at least 500,000 square feet in area, during periods of incidental human occupancy, as defined in subsection (c) of this section, external exit doors may be secured by an electronic locking system equipped with approved automatic releasing devices that shall unlock all such exit doors upon:
  - (1) The activation of an approved automatic sprinkler system installed in accordance with Section 15-16-010
  - (2) The activation of any one heat detector or any two smoke detectors of an approved fire alarm system installed in accordance with Section 15-16-110
  - (3) A loss of power controlling the locking system or a locking mechanism.
- (b) No electronic locking system shall be installed or operated without the prior approval of the deputy commissioner in charge of the bureau of fire prevention. No approval shall be given until the plans for such system have been reviewed and the operation of such system tested by representatives of the bureau of fire prevention. The deputy commissioner shall determine, based on the size of the facility and configuration of available exit doors, the number and location of doors which shall not be included in the electronic locking system. The deputy commissioner shall also determine the appropriate markings for such 24-hour exit doors which may include, but shall not be limited to, a flashing rotating beacon light which is automatically activated when the electronic locking mechanism is engaged and a sign indicating "Fire Exit" posted in a highly visible space near the rotating beacon light.
- (c) No electronic locking device as described in subsection (a) herein shall be engaged at any time when the exhibition facility is open to the public or when exhibition workers are present. The electronic locking device may be engaged only during permitted periods when the facility contains such number of persons as to be deemed at a level of incidental human occupancy. For the purposes of this section, "incidental human occupancy" means the occupancy of an exhibition facility of 500,000 square feet or greater in an area by a minimal number of essential personnel, and in no event more than 50 persons, including such number of special fire guards as are required pursuant to Section 15-4-640.
- (d) The permitted period during which an electronic door locking system may be engaged shall begin no sooner than one hour after the facility has become incidentally occupied and shall terminate no later than one hour before the facility ceases to be incidentally occupied. The owner, operator, or person in control of such facility shall maintain daily records indicating the period during which the electronic locking device was engaged. Such records shall be subject to the inspection of employees of the bureau of fire prevention during all hours of normal operation.

(Added. Coun. J. 6-12-91, p. 1642)

### 13-160-269 Electromagnetic locking devices.

- (a) Electromagnetic Locking Devices. In buildings classified as B--Institutional, C--Assembly, E--Business, F--Mercantile, G--Industrial, H--Storage and all hotels in A2--Multiple Dwellings protected throughout by an approved supervised automatic fire detection system or an approved supervised automatic sprinkler system, doors as a means of egress may be equipped with approved, listed electromagnetic locking devices that shall unlock in accordance with the following:
- (1) All electromagnetic locking devices within a building shall unlock immediately upon the actuation of the approved supervised automatic fire detection system or the approved supervised automatic sprinkler system.
  - (2) All electromagnetic locking devices within a building shall unlock immediately upon a trouble signal or abnormal condition in a supervisory circuit of the approved supervised automatic fire detection system or approved supervised automatic sprinkler system in ground fault or other condition rendering the system partially or completely inoperative. All electromagnetic locking devices shall remain unlocked until the required fire alarm or sprinkler system is restored to normal operation.
  - (3) All electromagnetic locking devices within a building shall unlock immediately upon loss of electrical power controlling the electromagnetic locking devices.
  - (4) All electromagnetic locking devices within a building shall unlock immediately upon loss of normal electrical power of the building.
  - (5) All electromagnetic locking devices within a building shall unlock immediately upon activation of a manually operated signal switching device located in a required central control station on the premises. The manually operated signal switching device shall be clearly and permanently identified as to its function and shall be readily accessible to qualified building personnel at all times while the building is occupied. Nothing in this paragraph shall prohibit the installation of more than one manually operated signal switching device in any building.
  - (6) Individual electromagnetic locking devices shall unlock upon the initiation of an automatic irreversible process which will release the electromagnetic locking device within 15 seconds when a force of not more than 15 pounds is applied for one second to the release device; the electromagnetic locking device shall not relock until the door has been opened and returned to the closed position no less than 30 seconds. Any reopening of the door before the end of the 30 second relocking cycle shall restart the 30 second relocking cycle.
  - (7) Any attempt to exit which exceeds one second shall render the door openable as described herein and shall not be field adjustable. The time delay (15 seconds) and the minimum relocking cycle (30 seconds) shall not be field adjustable. The electromagnetic locking device shall contain no moving parts.
  - (8) The operation of the release device and the subsequent initiation of the irreversible unlocking process shall activate an audible alarm in the vicinity of the door.

- (9) A durable sign having block letters which are one inch in height and 1/8 in width shall be permanently affixed on the door above and within 12 inches of the release device stating: "PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS."
- (b) Multiple Classification/Mixed Use Buildings. Special locking arrangements shall be permitted in buildings which consist of multiple classifications of those listed in subsection (a) of this section. Special locking arrangements shall not be permitted in buildings which consist, in whole or part, of any classification not listed in subsection (a) of this section.
- (c) Release Devices. The release device referred to in subsections (a)(5) and (a)(7) of this section shall consist of conventional types of hardware, whereby the door is released by turning a knob or handle, or pushing against a panic bar. Once the release device is activated manually, the door must unlock within 15 seconds.
- (d) Electrical Requirements. Wiring for electromagnetic locking devices shall not occupy the same raceways or enclosures as wiring for required life safety systems, including required fire detection systems and exit/emergency lighting and power systems. Wiring for electromagnetic locking devices may occupy the same raceways and enclosures as "normal" lighting and power systems within a building, or may be installed in separate, dedicated raceways and enclosures. In addition to the requirements of this section, all electrical wiring and equipment installations shall conform to the requirements provided in Title 14 of this Code.
- Exception: Wiring for electromagnetic locking devices may occupy the same enclosure as required fire detection and sprinkler system auxiliary contact and relay devices upon activation of either the fire detection or sprinkler systems; such auxiliary contacts and relays shall not interfere with the normal operation of any required fire detection system or automatic sprinkler system.
- (e) Approval. Special locking arrangement incorporating the use of electromagnetic locking devices shall be installed or utilized with the approval of the executive director and the deputy commissioner in charge of the fire prevention bureau whose duty it shall be to insure compliance with fire prevention provisions.

(Added. Coun. J. 12-15-93, p. 43930; Amend 8-2-95, p. 5544; Corrected. 9-13-95, p. 7562; Amend Coun. J. 3-5-03, p. 104990, § 34)

### **13-160-270 Revolving doors.**

Revolving doors may be used as required exits in residential, business and mercantile units under the following conditions:

- (a) Revolving doors shall be of an approved type.
- (b) Revolving doors shall be used only as outside exits at grades.
- (c) Revolving doors shall constitute not more than 50 percent of required outside exits.

(Prior code § 67-9.3)

### **13-160-280 Entrance and vestibule doors for handicapped.**

Entrance and vestibule doors for handicapped as required by Section 13-160-050(j) of this Code, in public buildings located within the route of travel, shall, in addition to complying with other laws and ordinances, comply with the following regulations:

- (a) There shall be a clear level space of at least 3 feet when said doors are in 90 degree open position. Vestibules shall have a minimum width of 4 feet, 6 inches.
- (b) Minimum single door width shall be 3 feet, zero inches in width.
- (c) The manual pull or push on a door shall not exceed 10 pounds in order to operate the door.

(Prior code § 67-9.4)

### **13-160-290 Stairways.**

All stairways required as exits shall comply with the provisions of Sections 13-160-300 to 13-160-350, inclusive.

(Prior code § 67-10)

### **13-160-300 Stairways--Treads and risers.**

- (a) In institutional and assembly units the maximum height of a riser shall be 7 and one-half inches and the minimum width of a tread, exclusive of nosing, shall be ten inches.
- (b) In other occupancies the maximum height of a riser shall be 8 inches, and the minimum width of a tread, exclusive of nosing, shall be 9 inches. The width of a tread, including nosing, shall be not less than 10 inches.
- (c) The height of two risers plus the width of one tread shall equal not less than 24 inches nor more than 27 inches.
- (d) Winders shall not be permitted in stairs required as exits except in single-family and two-family dwellings. The width of a tread of a winder measured at a distance of 18 inches from the inside railing shall be not less than 9 inches nor less than the treads of the flight below or above the winding section.

(Prior code § 67-10.1)

### **13-160-310 Stairways--Landings.**

- (a) The maximum vertical rise of a flight between floors, between landings or between a floor and a landing shall not exceed nine feet in assembly units nor 12 feet in all other occupancies.
- (b) The length of a landing in the direction of travel shall be not less than the width of the stairs, but need not exceed four feet in a stair of any width.
- (c) Except in single-family and two-family dwellings, no flight shall have less than two risers.

(Prior code § 67-10.2)

### **13-160-320 Stairways--Handrails.**

- (a) All stairways shall have walls, railings, or guards on both sides and shall have handrails on both sides except as follows:
  - (1) Stairs less than 44 inches wide may have a handrail on one side only.
  - (2) Intermediate handrails, continuous between landings, shall be provided where required to provide a lateral distance between handrails not exceeding 88 inches.
- (b) In assembly units, every handrail mounted on a wall shall have its ends returned and joined to the wall.
- (c) In nursing homes and sheltered care facilities, all corridors and passages used by patients shall be provided with handrails on both sides.

The height to the top of handrails shall be 2 feet, 10 inches to 3 feet, 2 inches above the floor and shall return to the wall.

(Prior code § 67-10.3; Amend Coun. J. 10-1-03, p. 9163, § 4.11)

### **13-160-330 Stairways--Construction.**

Stairs, other than those in single-family and two-family dwellings or serving only one dwelling unit in a multiple dwelling, shall comply with the following construction requirements:

- (a) Stairs shall be constructed entirely of noncombustible materials in the following buildings:
  - (1) Buildings of Types I-A, I-B, I-C and II construction
  - (2) Buildings of institutional and assembly units except churches
  - (3) Buildings of all occupancies four stories or more in height or having an occupancy content of more than 40 persons above or below the grade floor level
- (b) The under side of stairways of combustible construction shall be protected to provide fire resistance of not less than one hour.
- (c) Stairs shall be constructed with solid risers, treads and platforms except that open risers may be used for stairways constructed of noncombustible materials serving as exits from boiler rooms and other mechanical equipment areas.
- (d) The finished surface of treads and landings shall be of materials which will not cause danger of slipping.
- (e) No closet or storage space shall be located beneath stairs.

(Prior code § 67-10.4)

### **13-160-340 Stairways--Enclosures.**

Enclosures of stairways shall comply with the requirements of Section 15-8-140.

(Prior code § 67-10.5)

### **13-160-350 Stairways--Headroom.**

In residential units, stairways serving not more than two dwelling units shall have a clear headroom of not less than 6 feet 8 inches. In all other occupancies the clear headroom shall be not less than 7 feet.

(Prior code § 67-10.6)

### **13-160-360 Smoke-proof towers.**

A smoke-proof tower shall consist of an enclosed stairway accessible only from a vestibule or balcony having openings to the outside or to an interior smoke shaft as hereinafter provided. Smoke-proof towers shall conform to all applicable requirements for interior stairs and with the provisions of Sections 13-160-370 to 13-160-420, inclusive. (Prior code § 67-11)

### **13-160-370 Smoke-proof towers--Stairway enclosures.**

- (a) Stairways shall be constructed entirely of non-combustible materials and shall be enclosed by walls providing fire resistance of not less than three hours. If two smoke-proof towers are provided the stairways shall be constructed entirely of noncombustible materials and shall be enclosed by walls providing fire resistance of not less than two hours.
- (b) There shall be no openings in walls separating the enclosure from the interior of the building. Openings in an exterior wall of the enclosure shall be permitted only when such openings are located not less than 30 feet from any opening in the walls of the same building or an adjacent building. Such openings in an exterior wall shall be protected by fixed or automatic fire windows or shutters.
- (c) The bottom of an enclosure and the top of an enclosure shall be of construction providing fire resistance of not less than three hours. If two smoke-proof towers are provided the bottom of an enclosure and the top of an enclosure shall be of construction providing fire resistance of not less than two hours.

(Prior code § 67-11.1)

### **13-160-380 Smoke-proof towers--Vestibules and balconies.**

Access to the stairway at each story shall be through a vestibule or balcony complying with the following requirements:

- (a) Except when an interior smoke shaft is provided, the vestibule or balcony shall be located on an exterior wall not subject to a severe fire exposure hazard.
- (b) Every vestibule or balcony shall have an opening to a public way, yard or court or to an interior smoke shaft complying with the requirements of Section 13-160-420.
- (c) Such openings shall have an area not less than one-half the area of the exit doors leading from the buildings to the vestibule or balcony and shall be located not less than 4 feet above the floor and not more than 6 inches below the ceiling of the vestibule or balcony. Unless such opening faces a public way, yard, or court not less than 40 feet wide, the opening shall be protected with a fire shield complying with the requirements of Section 13-160-390. In any case, the yard or court shall have a minimum width of 20 feet and a minimum area of 400 square feet.
- (d) The floors, walls, and ceilings of all vestibules or balconies shall be of construction providing fire protection of not less than three hours.
- (e) When openings are protected by fire shields, the level of the vestibule or balcony floor shall be at the level of the floor of the building which it serves or shall be accessible therefrom

by ramps having a grade of not more than 1 in 10. When openings are not protected by fire shields, the vestibule or balcony floor shall be so placed as to prevent the possibility of blocking the doors by snow or ice but shall be not more than 7 and 1/2 inches below the level of any story. In no case shall there be any step from the vestibule or the balcony to the stair enclosure.

(Prior code § 67-11.2; Amend Coun. J. 6-14-95, p. 2841)

### **13-160-390 Smoke-proof towers--Fire shields.**

When fire shields are provided to protect exterior openings of balconies or vestibules, such fire shields shall comply with the requirements of this section.

- (a) Fire shields shall comply with all applicable requirements for fire windows as provided in Section 15-12-160.
- (b) Fire shields shall have an opening sash having a clear area not less than as required in Section 13-160-380(c), arranged to open automatically in case of fire to the full limit and to be held securely in such open position. Provision shall be made for the manual opening or closing of the sash.
- (c) The automatic opening of the sash shall be actuated by approved devices located inside the building within 5 feet of the door from the building to the vestibule or balcony and located also on the ceiling of the vestibule or balcony. Such devices shall be designed to operate as a result of rate of temperature rise or when the surrounding air reaches a temperature of 120 degrees Fahrenheit.

(Prior code § 67-11.3)

### **13-160-400 Smoke-proof towers--Opening protectives.**

- (a) The openings from the building to the vestibule or balcony and from the vestibule or balcony to the stair way enclosure shall be protected with self-closing Class B fire doors.
- (b) All windows of the building or structure facing on a yard or court within 30 feet of the vestibule or balcony shall be protected with Class E fire doors, fire windows, fire shutters or other approved opening protectives complying with the requirements of Section 15-8-110.

(Prior code § 67-11.4)

### **13-160-410 Smoke-proof towers--Exterior exits.**

The smoke-proof tower shall terminate at grade level and shall have access directly to a public way, to an open area leading to a public way, or to an exit corridor leading to a public way which is enclosed with construction providing fire resistance as required for the stairway enclosure.

(Prior code § 67-11.5)

### **13-160-420 Smoke-proof towers--Interior smoke shafts.**

- (a) Every interior smoke shaft used in connection with an entrance vestibule or balcony of a smoke-proof tower shall be at least 5 feet wide at every point and shall be open and unobstructed over an area of not less than 50 square feet from its bottom to the sky; provided, however, that such shaft may be covered with a roof if the walls below such roof are open to the outside air on all sides with a total open area of not less than 100 square feet. The smoke shaft shall be separated from all other parts of the building by construction providing fire resistance of not less than four hours. There shall be no openings from the building into the smoke shaft except the required openings from the vestibules or balconies.
- (b) Should at least two smoke-proof towers be provided the interior smoke shaft shall be at least three feet wide at every point and shall be open and unobstructed over an area of not less than 12 square feet from its bottom to the sky. Such shaft may be covered with a roof if the walls below such roof are open to the outside air on all sides with a total open area of not less than 24 square feet. The two smoke shafts shall be separated from all other parts of the building by construction providing fire resistance of not less than two hours. There shall be no openings from the building into the smoke shaft except the required openings from the vestibules or balconies. The interior surface of the smoke shaft shall be noncombustible material and the corridor door shall be a Class C door.

(Prior code § 67-11.6)

### **13-160-430 Ramps.**

Ramps required as a means of exit shall comply with all applicable requirements for interior stairs and with the provisions of Sections 13-160-440 to 13-160-460, inclusive.

(Prior code § 67-12)

### **13-160-440 Ramps--Grades.**

Ramps used in lieu of stairs shall have a grade of not more than one in eight. Ramps used in lieu of stairs in public buildings as defined in Section 13-4-010 of this Code shall have a grade of not more than one in 12.

(Prior code § 67-12.1)

### **13-160-450 Ramps--Handrails.**

Ramps having a grade greater than one in ten shall have handrails as required for stairs.

(Prior code § 67-12.2)

### **13-160-460 Ramps--Nonslip surfaces.**

Every ramp having a grade more than one in 12 shall have a nonslip surface.

(Prior code § 67-12.3)

### **13-160-470 Exterior and interior ramps for handicapped.**

Exterior and interior ramps for the handicapped in the route of travel shall comply with the following regulations:

- (a) The surface of any ramp shall be made of a non-skid material.
- (b) The width of the ramp shall be at least 36 inches.
- (c) The top and bottom of the ramp shall provide for a level surface containing at least 25 square feet in area with a minimum dimension of 4 feet 6 inches.
- (d) There shall be intermediate level platforms of a minimum of 4 feet 6 inches every 30 feet of ramp length.
- (e) All major turns in ramps shall be equipped with a level intermediate platform at the turn of no less than 4 feet 6 inches in width.
- (f) There shall be provided at least one handrail, 32 to 34 inches high, along one side of each ramp that provides for any change in vertical elevation that exceeds 8 inches in height, extending horizontally 1 foot beyond the top and the bottom of the ramp.

(Prior code § 67-12.4)

### **13-160-480 Horizontal exits.**

A horizontal exit shall consist of a doorway through a two-hour fire-resistive partition to an area of refuge in a separate fire area of the building and complying with Sections 13-160-490 to 13-160-510, inclusive, of this Code.

(Prior code § 67-13)

### **13-160-490 Horizontal exits--Floor area.**

The floor area on either side of a horizontal exit shall be sufficient to accommodate the occupants of both floor areas served, based on not less than 3 square feet per person.

(Prior code § 67-13.1)

### **13-160-500 Horizontal exits--Doors.**

- (a) Doors shall be one and one-half hour Class B automatic closing except that when opening through a fire wall they shall provide fire resistance for such openings as required in Section 15-8-010 of this Code.
- (b) Doors shall swing in the direction of the required exit travel.

(Prior code § 67-13.2)

### **13-160-510 Horizontal exits--Bridges and balconies.**

- (a) Bridges and balconies shall be constructed of noncombustible materials with solid floors. Railings shall comply with the requirements for railings of outside stairs.
- (b) All exterior wall openings within a distance of 15 feet from balconies or bridges shall be protected by fire doors, fire windows, or fire shutters as required in Section 15-8-070.

(Prior code § 67-13.3)

### **13-160-520 Escalators.**

Escalators serving as a required means of exit shall comply with the requirements of Chapter 13-156 and with the requirements of Sections 13-160-530 to 13-160-570, inclusive.

(Prior code § 67-14)

### **13-160-530 Escalators--Compliance with interior stairway requirements.**

Escalators shall comply with all applicable requirements of interior stairways as provided in Section 13-160-290.

(Prior code § 67-14.1)

### **13-160-540 Escalators--Type.**

Escalators shall be of the horizontal tread type operating in the direction of travel.

(Prior code § 67-14.2)

### **13-160-550 Escalators--Rise.**

An escalator flight shall have a vertical travel of not more than 35 feet.

(Prior code § 67-14.3)

### **13-160-560 Escalators--Angle of inclination.**

The angle of inclination of an escalator shall not exceed 30 degrees from the horizontal. (Prior code § 67-14.4)

### **13-160-570 Escalators--Protection.**

Escalators serving as required exits shall be enclosed and protected as required for stairways in Section 15-8-120.

(Prior code § 67-14.5)

### **13-160-580 Exterior stairs.**

Exterior stairs required as a means of exit shall comply with all applicable requirements for interior stairs and with the provisions of Sections 13-160-590 to 13-160-620, inclusive.

(Prior code § 67-15)

### **13-160-590 Exterior stairs--Treads and risers.**

Solid risers shall not be required. Treads and landings shall be solid except for openings required for drainage.

(Prior code § 67-15.1)

### **13-160-600 Exterior stairs--Opening protectives.**

Except in residential units, all openings within 15 feet of an exterior stair shall be protected with fire doors, windows or shutters complying with the requirements of Section 15-8-070.

(Prior code § 67-15.2)

### **13-160-610 Exterior stairs--Permanent.**

Exterior stairs shall be built permanently to the ground without counter-balanced or movable sections.  
(Prior code § 67-15.3)

### **13-160-620 Exterior stairs--Construction.**

Exterior stairs shall be constructed entirely of non- combustible materials in the following buildings:

- (a) Buildings of Types I-A, I-B, I-C and II construction

Institutional units

(Prior code § 67-15.4)

### **13-160-630 Fire escapes.**

Fire escapes, when permitted, shall comply with the provisions of Sections 13-160-640 and 13-160-650.

Fire escapes shall not be permitted except where such exits now serve existing buildings and except as approved by the executive director for existing buildings where additional exits are necessary and conditions do not permit the use of more adequate exit facilities.

(Prior code § 67-16; Amend Coun. J. 9-13-89, p. 4604; Amend Coun. J. 3-5-03, p. 104990, § 34)

### **13-160-640 Fire escapes--Stairways.**

Fire escape stairways shall conform, insofar as possible, with the requirements for interior stairways in Section 13-160-290, except as otherwise required in this section.

- (a) The width of a fire escape stairway shall be not less than 24 inches. The maximum riser shall be 8 inches, and the minimum width of tread, exclusive of nosing, shall be 9 inches.
- (b) Location.
  - (1) Every fire escape stairway shall be located outside the building on a wall facing a public way or an open space having an unobstructed exit to a public way at grade.
- (c) Counterbalanced sections. A counterbalanced section may be used for the bottom flight of any fire escape stairway and shall be used when such fire escape stairway projects over a public way. The vertical height of a counterbalanced section shall not exceed 14 feet and have a minimum of 12 feet except when a counterbalanced section is used over any public way where the loading, unloading, or passage of trucks or large semi trailers is necessary, the minimum height shall be not less than 14 feet.
- (d) Access to a fire escape stairway from the interior of a building shall be through a doorway flush with the floor and not less than 30 inches wide, except that access to a fire escape stairway serving not more than 20 persons may be through a window having an openable area not less than 30 inches wide by 36 inches high, located not more than 24 inches above the floor.

- (e) Construction.
  - (1) Fire escape stairways shall be constructed entirely of noncombustible materials.
  - (2) Fire escape stairways shall be designed to support a live load of not less than 100 pounds per square foot.
  - (3) Stair treads and landings shall be so constructed as to prevent accumulation of snow or ice, but the maximum dimension of any opening, through such treads, landings or floors shall not exceed 1 and 1/4 inches.
  - (4) Metal mesh or guard rails not less than 42 inches high shall be provided on all unenclosed sides of fire escape stairways.
  - (5) All metal structural members shall be adequately protected against corrosion and shall be scraped and painted at least once every three years.
- (f) Protection. All exterior wall openings within 10 feet of a fire escape stairway shall be protected as provided in Section 15-8-070.

(Prior code § 67-16.1)

### **13-160-650 Fire escapes--Other exits.**

Other means of fire escape exit, including ladders or other devices, shall comply with such requirements as the executive director shall prescribe. All metal structural members shall be adequately protected against corrosion and shall be scraped and painted at least once every three years.

(Prior code § 67-16.2; Amend Coun. J. 9-13-89, p. 4604; Amend Coun. J. 3-5-03, p. 104990, § 34)

### **13-160-660 Exit lighting.**

All exit areas shall be adequately lighted by electricity. Except in single-family and two-family dwellings, such lighting shall be continuous during the time that conditions of occupancy require that the exit ways be open or available and the intensity of lighting required in Section 13-160-670 is not provided by means of natural light. Emergency exit lighting shall be provided in intermediate care facilities for the developmentally disabled --15 or less.

(Prior code § 67-17; Amend Coun. J. 12-21-84, p. 12140)

### **13-160-670 Exit lighting--Intensity.**

Normal intensity of lighting shall be not less than one foot-candle per square foot on the floor surfaces of vertical exits and not less than one-half foot-candle per square foot on the floors of other exits.

(Prior code § 67-17.1)

### **13-160-680 Lighting during performances.**

Lighting on the floor of exit aisles in places of assembly where theatrical, motion picture or other use requires darkened conditions, may be reduced to not less than one-tenth foot-candle per square foot during the time of performance.

(Prior code § 67-17.2)

### **13-160-690 Emergency lighting.**

Emergency lighting shall be provided in accordance with the requirements of Chapter 14-28 through 14-36 and 14-44 through 14-72 of this Code. (Prior code § 67-17.3)

### **13-160-700 Exit, stairway, fire escape and directional signs.**

Exit, stairway, fire escape and directional signs, illuminated by electricity, shall be installed and maintained in all existing buildings and buildings hereafter erected, altered, or converted, in accordance with the provisions of Sections 13-160-710 through 13-160-770.

(Prior code § 67-18)

### **13-160-710 Directional signs--Where required.**

Exit, stairway, fire escape and directional signs shall be installed to mark all ways of egress in the following buildings or parts of buildings in the case of multiple occupancies

- (a) Multiple dwellings of the corridor type two stories or more in height
- (b) Institutional buildings two stories or more in height
- (c) Assembly units
- (d) Schools
- (e) Intermediate care facilities for the developmentally disabled --15 or less
- (f) Business units, mercantile units, industrial units, storage units, and hazardous use units over two stories in height; business units, mercantile units, industrial units, storage units and hazardous use units two stories or less in height having a ground area of 10,000 square feet or more
- (g) Theatres
- (h) Churches
- (i) Open air assembly units with a capacity exceeding 250 persons where such unit is used at any time when natural light does not clearly indicate all means of egress

(Prior code § 67-18.1; Amend Coun. J. 12-21-84, p. 12140)

### **13-160-720 Directional signs--Fixture requirements.**

Every such sign shall consist of a flat sided glass globe, a rectangular 20 U.S. gauge sheet metal box provided with channels to hold a glass sign or a plastic edge glow type of sign, bearing the lettering hereinafter required.

(Prior code § 67-18.2)

### **13-160-730 Directional signs--Illumination.**

Every such sign shall be internally illuminated by a ten watt or larger incandescent electric lamp.

(Prior code § 67-18.3)

### **13-160-740 Directional signs--Location.**

Exit signs shall be located over or immediately adjoining every opening to a horizontal means of egress or ramp leading out of a building; also over every opening leading from a public assembly room to a mezzanine floor, corridor or hallway.

Stairway or exit signs shall be located at every stairway on every floor in existing buildings. In buildings hereafter erected stairway signs only shall be located at every stairway on every floor.

Fire escape signs shall be located over or immediately adjoining every doorway or opening to a fire escape.

All such signs shall be clearly visible from all means of approach to such ways of egress.

Directional signs shall be located where the path of exit travel or the location of the exit, stairway, or fire escape is not clear and unmistakable due to bridges, tunnels, intersections of hallways, intervening partitions or turns in corridors. Such signs shall be located at every yard, court, passageway or other exterior space leading from any exit to a space serving as a way of departure from every theater, public assembly building, hotel, school or church.

(Prior code § 67-18.4)

### **13-160-750 Directional signs--Lettering.**

Every exit, stairway and fire escape sign shall bear the words "EXIT," "STAIRWAY," and "FIRE ESCAPE," respectively, in block letters at least 4 and 1/2 inches high with 9/16 inch stroke.

Every directional sign shall bear the word "EXIT" to indicate the direction of an exit, stairway or fire escape and shall bear a horizontal arrow pointed in the direction of travel. Lettering shall be in block letters at least 3 and 3/8 inches high with 9/16 inch stroke. The arrow shall be 1/2 inch wide and as long as the lettering.

All such letters and arrows shall be red on a white translucent field.

(Prior code § 67-18.5)

### **13-160-760 Directional signs--Phosphorescent signs.**

Exit, stairway, fire escape and directional signs of luminous phosphorescent material illuminated as herein before required may be used in lieu of requirements of Systems II and III, as defined in Sections 14-48-060 and 14-48-070 of the Municipal Code of Chicago in all existing buildings and in buildings hereafter erected, altered, or converted, in accordance with Section 14-48-030 of the Municipal Code of Chicago.

Phosphorescent signs shall be made of materials which meet or exceed the specifications for luminous material and equipment (nonradioactive), electric lamp activated as hereinafter in this section set forth. No such sign shall be installed or used until it has been tested as hereinafter specified in Section 13-160-790 by a laboratory equipped to make such tests and maintained by the City of Chicago as a testing laboratory or by any other qualified laboratory equipped to make such tests as herein provided and acceptable to and approved by the fire commissioner of the City of Chicago and until such laboratory has certified to the fire commissioner that such sign meets the requirements as set forth in Section 13-160-790 upon which certification the fire commissioner shall approve such sign for installation subject to further inspection as hereinafter provided.

No person shall sell or offer for sale, install, or use any such phosphorescent sign until it has been approved by the commissioner as aforesaid.

(Prior code § 67-18.6; Amend Coun. J. 6-14-95, p. 2841)

### **13-160-770 Directional signs--Normal illumination defined.**

Normal illumination is hereby defined as that intensity of illumination which provides not less than one foot-candle at all points on stairways, floors, and paths of travel required to be illuminated by the provisions of this Code. (Prior code § 67-18.7)

### **13-160-780 Enforcement of Sections 13-160-710 through 13-160-770.**

The provisions of Sections 13-160-710 through 13-160-770 shall be enforced by the bureau of fire prevention. (Prior code § 67-18.8)

### **13-160-790 Specifications for phosphorescent luminous material (nonradioactive).**

#### A. Classification.

A-1. Form. Nonradioactive luminous material shall be furnished in the following forms:  
Applied material (luminescent material with backing).

#### B. Material and Workmanship.

B-1. Material. All material shall be of the highest grade and free from any imperfections which may affect its serviceability under the most severe conditions.

B-2. Workmanship. The workmanship shall be first class in every respect.

#### C. General Requirements.

##### C-1. Definitions.

C-1a. Luminescent Material. Luminescent material is that material which emits light not ascribable directly to incandescence and which is emitted without elevation in the temperature of the material.

C-1b. Phosphorescent Material. Phosphorescent material is identified as that material which, after exposure to a light source, either visible or invisible, will continue to emit light in the visible spectral range for an appreciable period of time after excitation of the material has ceased.

C-1c. Micro lumen. A micro lumen is the total visible energy received by a square centimeter of surface when illuminated by a point source of unit candle power placed at a distance of ten meters.

C-1d. Micro Lambert. A micro Lambert is the unit of brightness used in this specification. It is the brightness of a perfectly diffusing and completely reflecting surface illuminated by one micro lumen per square centimeter of surface.

C-2. Shape and Size of Markings. When markings are required for reporting certain characteristics or descriptive information, the characters shall be of such shape and size as to insure their legibility for the intended applications.

#### D. Detail Requirements. Phosphorescent materials.

D-1. Initial Brightness. One minute after a five-minute exposure to a tungsten incandescent light source providing 600 foot-candles uniformly on a smooth surface, to which three coats of the phosphorescent material have been applied, the material shall have a brightness of not less than 35 micro lamberts.

- aD-2. Rate of Decay. Thirty minutes after removal of the light source described in paragraph D-1, the brightness shall be not less than 1.5 micro Lambert. One hour after removal of the light source, the brightness shall be not less than 0.5 micro Lambert.
- D-3. End Brightness. Three hours after removal of the light source, described in paragraph D-1, the brightness shall be not less than 0.20 micro Lambert.
- D-4. Weathering. The material shall not show a reduction in brightness greater than 30 percent of the brightness values required by paragraphs D-1, D-2 and D-3 following 90 hours exposure in the salt-spray chamber described in paragraph E-2b(2)a. None of the phosphorescent material shall show a tendency to peel, chip, discolor, or flake during this period.
- D-1a. Applied Material (Phosphorescent Material with Backing).
  - D-1a. (1) General. The material shall meet the requirements of paragraph D-1, except as to number of coats, accessory equipment, drying, time, primer, and hiding power.
  - D-1a. (2) Backing. The back material shall be of sufficient stiffness, thickness, and strength to retain its shape without bending or folding, regardless of the method of mounting. Material which tends to curl shall not be used. The backing material shall have a minimum useful life equal to or greater than that of the nonradioactive luminous material applied to its surface. It shall be moisture-resisting, and shall be capable of resisting acid fumes and high humidity atmospheric conditions at temperatures up to 650 degrees centigrade (149 degrees Fahrenheit). The backing used shall be suitable for outdoor use. After the weathering tests described in paragraph E-2b(2)a, the backing shall remain in a serviceable condition and shall show no signs of cracking, peeling or discoloring of the luminous coating from the backing.

1. Method of Sampling, Inspection, and Tests.

- E-1. General. The methods of sampling, inspection and tests conducted upon nonradioactive luminous material covered by this specification shall be considered as falling in the following general classifications:

Type or brand approval tests. (At designated laboratory.)

Inspection tests. (At place of manufacture.)

- E-2. Type or Brand Approval Tests. The type or brand approval tests shall comprise all those tests necessary to determine that the material is in strict accordance with the requirements of this specification.

- E-2a. Nature of Tests.

- E-2a. (1). Brightness. Brightness tests shall be conducted on the material for the purpose of determining the discharge characteristic and to determine the period of useful life. Intensity of brightness shall be measured in accordance with the brightness requirements of paragraphs D-1 and D-2 to determine the characteristics of the material as received and after the weathering tests. (See paragraph E-2b (2)).

- E-2a (2). Weathering. Weathering tests shall consist of a determination of the ability of the material to withstand an accelerated weathering condition which includes the simulated action of sunlight, rain, and fog. (See paragraph E-2b)).

E-2b. Methods of Test.

E-2b. (1). Brightness. The brightness of luminescent materials covered by this specification shall be determined by the visual comparison method. This method consists of matching the brightness of a diffusely illuminated field of known brightness with the brightness of the surface under test, the brightness of the diffuse field being capable of being varied at will. The brightness of the diffuse field shall be determined by preliminary calibration against known primary standards of brightness. Thus, by comparing the brightness of the working standard with the brightness of the surface under test, its value in micro lamberts can be determined. For the measurement of brightness of 1.5 micro Lambert or above, a MacBeth illuminometer or other suitable photometer, fitted with an optical filter of the proper color and density to match the color of luminescent radiation, shall be used. For lower brightness, the instrument described in paragraph E-2b (1)a shall be used.

E-2b. (1)a. Measurement of Brightness of Phosphorescence. Test equipment:

MacBeth illuminometer or other suitable photometer. 1,000-watt tungsten projector lamp operating at rated voltage of 110 volts. The lamp need not be new but should be capable of furnishing 600 foot-candles at a distance of 1 and ½ feet.

Test Specimens:

In applied form shall have an area of at least 1 square foot.

Test procedure:

After having been kept in darkness for a period of 24 hours prior to test, the test specimen shall be irradiated by 500 foot-candles of tungsten illumination for a period of one minute. After irradiation, brightness readings shall be taken one minute after exposure and thereafter at the end of approximately 5, 10, 30, 60, 120, 180 minutes, etc., after exposure. Readings shall be taken by an observer whose eyes have been dark-adapted for a period of at least 20 minutes.

Low brightness measurements:

The photometer shall be used for brightness measurements below 1.5 micro Lambert. In this instrument the photometric field is approximately 2 and 1/2 inches in diameter and is observed with binocular vision. The photometer shall be calibrated by placing a diffusing surface of known reflection power and illuminating it to a known brightness by varying the distance from a source of the desired color. The brightness of the source shall be determined close to the source of high levels of illumination by standard methods of photometry. The results obtained from a series of measurements of brightness of phosphorescent decay shall be plotted.

E-2b. (2). Weathering Tests.

E-2b. (2)a. Weathering of Phosphorescent Material

Test equipment:

A salt-spray chamber containing a sunlamp and "Corex window" assembly, equipped with a new S-1 bulb for each 22 cycle test.

A pump for forcing a stream of water against a rapidly rotating disk within the chamber.

A salt dissolver.

A motor-driven blower for forcing heated air into the chamber.

Test procedure:

The spray is produced when a stream of water strikes the rotating disk. The "Corex" window shall be located directly above the disk so that the spray will wash the window and prevent the accumulation of salt due to evaporation of water caused by the heat of the sunlamp. The specimen shall be mounted inside the chamber so that the plane of the specimen is 12 inches from the bottom of the bulb. The specimen shall then be subjected to a cycle of ten minutes spray of five percent salt solution and then a 10-minute blast of air at 140 degrees Fahrenheit. These conditions shall alternate for 10-minute intervals over the required test period. During the test period the samples shall be continuously irradiated with ultraviolet light from the S-1 sunlamp.

- E-3. Inspection Tests (at Place of Manufacture). Inspection tests at place of manufacture shall consist of selecting test samples and forwarding them to a designated approved laboratory for weathering the brightness tests.

The material shall be supplied in its form as applied. The quantity for test shall be one square foot of each color.

- E-4. Inspection Tests (at Designated Laboratory). Inspection tests at designated laboratory shall be conducted to determine whether the material is identical with that which was initially given type or brand approval test and approved. (Prior code § 67-18.65)

## 13-196-084 (STAIRWAY RE-ENTRY ORDINANCE)

**SECTION 1.** Chapter 13-196-084 of the Municipal Code of the City of Chicago is hereby amended by adding a new Section 13-196-084 as follows:

### **13-196-084                    Stairwell re-entry in existing buildings.**

- (a) In buildings not required to comply with Chapter 13-76, every stairwell enclosure that serves more than four stories shall comply with one of the following requirements, as a minimum standard:

Option 1.            The stairwell enclosure doors shall not be locked from the stairwell side at any time in order to provide re-entry from the stair enclosure to the interior of the building; or

Option 2.            The stairwell enclosure doors shall be equipped with a fail-safe electronic lock release system that is activated both manually, by a single switch accessible to building management and firefighting personnel, and automatically, either by approved smoke detectors or sprinkler waterflow devices connected to an annunciator panel.

If this option is selected, a telephone or other two-way communications system connected to an approved station shall be provided at not less than every fifth floor in each stairway where the doors to the stairway are locked, no later than January 1, 2005.

During the time necessary to install a lock release system under this Option 2, but in no event beyond December 31, 2004, the transitional measures listed as (A) through (E) below may be used.

Doors on stair enclosures may be equipped with hardware that prevents re-entry into the interior of the building, provided that all the following criteria are met:

- (A) There shall be not less than two levels where doors leading to the building interior are permanently unlocked, permitting access to another exit stair; and
- (B) There shall be not more than four stories intervening between stairwell enclosure doors that provide access to another exit stair; and
- (C) Re-entry to the building interior shall be possible at all times on the highest story or the second highest story, whichever allows access to another exit stair; and

- (D) Doors allowing re-entry shall be identified as such on the stair side of the door; and
  - (E) Doors not allowing re-entry shall be provided with a sign on the stair side indicating the location of the nearest door, in each direction of travel, that allows re-entry or exit.
- (b) Regardless of which option is selected under subsection (a) of this section, stairwell enclosure doors at the main egress level of the building shall remain unlocked from the stairwell enclosure side at all times.
  - (c) Every building of more than four stories, and having a height in excess of 80 feet above grade, shall comply with subsection (a) of this section upon this section's taking effect. Every building of more than four stories, and having a height not exceeding 80 feet above grade, shall comply with subsection (a) of this section no later than January 1, 2005.
  - (d) No later than May 1, 2004, the executive director of the department of construction and permits and the fire commissioner shall issue guidelines for the approval of stations in buildings where Option 2 described in subsection (a) has been selected.
  - (e) Nothing in this section applies to any stairwell enclosure door, which opens directly into a dwelling unit, provided the dwelling unit door has a self-closer, a latch, and no self-locking hardware. Where all doors in the stairwell meet these criteria, the stairwell shall be provided with either a two-way communication system as required by Option 2 above, or the stairwell shall be provided with readily operable windows that are operable according to ANSI A117.1-1998, Section 309 Operable Parts, on each landing or intermediate landing, no later than January 1, 2005.

DEPARTMENT OF BUILDINGS, FIRE & CONSTRUCTION AND  
PERMITS

RULES AND REGULATIONS  
For

**SECTION 13-196-084 AS AMENDED ON 8/30/04**

- Rule 1.** An “approved station” means (1) a fixed site within a building that is currently attended by a person such as a building attendant, doorman, or security guard, who is able to unlock all stairwell enclosure doors in the event of an emergency, or (2) an off-site service staffed 24-hours a day by persons who, upon being informed that people are trapped in a stairwell, shall immediately (i) notify the city’s 9-1-1 emergency telephone system, and (ii) contact the building’s security, maintenance or engineering staff, or any other person in the building authorized to unlock the stairwell enclosure doors in the event of an emergency.
- Rule 2.** As evidenced by subsection (c) of Section 13-196-084, the Chicago City Council clearly intended when it passed this ordinance to require that all stairwell enclosure doors in high rise buildings (5 or more stories; height in excess of 80 feet) be unlocked immediately to prevent people from becoming trapped in a stairwell in the event of a fire or other emergency. There is only one temporary exception to this general rule. **Temporary exception available prior to January 1, 2005:** If a property owner or building manager chooses to install a fail-safe electronic lock release system in accordance with Option 2, then, during the transition period before that system is installed and becomes fully operational, the property owner or building manager may choose as an alternative to unlocking all stairwell enclosure doors, to equip those doors with hardware that meets all of the criteria identified in items (A) through (E) of Option 2. If, however, all of the criteria identified in items (A) through (E) are not met, the property owner or building manager must immediately unlock all stairwell enclosure doors until such time that the fail-safe electronic lock release system is installed and becomes fully operational.
- Rule 3.** As of January 1, 2005, the temporary exception identified in Rule 2 is no longer available. As of that date, all existing buildings with stairwell enclosures that serve more than four stories are required either (i) to be equipped with a fully operational fail-safe electronic lock release system that meets all of the requirements identified in Option 2 or (ii) to unlock all stairwell enclosure doors.
- Rule 4.** If at any time after a fail-safe electronic lock release system is installed the system becomes unable to operate for any reason, the building owner or property manager shall immediately unlock all stairwell enclosure doors until the system is restored to full operational capacity.

## 13-196-203 (HIGH RISE SAFETY ORDINANCE)

### **BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CHICAGO:**

**SECTION 1.** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new Section 13-196-203, as follows:

13-196-203            Life Safety Data Sheet-Required.

- (A)                    No later than April 1, 2005, any owner of an existing building exceeding 80 feet in height above grade shall file with the fire department a life safety data sheet containing the following information about the building: (1) the name of the building, owner of record, and, if applicable, the building manager; (2) the address of the building, (3) whether the building is residential, commercial or mixed use, (4) if the building is residential or mixed use, the number of dwelling units in the building, (5) the number of stories in the building, (6) whether the building is equipped with an automatic sprinkler system meeting any or all of the requirements of Chapter 15-16 of this Code, and identifying the areas so protected, and (7) whether the building is equipped with a standard inside standpipe system, a fire pump, and a smoke-proof tower.
- (B)                    **All information contained in the life safety data sheet shall be kept current. Any change in the required information shall be reported by the building owner to the fire department within 14 days after the change. This subsection shall be enforceable against the building owner and against any subsequent owner.**

(See Appendix A)

Any person who violates the requirements of this section shall be fined not less than \$200 or more than \$500 for each offense. Each day that a violation continues shall constitute a separate and distinct offense.

**SECTION 2.** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new Section 13-196-204, as follows:

**13-196-204            Voice communication systems in existing buildings.**

- (A)                    Subject to the exceptions listed below, no later than January 1, 2012, every existing building exceeding 80 feet in height above grade shall be equipped with the following: (i) a one-way voice communication system meeting the requirements of section 13-76-050(b) and (ii) a two-way voice communication system meeting the requirements of section 13-76-050(a); provided, however, that a telephone or other two-way communication system connected to an approved station, and installed pursuant to and in accordance with Option 2 of section 13-196-084(a), shall be deemed to satisfy the requirements of item (ii) of this section.

- (B) Neither a one-way nor a two-way voice communication system shall be required in the following buildings:

**Exception No.1:** Buildings that are classified as Class A-2, Multiple Dwellings, and are for non-transient residential use and are fully protected by automatic sprinklers.

**Exception No. 2:** Institutional buildings and schools that have an approved standard fire alarm system as required by Section 15-16-110.

- (C) A one-way voice communication system shall not be required in the following buildings:

**Exception No. 1:** Non-transient residential buildings with an existing occupant notification system if a detailed description of the existing occupant notification system is submitted to and approved by the commissioner of buildings and the fire commissioner or by their designated representatives. In order to be considered for approval under this exception, and if approved under this exception, the existing occupant notification system shall meet the following criteria:

- (a) The system must be in continuous use and must be tested on a monthly basis or the system must have electronic supervision to indicate operational deficiencies in the system including, but not limited to, shorts, grounds and breaks in the circuit wiring; and
- (b) The system must be audible throughout all required areas of the building, or must produce within all dwelling units a minimum sound level of 45 dB within 10 feet of any existing occupant notification system device; and
- (c) The system must be able to transmit voice instructions without delay; and
- (d) The system must be able to transmit voice instructions to all required areas or to all dwelling units at the same time; and
- (e) The system must be available for fire department use from a central command location; and
- (f) The system is subject to field testing; and
- (g) Replacement or modification of system components to meet the above criteria is limited to 50% of the reproduction cost of the existing occupant notification system.

- (D) A two-way voice communication system shall not be required in the following buildings:

**Exception 1:** *Buildings* that are classified as Class A-2, Multiple Dwellings, and are for non-transient residential use if the building does not exceed 15 stories in height and contains 60 or fewer dwelling units as defined in section 13-4-010.

- (E) For purposes of this section, “non-transient residential” means a residential use other than a hotel, motel, bed-and-breakfast establishment, dormitory, transitional shelter, emergency shelter, or other temporary residential use.
- (F) This section shall be enforceable against the building owner and against any subsequent owner.

**SECTION 3:** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new Section 13-196-206, as follows:

**13-196-205                    Automatic sprinkler system installation in existing high rise buildings.**

Subject to the exceptions listed below, every existing building exceeding 80 feet in height above grade shall be protected throughout by an approved automatic sprinkler system meeting the requirements of Chapter 15-16 of this code unless otherwise provided by section 13-196-207. The owner of each such building shall, no later than

September 1, 2005, submit for approval to the bureau of fire prevention a plan for compliance with the requirements of this section. The requirements of this section shall be enforceable against the building owner and against any subsequent owner.

Every building subject to the provisions of this section shall comply with the following schedule for installation of an approved automatic sprinkler system: one-third of the gross square footage of the building shall be equipped with automatic sprinklers by

January 1, 2009;

Two-thirds of the gross square footage of the building shall be equipped with automatic sprinklers by January 1, 2013; and the entire gross square footage of the building shall be equipped with automatic sprinklers by January 1, 2017. Buildings subject to any of the following exceptions 3 through 7, inclusive, shall comply with the requirements of section 13-196-203.

**Exception No.1:** An open-air parking facility meeting the requirements of section 13-96-920 of this code.

**Exception No. 2:** The open-air portions of a stadium.

**Exception No. 3:** A building that is classified as a Class A-2, Multiple Dwelling, and that is a non-transient residential use. This exception includes (a) all approved auxiliary use areas of the building other than parking garages, and (b) any parking garage in the building that is used exclusively by the building’s non-transient residential occupants and their guests or by persons who, pursuant to a written lease agreement, rent space in the building’s parking garage for use by a designated motor vehicle in time increments of at least one month in duration.

**Exception No.4:** The following portions of a building classified as a mixed occupancy building:

- (A) Any portion of a mixed occupancy building that is classified as a Class A-2, non-transient residential use;
- (B) Any approved auxiliary use area wholly contained within a Class A-2, non-transient residential use portion of a mixed occupancy building;
- (C) Any parking garage in a mixed occupancy building that is used exclusively by the building's non-transient residential occupants and their guests or by persons who, pursuant to a written lease agreement, rent space in the building's parking garage for use by a designated motor in time increments of at least one month in duration.
- (D) Any portion of a mixed occupancy building, other than those portions of the building classified as a Class A-2, non-transient residential use, if all of the following criteria are met:
  - (1) The cumulative total of the building's floor areas not classified as a Class A-2, non-transient residential use does not exceed 10% of the total floor area of the building. The floor areas of the parking garages used exclusively by the building's non-transient residential occupants and their guests shall be excluded from the calculation of the total floor area of the building; and
  - (2) Occupancy separations are provided in accordance with Table 13-56-280 as set out in section 13-56-280 of this code; and
  - (3) The mixed occupancy building must be either of Type I, fire-resistive construction or of Type II, non-combustible construction; and
  - (4) All of the exempted areas within the mixed occupancy building, other than those portions of the building classified as a Class A-2, non-transient residential use, are located in the building at a floor level elevation that does not exceed 80-feet in height above average grade.

**Exception No. 5:** A building designated as a Chicago landmark pursuant to Article XVII of Chapter 2-120 of this code unless the landmarked building is required to be equipped with an automatic sprinkler system by any other provisions of this code.

**Exception No. 6:** A building within a landmark district designated pursuant to Article XVII of Chapter 2-120 of this code and determined to be a contributing building unless the contributing building is required to be equipped with an automatic sprinkler system by other provisions of this code.

**Exception No.7:** *A building color-coded red or orange in the Chicago Historic Resources Survey, published in 1996, unless the building is required to be equipped with an automatic sprinkler system by other provisions of this code.*

For purposes of this section, “non-transient residential” means a residential use other than hotel, motel, bed-and-breakfast establishment, dormitory, transitional shelter, emergency shelter or other temporary shelter.

**SECTION 4:** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new Section 13-196-206, as follows:

**13-196-206 Life safety evaluation of existing high rise buildings.**

- (A) No later than January 1, 2005, the commissioner of buildings shall adopt by rule and publish criteria for life safety evaluation of all existing buildings exceeding 80 feet in height above grade that are not required by section 13-196-205 to be protected throughout by an approved automatic sprinkler system. The criteria adopted pursuant to the subsection shall provide sufficient protection to life and safety of building occupants.

The criteria shall be developed based on a review of available resources, including: standardized building and safety codes and the practices of other municipalities.

- (B) The owner of any building qualifying for any exception 3 through 7, inclusive, of section 13-196-205 shall have the building evaluated for life safety by a licensed professional engineer or by a licensed architect; provided, however, that this requirement shall not apply to any building which is protected throughout by a previously approved automatic sprinkler system. The licensed engineer or architect shall prepare a life safety evaluation of the building in accordance with the requirements of this section and with any rules and regulations promulgated there under. The life safety evaluation shall be signed and sealed by the person who prepared it and shall contain an explicit statement acknowledging that the information contained therein is true and complete.
- (C) If, based on the use of a scoring system described by rule to conduct the life safety evaluation, the licensed professional engineer or licensed architect determines that the building achieves the minimum score required on the life safety evaluation, the licensed engineer or architect shall certify the evaluation as a life safety compliance plan and shall give the life safety compliance plan to the building owner. No later than January 1, 2006, the building owner shall submit the life safety compliance plan to the department of buildings and the bureau of fire prevention. The life safety compliance plan shall be enforceable against the building owner and against any subsequent building owner.

- (D) If, based on the use of a scoring system described by rule to conduct the life safety evaluation, the licensed engineer or licensed architect determines that the building does not achieve the minimum score required on the life safety evaluation, the building owner shall, no later than January 1, 2006, submit the life safety evaluation to the department of buildings and the bureau of fire prevention along with either: (1) a proposal to protect the building throughout with an automatic sprinkler system meeting the requirements of Chapter 15-16 of this code unless otherwise provided by section 13-196-207, notwithstanding any exceptions for which the building may have otherwise qualified pursuant to section 13-196-205, and using the schedule for installation described in section 13-196-205; or (2) a proposal for achieving the minimum score required on the life safety evaluation by making specified modifications to the building.

Any proposal submitted pursuant to this subsection shall be signed and sealed by a licensed professional engineer or by a licensed architect. In addition, any proposal submitted pursuant to item (2) of this subsection shall contain (i) an explicit statement by the licensed engineer or architect certifying that if the modifications identified in the proposal are implemented, the building will receive the minimum score required on the life safety evaluation; and (ii) a timetable for completion of those modifications to be phased in over a stipulated period of years, but no later than January 1, 2012, at which time the modifications identified in the proposal shall be fully implemented. Any schedule for installation or timetable required by this subsection shall be enforceable against the building owner and against any subsequent owner.

If after reviewing the certified proposal the commissioner of buildings and the deputy commissioner of the bureau of fire prevention determine that the certified proposal, when fully implemented, will enable the building to achieve the minimum score required on the life safety evaluation, the commissioner and deputy commissioner shall jointly accept the certified proposal as a life safety compliance plan. The life safety compliance plan shall be enforceable against the building owner and against any subsequent owner.

- (E) No permit shall be issued for work on any existing building that is the subject of a life safety compliance plan unless the licensed architect or licensed engineer of record identified in the permit application certifies in writing that the permitted work will not reduce or otherwise negatively impact the score of the life safety evaluation on which the life safety compliance plan is based; nor shall any permit be issued for work on a building whose owner is in violation of any of the requirements of this section that the permitted work will not reduce or otherwise negatively impact the score of the life safety evaluation on which the life safety compliance plan is based; nor shall any permit be issued for work on a building whose owner is in violation of any of the requirements of this section unless the permit is necessary to cure the violation.
- (F) Nothing in this section shall be construed to waive any provision of the Municipal Code of Chicago applicable to existing buildings or to relieve any person from full compliance with those provisions.

**SECTION 5.** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new Section 13-196-207, as follows:

### **13-196-207 Materials and installation standards for retrofit fire protection systems.**

In every existing high-rise building subject to the requirements of sections 13-196-204, 13-196-205 or 13-196-206 of this code, the following materials and installation standards shall apply to newly installed fire protection systems:

- (A) An existing water supply that serves an existing fire department wet-standpipe system may also serve as the water supply for retrofit sprinkler systems, provided the water supply meets, non-simultaneously, the larger of either the standpipe demand at the time of the original installation, or the new sprinkler system demand including hose stream allowance.
- (B) Notwithstanding the requirements of **sections 18-28-602.2.1 and 15-16-370**, sprinkler piping and sprinklers shall meet or exceed the requirements of NFPA 13-2002 and their respective product listings issued by an approved independent laboratory or agency.
- (C) Automatic sprinkler systems shall meet or exceed the requirements of NFPA 13-2002 except that at least one sprinkler shall be provided within the stairway enclosure at the landing serving the door(s) to each floor.
- (D) If repairs or minor modifications are made to existing dry-pipe sprinkler systems, the zoning of the system may remain as originally installed.
- (E) Low-voltage electrical wiring risers for fire detection and fire alarm notification systems may be installed in stairways, notwithstanding the requirements of section 15-8-180, if the wiring is in conduit and does not obstruct the required egress width of a stairwell.
- (F) Low-voltage electrical branch wiring in horizontal runs for voice communication systems may be installed without conduit, unless required by other sections of this code, if the wiring (i) is limited combustible FHC 25/50 CMP, (ii) has a maximum Class 1 flame spread rating as defined in section 15-12-040, and (iii) has a smoke developed rating not to exceed 50 when tested in accordance with ASTM E-84.
- (G) Low-voltage electrical wiring for fire detection systems may be run in the same conduit as low-voltage electrical wiring for fire alarm notification systems, as permitted by NFPA 72-2002 and the product listings of the wire and the conduit issued by an approved independent laboratory or agency.
- (H) Low-voltage fire detection equipment panels and low-voltage fire alarm notification equipment panels may be installed in the same panel box, as permitted by NFPA 72-2002 and the product's listing issued by an approved independent laboratory or agency.
- (I) Central station monitoring of fire alarm systems may use digital alarm communicators with constant supervision, as permitted by NFPA 72-2002.

**SECTION 6.** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new section 13-196-208, as follows.

**13-196-208                    Smoke-proof towers in existing high rise buildings–Fire shields.**

If fire shields in smoke-proof towers are provided to protect openings of balconies or vestibules in existing buildings exceeding 80 feet in height above grade, such fire shields shall comply with the requirements of this section.

- (A) Fire shields shall comply with all applicable requirements for fire windows as provided in section 15-12-160.
- (B) Fire shields shall have an opening sash having a clear area not less than as required in section 13-160-380(c), arranged to open automatically in case of fire to the full limit and to be held securely in such open position. Provision shall be made for the manual opening or closing of the sash.
- (C) The automatic opening of the sash shall be actuated by approved devices located inside the building within 5 feet of the door from the building to the vestibule or balcony and located also on the ceiling of the vestibule or balcony. Such devices shall be designed to operate as a result of rate of temperature rise or when the surrounding air reaches a temperature of 120 degrees Fahrenheit.
- (D) Each fire shield sash shall be tested annually to verify automatic operation as required in subsection (c) of this section. Testing shall be performed by an individual or organization approved by the deputy commissioner in charge of the bureau of fire prevention. Reports of the testing shall be filed with the bureau by June 30th of each year.

**SECTION 7.** Chapter 13-196 of the Municipal Code of the City of Chicago is hereby amended by inserting a new section 13-196-209, as follows:

**13-196-209                    High-Rise buildings–Stairways–Doors–Frames.**

No later than January 1, **2012**, doors and frames in stairways in all existing residential buildings and buildings of mixed residential occupancy exceeding 80 feet in height above grade shall have a fire resistance rating of at least one hour.

**SECTION 8.** Section 15-16-610 of the Municipal Code of the City of Chicago is hereby amended by inserting the language underscored, as follows:

**15-16-610                    Retroactivity.**

The provisions of sections 15-16-170 to 15-16-600, both inclusive, shall apply to all automatic sprinkler systems hereafter installed in any preordinance buildings, existing buildings and buildings hereafter constructed and shall also apply to any automatic sprinkler systems installed prior to the passage of this ordinance which were not installed in accordance with approved plans and permits; provided, however, that existing high rise buildings subject to the requirements of sections 13-196-205 or 13-196-206 may deviate from these provisions to the extent permitted by section 13-196-207.

**SECTION 9.** Section 13-200-310 of the Municipal Code of the City of Chicago is hereby amended by inserting the language underscored, as follows:

**13-200-310                    Building over 80 feet in height.**

Any building over 80 feet in height which is altered or repaired, the cost of which in any consecutive 30 months exceeds 50 percent of the reproduction cost of the building, shall comply with requirements of Chapter 13-76 for high rise buildings, and Chapter 15-8 for stair, elevator and shaft enclosures.

**SECTION 10.** Section 13-196-038 of the Municipal Code of the City of Chicago is hereby amended by inserting the language underscored as follows:

**13-196-038                    Fines and penalties.**

Any violation of or interference with the enforcement of any provision of section 13-196-031 through and including section 13-196-037, and of section 13-196-204 through and including 13-196-209, shall be punishable by a fine of not less than \$500 and not more than \$1000 for each offense. Each day that a violation continues shall constitute a separate and distinct offense for which a fine as herein provided shall be imposed.

**SECTION 11.** This ordinance shall be in full force and effect from and after its passage and approval.

## **CHAPTER 15-16 – Part 2 (FIRE EXTINGUISHERS)**

### **15-16-620 Definitions**

**Service** Where used in reference to fire extinguishers, means the charging, filling, maintaining, recharging, refilling, repairing, and testing of fire extinguishers.

**Serviceman** Means a person licensed by the City of Chicago to charge, fill, maintain, recharge, refill, repair, and test fire extinguishers.

**Standard Fire Extinguisher** Means a portable fire extinguisher, which bears the label of approval of a national testing laboratory acceptable to the deputy commissioner in charge of fire prevention.

### **15-16-630 Classification and rating**

The classification and rating of fire extinguishers and their installation shall be in the manner prescribed in NFPA No ten entitled “Standard for the Installation of Portable Fire Extinguishers,” published by the National Fire Protection Association in 1973.

### **15-16-640 Where required**

Standard fire extinguishers shall be provided on every floor, basement, and sub-basement of all buildings and structures as specified in the aforementioned NFPA ten with the following exceptions:

- (1) Single-Family and Two-Family Dwellings. Fire extinguishers shall not be required.
- (2) Multiple Dwellings. Fire extinguishers shall not be required in multiple dwellings not exceeding three stories in height and having a floor area not exceeding 3,000 square feet.
- (3) Business, Mercantile, Industrial, and Storage Units. Fire extinguishers shall not be required in one-story buildings of business, mercantile, industrial, or storage occupancy having a floor area not exceeding 3,000 square feet.
- (4) Stage Blocks. In stage blocks, one 2A-rated and one C-rated fire extinguisher shall be provided on each side of the stage, on each gallery above the stage level, on the gridiron, and in accessible places below grade.
- (5) Projection Rooms. In motion picture projection rooms, one 2A-rated and one C-rated fire extinguisher shall be provided.
- (6) Open Air Assembly Units. In open-air assembly units, one 2A-rated fire extinguisher shall be located within every assembly room having a capacity of 300 persons or more, except that such extinguisher may be located in a corridor within 15 feet of a doorway to such assembly room.

- (7) Not less than one 2A-rated fire extinguisher shall be located within every assembly room having a capacity of 300 persons or more, except that such extinguisher may be located in a corridor within 15 feet of a doorway to such an assembly room.
- (8) Only dry chemical fire extinguishers shall be installed where grain-bleaching processes employing sodium peroxide and sulphur are carried on, wherever calcium carbide is present, and wherever the introduction of water would create an added hazard.
- (9) Only fire extinguishers having a Class B rating shall be installed in dry cleaning rooms and spaces where flammable liquids are present.
- (10) In hazardous chemical rooms, the nature of the chemical contents of such rooms shall determine the extinguisher requirements.
- (11) Only fire extinguishers having a Class C rating shall be installed for use upon fires in electrical equipment.
- (12) Lumberyards. Portable fire extinguishing equipment suitable to the deputy commissioner in charge of fire prevention shall be provided at convenient conspicuous locations in open yards so located that the travel distance to the nearest unit does not exceed 75 feet. Where necessary, extinguishing agents shall be protected against freezing.
- (13) Fire extinguishers in exhibition areas shall be provided at all hose cabinets as required in Section 15-16-090 (e).

#### **15-16-650 Multiple requirements**

Where more than one classification and rating of extinguisher is required by this code for an area or room, an extinguisher having a multiple classification and rating may be used in lieu of separate extinguishers having only a single classification.

#### **15-16-660 Installation**

Every required or non-required fire extinguisher, when installed, shall be fully charged and ready for immediate use. Where an extinguisher is likely to be obscured by piles of stock, lumber or otherwise, a sign shall be installed and maintained which will mark the location of such extinguisher in a manner legible at a distance of at least 50 feet.

#### **15-16-670 Inspection and tests**

Fire extinguishers shall be inspected regularly and kept in good condition, ready for immediate use at all times. All extinguishers shall be maintained annually as specified in National Fire Protection Association's Pamphlet 10A, entitled "Recommended Good Practice for the Maintenance and Use of Portable Fire Extinguishers," 1973 Edition. Hydrostatic testing shall be performed at the prescribed intervals as given in the aforementioned pamphlet. Whenever a liquefied gas extinguisher or gas cylinder used for inert gas storage is hydrostatically tested, the test shall be conducted in accordance with Pamphlet C-1, Fourth Edition, entitled "Methods for Hydrostatic Testing of Compressed Gas Cylinders," published by the Compressed Gas Association.

**15-16-680                    Tags to be attached**

Every standard fire extinguisher shall have attached thereto a tag which clearly indicates the dates of charging, filling, maintenance, recharging, or refilling, as applicable, with the signature of the person performing the work, and the license number of the serviceman. The color and form of the tag shall be determined by the deputy commissioner in charge of fire prevention; provided, however, that the color used for any one year shall be different from the color used for the previous year. The tag shall have clearly imprinted thereon in numerals no less than 1/2 inch in height, the year for which it is issued.

Every such fire extinguisher which has passed the hydrostatic pressure test as herein required shall be provided with a metal label or tag or cylinder stamping as prescribed in the aforementioned NFPA pamphlet 10A or Pamphlet C-1, whichever is applicable.

**15-16-690                    Licensing of servicemen**

Every fire extinguisher serviceman shall be licensed in accordance with the provisions of Chapter 15-4.

**15-16-700                    Violation – Penalty**

Any person who violates any provisions of Sections 15-16-620 to 15-16-690 shall be fined not more than \$200.00 for each offense.

## **15-16 Part 3 (STANDARD INSIDE STANDPIPE SYSTEMS)**

### **15-16-710 Definition of system.**

A standard inside standpipe system, for the purposes of this code, is hereby defined as an arrangement of piping installed in a building with outlets located in such a manner that water can be discharged in streams through hoses attached to such hose outlets for the purpose of extinguishing a fire and so protecting the building and its contents with pumps, tanks, and other equipment necessary to provide an adequate supply of water to the hose outlets. Every inside standpipe system required by this code shall comply with all the requirements hereinafter enumerated for such a system. Fire pumps, air compressors, hoses and all other equipment installed in connection with a standard inside standpipe system, except for pressure maintenance pumps, shall be of a make, type, and design which has been tested and approved by and which bears the label of an organization nationally recognized as an authority.

(Prior code § 91-53)

### **15-16-720 Where standpipe system required.**

Standard inside standpipe systems complying with the requirements of Sections 15-16-710 to 15-16-1190 shall be provide in all buildings exceeding 80 feet in height with the exceptions listed in Section 13-196-190.

(Prior code § 91-53.1)

### **15-16-730 Other definitions.**

For the purposes of this chapter, other terms used hereinafter are hereby defined as follows:

“Air compressor” means a device for supplying air under pressure to the cushion tank of an inside standpipe system.

“Fire area” means the entire floor area enclosed within the exterior walls of a building, if not divided into independent areas by fire walls, or the floor area of any such independent area, if so divided.

“Fire pump” means a device used for supplying water to an inside standpipe system at the pressure required by the system.

1. “Automatically controlled.” An automatically controlled fire pump is one which starts automatically when the pressure in the system drops to a predetermined point and stops automatically when the pressure in the system rises to a predetermined point.

“Pressure maintenance pump” means a small centrifugal pump under automatic control used to maintain pressure on the system to avoid frequent operation of the fire pump.

“Siamese connections” means a two or other multiple-inlet fitting installed on the outside of a building and connected to the standpipe main of an inside standpipe system for the use of the fire department only, to supply water to the system.

“Water supply piping in an inside standpipe system” means the water supply piping from the source of supply to hose outlets. The sections of the piping are:

1. Pump suction: the pipe which conveys the water from the city main or other source of supply to the fire pump.
2. Standpipe main: the pipe which conveys the water from the fire pump to the standpipe risers.
3. Standpipe risers, or standpipe: a vertical pipe which extends upward through a building and conveys the water from the standpipe main to the hose outlets.

(Prior code § 91-54)

#### **15-16-740 Permit fees.**

Before the installation of an inside standpipe system required by the provisions of the code, a plan setting forth all essential details of the inside standpipe system shall be submitted to the bureau of fire prevention. Upon finding that the plan conforms to the requirements of the code and after payment of standpipe permit fees hereinafter specified, said plan shall be approved by the bureau of fire prevention.

The fees charged in connection with an inside standpipe system shall be as follows:

For the approval of the standpipe plan and the initial inspection of the inside standpipe system required by the provision of this code, a fee of \$36.00 shall be charged for the first standpipe riser and \$18.00 for each additional standpipe riser. For the test of a fire pump used in connection with an inside standpipe system, a fee of \$18.00 for each unit of pumping capacity of 50 gallons per minute or fraction thereof shall be charged with a minimum permit fee of \$180.00. (Prior code § 91-55; Amend. Coun. J. 12-15-92, p.27387)

#### **15-16-750 Installation certification.**

After completing a standpipe system installation, the contractor shall submit to the deputy commissioner in charge of the bureau of fire prevention, a written certification that the system has been installed in accordance with the plans approved by the bureau of fire prevention.

(Prior code § 91-56)

#### **Types of systems.**

Inside standpipe systems may be:

- (a) Wet, in which the pipes are kept filled with water.

- (b) Dry, in which a portion of the piping nearest the hose outlets normally is kept filled with air and so arranged that the operation of an outlet will automatically admit water to the system. Dry systems shall be used only when a wet system is impracticable on account of a deficiency of heat in the area in which piping is located.

(Prior code § 91-57)

### **15-16-770 Source of water supply.**

The water supply for inside standpipe systems shall be taken from a source sufficient to provide a minimum pressure of 65 pounds per square inch with 500 gallons per minute flowing at the highest hose outlet for a period of at least one-half hour. The total water supply capacity shall be not less than 500 gallons per minute for the first standpipe and 250 gallons per minute for each additional standpipe riser, but no standpipe system need have a capacity greater than 1, 500 gallons per minute.

(Prior code § 91-58)

### **Fire pumps.**

Where fire pumps are used to meet the water supply requirements, the minimum capacity of such pump shall be 500 gallons per minute at a pressure of not less than 100 pounds per square inch. However, no one pump need have a capacity of more than 1, 500 gallons per minute.

(Prior code § 91-59)

### **Use for other services.**

An inside standpipe system and a sprinkler system may be connected to the same water supply; provided, however, the water supply is of sufficient capacity for the required capacity of the sprinkler system and one-half the required standpipe capacity. It shall provide sufficient pressure for the more severe demands.

(Prior code § 91-60)

### **Fire pump requirements.**

Pumps and auxiliary equipment, including starters, required to form complete pumping units, shall be of the centrifugal type designed and developed for this class of service and listed by a national testing laboratory.

In each case, the pump shall be selected to meet the conditions surrounding the installation and installed in accordance with the specification in NFPA 20, entitled "Standard for the Installation of Centrifugal Fire Pumps," published by the National Fire Protection Association in 1973, except as may be provided below.

(Prior code § 91-61)

**15-6-810 Pumps supplied from city main.**

If the supply is taken from a city main, the pumping unit shall be designed to develop its full capacity at its rated pressure; provided, however, that if it is the source of supply for an upper standpipe system in a building having multiple systems, it may take its suction from the discharge of the fire pump for the system immediately below, but all piping shall be arranged so that pressure from the higher pressure system cannot be delivered to the lower pressure system.

(Prior code §91-62)

**15-6-820 Fire pump auxiliary equipment.**

Pumps shall be designed for automatic operation, with a time delay device set for one minute for each ten horsepower of motor rating, but not to exceed seven minutes, continuous operation after each start provided and a separate automatically controlled centrifugal pressure maintenance pump to avoid too frequent starting and stopping operations of the fire pump.

(Prior code § 91-63)

**15-6-830 Pressure-control devices.**

All pressure-controlling and pressure-limiting devices installed in connection with a fire pump shall be designed for operation over a minimum charge of zero to 300 pounds per square inch.

(Prior code § 91-64)

**15-6-840 Pump suction piping.**

The suction pipe size to a fire pump shall be six inches for 500 and 750 gallons per minute pumps and eight inches for 1,000 and 1,500 gallons per minute pumps. This pipe shall be directly connected to the city main or suction source free from any meter (except a detector meter installed in a bypass around a check valve). The city connection shall be increased two inches if used for both domestic consumption and fire protection demands when the domestic service exceeds two inches.

(Prior code § 91-65)

**15-6-850 Requirements for auxiliary drive.**

Diesel or natural gas driven electric generators or direct diesel or natural gas drive, shall be installed on fire pumps directly serving floors located over 500 feet high.

(Prior code § 91-66)

**15-6-810 Piping arrangement.**

The piping system shall consist of mains from the sources of supply, risers, branches and other piping to the hose outlets; it shall include the connection from the city main or other source to the suction of the pump. In addition to the source of supply inside of the building, there shall be one or more pumper or siamese connections at points outside the building directly connected to the main for the use of the city fire department. The standpipe main from the source of supply shall be located in the lowest story of the building and shall be completely looped, without dead-ends, when the building height exceeds 500 feet.

((Prior code § 91-67)

**15-16-870 Piping design.**

All piping (mains, risers and branches) shall be of wrought iron or mild steel, black or galvanized or ductile iron. Where the pressure is not more than 300 pounds, pipe may be standard or extra heavy weight; where the pressure is more than 300 pounds, the pipe shall be approved for that pressure. All fittings in wrought iron or mild steel pipe shall be black or galvanized; in main piping two and one-half inches and larger, at changes in direction they shall be long radius pattern and flanged in all water supplies around pumping equipment at all changes of direction in the mains; at the base of each standpipe riser and at all points where branches are taken from the mains. They shall be standard or extra heavy weight where the pressure in the system is not more than 175 pounds; extra heavy cast iron, cast steel or ductile iron where the pressure is more than 175 pounds and not more than 400 pounds and carbon steel or ductile iron where the pressure is more than 400 pounds.

(Prior code § 91-68)

**15-16-880 Piping drains.**

All piping shall be provided with drains.

(Prior code § 91-69)

**15-16-890 Risers.**

Connected to the standpipe main there shall be one or more independent standpipe risers to supply all the hose outlets in the building.

(Prior code § 91-70)

**15-16-900 Arrangement of risers.**

The number of risers shall be determined by the floor area of the building. They shall be arranged so that all portions of the floor in all stories can be protected by fire hose not more than 100 feet long if the control valve is located in a properly enclosed stairwell, and 75 feet if not. This length of hose shall extend to within 30 feet of the outside wall if the space is not divided into rooms or into the room farthest from the standpipe to which the hose is connected if the space is so divided.

(Prior code § 91-71)

**15-16-910 Location of risers.**

Risers shall be located in or near the stair enclosures except on the ground floor or where the number of risers is greater than the number of stair enclosures when the additional risers may be located at other points as approved by the deputy commissioner in charge of the bureau of fire prevention and adequately protected against mechanical injury.

(Prior code § 92-72)

**15-16-920 Size of risers.**

Risers shall be not less than 4 inches in diameter for 13 or less stories; 6 inches for 15 additional stories, and 8 inches for all additional stories. Main shall be of not less size than the largest riser.

(Prior code § 91-73)

**15-16-930 Fire department hose connections.**

A two and one-half-inch fire department hose connection and valve shall be provided in each story on each required riser (except at street grade) and above the roof, the connections and valves shall be protected against mechanical damage. Additional fire department connections with valves shall be connected to the main if necessary to service basements or other stories with hose of the length prescribed.

(Prior code § 91-74)

**15-16-940 Hose valve design.**

The two and one-half inch hose valves for the use of the fire department, as hereinbefore prescribed, shall be of the gate or angle type and shall be located at such a height that the centerline of the valve shall be not less than 3 feet nor more than 6 feet above the floor and so installed that the water will flow through the valve without kinking or bending the hose. Where the pressure is not greater than 300 pounds, the valve, except hand wheel, shall be of extra heavy brass. Hand wheels on all two and one-half-inch valves shall be of solid construction of malleable iron, cast iron, brass, or bronze and shall be not less than five inches in diameter. Each two and one-half-inch outlet shall be provided with a lugged cap to protect the threads of the valve, attached to the valve by a chain not less than six inches long.

(Prior code § 91-75)

**15-16-950 Hand hose connections.**

A one and one-half-inch hose connection and valve shall be provided adjacent to each fire department connection, except at the connection above the roof if this is exposed to freezing.

(Prior code § 91-76)

**15-16-920 Hand hose valve design.**

The one and one-half-inch hose valve shall be of the gate or angle type. Where the pressure is not greater than 300 pounds, the entire valve, except hand wheel, shall be of brass, of standard or extra heavy weight; where the pressure is greater than 300 pounds, the valve, except hand wheel, shall be of extra heavy brass. Hand wheels shall be of cast or malleable iron, brass, or bronze.

(Prior code § 91-77)

**15-16-970 Equipment at hose outlets.**

There shall be attached to each one and one-half-inch hose valve not more than 100 feet of one and one-half-inch approved fire hose if the control valve is located in a properly enclosed stairwell and 75 feet if not, provided with an approved nozzle; the minimum length of hose permitted with one pair of couplings shall be 50 feet. This hose shall be hung on a semiautomatic rack so constructed that the hose can be quickly laid without having it catch in the rack or fall to the floor, that the water will be held back by the hose when on the rack, and that one person can operate the rack which shall swing freely in the direction of the pull and means for holding the nozzle shall be arranged so that it can be easily removed. Racks shall be installed in a suitable cabinet or shall have a cover, which will protect the hose from injury, from moisture, dust and other cause.

(Prior code § 91-78)

**15-16-980 Pressure-reducing devices.**

When the pressure at nozzles is more than 65 pounds per square inch, the one and one-half-inch hose valve shall be provided with a device or disc either to limit the pressure to 65 pounds or to restrict the flow, so that the nozzle can be safely handled by one man.

(Prior code § 91-79)

**15-16-990 Domestic use prohibited.**

Connections for domestic supply shall not be taken from any part on the inside standpipe piping.

(Prior code § 91-80)

**15-16-100 Multiple systems.**

An interior standpipe system required in a building, the top floor of which is more than 275 feet above grade, exclusive of space used for sprinkler, elevator, ventilation, and other building machinery, shall be separated into two or more systems, each of which shall include a fire pump, pressure maintenance pump, and all other equipment and piping necessary for a complete inside standpipe installation. The lowest system shall serve the portion up to and including the story the floor of which is 275 feet or less above grade. Above this point systems shall be provided to serve zones of not more than 20 stories each.

(Prior code § 91-81)

**15-16-1010 Express risers.**

In a building having a top floor which is more than 275 feet above grade, individual zones, as required by this code, shall be supplied by two or more separate risers from the zone fire pump located in the lowest story of the building, known as an express riser, except that the number of express risers shall not exceed the number of risers serving that zone; or by individual fire pumps located on the lowest floor of each zone taking suction under head from a tank automatically filled by two or more risers from the adjacent lower zone. Such a tank shall have a capacity sufficient to supply the largest pump in the zone at its rated capacity for at least 30 minutes but not less than 10,000 gallons.

(Prior code § 91-82)

**15-16-1020 Siamese connections required.**

At least one siamese pumper connection shall be provided on each street exposure to a limit of two street exposures, except that one siamese pumper connection will be permitted in the case of two adjacent street exposures whose combined length is not greater than 250 feet. If any exposure is more than 250 feet long, there shall be two siamese connections for such exposure no closer than 200 feet apart; however, no one building need have more than two siamese connections for an inside standpipe system. All Siamese connections shall be located not less than 18 inches nor more than five feet above grade at the building line. Hose threads shall fit the couplings of the city fire departments; they shall be provided with caps securely attached to the connection.

(Prior code § 91-83)

### **15-16-1030 Check valves.**

Each Siamese pumper connection shall be connected directly to the system through a four-inch pipe with a straightway or silent-type check valve in the connection; there shall be no other valves in the pipe connection. Each connection shall be drained between the check valve and the outside hose coupling.

(Prior code § 91-84)

### **15-16-1040 Arrangement of siamese connections.**

Where the inside standpipe system has a single riser, the siamese connection shall be connected on the system side of the gate valve in the riser. Where the system has two or more risers; the siamese connections shall be connected on the supply side of the gate valve so that with any riser shutoff the supply will be into the remaining risers. All piping shall be arranged to connect into the system by the most direct route as required by this code.

At each siamese connection, there shall be provided a flat square metallic plate attached to the siamese connection or the building near the connection on which shall be placed the word "STANDPIPE" if there is a single system, or the words "LOW LEVEL STANDPIPE: BASEMENT (OR SUBBASEMENT): TO FLOOR" or "HIGH LEVEL STANDPIPE: FLOOR TO FLOOR" or other suitable marking if there is more than one system.

(Prior code § 91-85)

### **15-16-1050 Valves.**

All parts of the system shall be provided with gate valves so that any portion can be taken out of service for repairs or in emergency without interfering with the operation of the remainder of the system. Each system shall be provided with a gate valve so located as to control all sources of water supply except siamese connections. All valves in connections to water supply and from main to risers shall be outside screw and yoke pattern or other indicating type.

Check valves shall be installed in all sources of water supply including both suction and discharge side of the fire pump; they shall be straightway pattern or silent-type installed in horizontal piping. A gate valve shall be installed on each side of each check valve unless otherwise noted.

Gate valves and check valves more than two and one-half inches in diameter shall meet the following requirements:

- (a) Where the pressure does not exceed 300 pounds, all valves may be of brass, cast iron or steel.
- (b) Where the pressure exceeds 300 pounds but does not exceed 400 pounds, all valves shall be extra heavy brass, extra heavy cast iron or extra heavy steel.
- (c) Where the pressure exceeds 400 pounds, all valves shall be of special material designed to withstand the pressure to which they are subjected.

- (d) All component parts of valves shall be of dimensions suitable for the material of which they are constructed and designed for the required pressure.

Metal discs shall be attached by wires or incombustible fastenings to the wheels of all outside screw and yoke valves arranged to designate the use of each valve.

A diagram drawn to scale showing the city connection, fire pump, siamese connections, standpipe main, risers and all valves shall be framed behind glass and permanently posted in a conspicuous place on the fire pump control panel.

Gate valves controlling water supplies for main and risers shall be located where readily accessible; valves which are not within easy reach from the floor level shall be rendered accessible by permanent iron ladders or other suitable construction.

All gate valves in main and risers shall be secured open; they shall be plainly marked to indicate the area controlled.

(Prior code § 91-86)

#### **15-16-1060 Steam piping.**

If the fire pump is steam driven, a connection shall be made directly from the main steam header at the boilers to the pump, with valve at the header; a pressure regulator governor shall be installed in a bypass around the main valve in the steam supply to the pump.

(Prior code § 91-87)

#### **15-16-1070 Test manifold and wall hydrants.**

Each system supplied by a fire pump shall be provided with a discharge test manifold or wall hydrant having one two and one-half-inch individually valved hose connection for each 250 gpm of rated pump capacity. The discharge test manifold should be so located that water can be discharged to a safe area with not more than 100 feet of hose attached.

(Prior code § 91-88)

#### **15-16-1080 Gauges.**

There shall be provided in the discharge side of each fire pump a spring pressure-indicating gauge with indications from zero to double the working pressure of the system. A suitable compound pressure and vacuum indicating gauge shall also be provided near each fire pump.

(Prior code § 91-89)

#### **15-16-1090 Painting.**

All suction connections to the fire pump and all discharge piping, except standpipe risers, shall be painted red.

(Prior code § 91-90)

### **15-16-1100 Protection against freezing.**

All portions of inside standpipe systems, normally filled with water and exposed to frost and freezing temperature, shall be protected against freezing. (Prior code § 91-91)

### **15-16-1110 Dry pipe system.**

A dry pipe system shall be permitted only in a building, or a portion of a building, which is unheated or which is heated only a part of the time.

The dry pipe system shall be isolated from the water supply, or from the wet portion of the system, if a combined wet and dry pipe system, by one or more dry pipe valves located at accessible points as near as practicable to the dry system adequately protected against mechanical injury and against freezing; piping shall be arranged so that each standpipe riser larger than six inches shall be provided with an independent dry pipe valve.

The valves shall automatically control the flow of water. They shall be constructed and installed so that under normal conditions, the portion of the piping in unheated spaces will remain dry. The operation of a hose valve will permit water to flow into the piping to supply water at the hose valve.

An instruction sheet giving full directions for the maintenance and operation of the dry pipe valve and the safe minimum and maximum air pressure to be maintained on the dry pipe valve shall be framed behind glass and permanently posted in a conspicuous place near each dry pipe valve.

(Prior code § 91-92)

### **15-16-1120 Buildings under construction.**

For all buildings for which there is required a system of standpipes, there shall be installed during construction, a system of piping which will protect the building during this period. If the building is over 300 feet high and fire pumps are required, they shall be installed and in service. This may be a part of the permanent installation or may be an independent temporary system. If a temporary system, it shall consist of a main to which shall be connected not less than one-half the number of risers required for the permanent system and supplied through not less than one-half the number of siamese connections located where easily accessible with a check valve at each siamese and risers carried up through the building provided with two and one-half-inch valves with fire department thread located in each story. These connections shall be accessible and protected with non-corrodible lugged caps attached to the riser with a chain not less than eight inches long. Outlets shall be in accessible locations and so that hose can be attached without kinking or bending.

In the installation of the standpipe risers, the top openings at no time shall be more than two stories below the top of the main structural supports of the building; risers shall be pipe not less than one inch in diameter with no valve other than a check valve installed at the top of each riser to permit water to pass out of the same. The discharge of this pipe shall be located so that it will not cause damage to the building in process or construction or any adjacent building.

(Prior code § 91-93)

**15-16-1130 Buildings being demolished.**

In all buildings or structures which are being reduced in height, torn down, wrecked or demolished and which are equipped with inside standpipe systems, the work of demolition shall proceed in such a manner that the systems will be maintained in an operative condition with the top of the risers not more than two stories below the top of the main structural supports of the building, or until the structural supports have reached a height of less than 40 feet above the street grade.

Siamese connections shall not be removed until the lowest section of the risers has been removed.

(Prior code § 91-94)

**15-16-1140 Alarms.**

Each standpipe shall be provided with an alarm valve or flow indicating device connected to operate a local alarm sounding device inside the main lobby, in the boiler room, ring an outside bell and telephone switchboard room where provided.

(Prior code § 91-95)

**15-16-1150 Test method.**

Each fire pump shall be given an acceptance test for one hour and shall deliver its rated capacity at the required speed and pressure, during not less than 30 minutes of this test period, it shall deliver a 50 percent overload. It shall not cause the bearings in the pump or on its motor, engine or turbine to become excessively heated. On electric-driven fire pumps, there shall be no increase in the temperature of the electric wiring, electric windings on the motor and electric-current-carrying devices on the control panel other than as noted on the ratings of the various equipment.

(Prior code § 91-96)

**15-16-1160 Annual test required.**

An annual test shall be made of each fire pump during which time water shall be discharged from the highest hose outlet of each riser for a period of at least five minutes and each fire pump shall deliver its rated capacity at its rated pressure through a test manifold or wall hydrant for a period of at least 15 minutes. For the annual fire pump test, a fee of \$18.00 for each 50 gallon pumping capacity per minute shall be charged. The minimum fee shall be \$180.00. The afore stated fees shall not be assessed with respect to any building used solely as a school operated by the Chicago Board of Education or by a religious or charitable organization.

(Prior code § 91-97; Amend. Coun. J. 7-13-94, p. 53399)

**15-16-1170 Inspection.**

It shall be the duty of the deputy commissioner in charge of the bureau of fire prevention to cause an inspection to be made of all standpipe systems at least once every six months. In case such inspection discloses any violations of or variation from the requirements of this ordinance,

or any defective conditions, which would handicap the operation of the standpipe system, notice shall be sent to the owner or agent in control of the building containing such standpipe system to remove or correct such defective conditions within such time as shall be set forth by the said notice. For every such semiannual inspection, it shall be the duty of the owner to pay the director of revenue an inspection fee of \$50.00.

(Prior code § 91-98; Amend. Coun. J. 112-15-92 p. 27387)

#### **15-16-1180 Retroactivity.**

The provisions of Sections 15-16-710 to 15-16-1180, both inclusive, shall apply to existing buildings including pre-ordinance buildings and buildings hereafter constructed but no existing building shall be required to make any alteration in its standard inside standpipe system, if originally installed in accordance with approved plans and permit, by reason of amendments to this code adopted after passage of this ordinance.

(Prior code § 91-99)

#### **15-16-1190 Existing buildings.**

Existing buildings, which required standpipes under Section 15-16-090(d) only, shall use the following design requirement to comply with this code:

1. Such building is equipped with one four-inch inside standpipe riser where the ground area of the building does not exceed 20,000 square feet and an additional four-inch inside standpipe riser where the ground area of the building is over 20,000 square feet.
2. Each such standpipe riser is equipped, in the basement and on each floor level, with a 1 and ½ inch connection with 75 feet of hose attached, and a 2 and ½ inch valve and connection provided with standard Chicago Fire Department thread.
3. In such buildings, equipped throughout with an approved system of automatic sprinklers, sprinkler risers, which are not less than four inches in diameter, may be used in lieu of inside standpipe risers.
4. Such building is equipped with a Siamese pumper connection.
5. The standpipe or sprinkler risers are maintained wet at all times.
6. The piping, fittings, and equipment used in connection with such risers shall be capable of withstanding the water pressure required for fire extinguishment.
7. The location and equipment of such risers are approved by the deputy commissioner in charge of fire prevention.

(Prior code § 91-100)

## **15-16 Part 4 (STANDARD FIRE ALARM SYSTEMS)**

### **15-16-1200 Definition of system.**

The wording “standard fire alarm system” where used in this code, is hereby defined to mean a manually operated fire alarm system equipped with automatic detectors, if required, as hereinafter defined. Such system shall be installed in a building for the purpose of notifying the occupants and/or employees of said building of conditions due to fire or other causes, which necessitate that the building be vacated immediately by the occupants. All equipment and devices used in the installation of such a system shall be tested by and bear the label of approval of a nationally recognized testing laboratory acceptable to the deputy commissioner in charge of fire prevention and the bureau of electrical inspection. The workmanship, equipment and quality of installation shall conform to the electrical requirements of Title 14 of the Municipal Code of

Chicago.

(Prior code § 91-101)

### **15-16-1210 Where required.**

Standard fire alarm systems complying with the requirements of Sections 15-16-1200 to 15-16-1510, both inclusive, shall be provided in the occupancies described in Sections 15-16-110 to 15-16-150, both inclusive of this Code.

(Prior code § 91-101.1)

### **15-16-1220 Other definitions.**

As used in this chapter:

“Annunciator” means a visual device which must be manually reset, indicating the particular zone on which an alarm-sending station or automatic detector has operated and indicate the location of the zone.

“Automatic detector” means a device or assembly which operates upon either an increase in temperature, the sensing of an abnormal amount of smoke or combustion products, or the sensing of a flame and activates the alarm-sounding devices.

“Automatic fire detection system” means a system using automatic detection devices or assemblies to activate alarm-sounding devices.

“General alarm” means an alarm sounded on all alarm-sounding devices throughout the building.

“Presignal alarm” means an alarm sounded on the pre-signal alarm-sounding devices only.

“Zoned-type fire alarm system” when used in connection with fire alarm or fire detection systems, means a system having two or more separate, distinct, supervised alarm-sending circuits serving separate areas of a building.

(Prior code § 91-102)

**15-16-1230            Installation certification.**

After completing a fire alarm system installation, the contractor shall submit to the deputy commissioner in charge of the bureau of fire prevention, a written certification that the system has been installed in accordance with the plans approved by the bureau of fire prevention.

(Prior code § 91-103)

**15-16-1240            Classification of systems.**

All fire alarm fire detection systems shall be divided into two classes as follows:

Class I – Non-coded, closed circuit general alarm systems

Class II – Coded, closed circuit, pre-signal and general alarm systems

(Prior code § 91-104)

**15-16-1250            Class I system.**

A Class I standard fire alarm system shall be a non-coded closed circuit fire alarm system, which shall be so installed and arranged that the operation of an alarm-sending station will automatically actuate all signaling devices and sound a continuous general alarm throughout the building until the alarm-sending station has been restored to its original condition.

(Prior code § 91-105)

**15-16-1260            Class II system.**

A Class II standard fire alarm system shall be coded, closed circuit, pre-signal fire alarm system, which shall be so installed and arranged that the initial operation of an alarm-sending station will sound, at least four times, the code of that alarm-sending station on the pre-signal alarm-sounding devices only. Pre-signal alarm-sounding devices shall be installed not to alert all the occupants of the building but to notify those in authority and certain occupants that a fire or emergency exists in the building. Such pre-signal alarm-sounding devices shall be located at the telephone switchboard, in the engine room, general offices, and in such other places in the building where the members of the fire brigade, employees, or attendants work or assemble. Every alarm-sending station of a Class II standard fire alarm system shall be equipped so that a coded, general alarm can be sounded by the use of keys, plugs, or similar devices which shall at all times, be available to persons with authority to sound a general alarm. In every building where a Class II standard fire alarm system is installed there shall be on duty at all times two adults charged with the responsibility of sounding a general alarm.

(Prior code § 91-106)

**15-16-1270            Fire detectors, where required.**

For automatic fire detector requirements, see Chapter Article I of Chapter 15-16 of this Code.

(Prior code § 91-107)

**15-16-1280 Alarm sounding devices.**

Alarm-sounding devices shall be provided of such type and shall be so distributed that they can be heard clearly throughout the building except on systems serving only a Type III school in a building not otherwise requiring a system in which case they may be located only in the spaces occupied by the Type III school. At least one such sounding device shall be installed on each floor and in the basement. Alarm-sounding devices shall consist of approved bells, gongs, whistles, horns or chimes.

When pre-signal alarm-sounding devices are installed in patient areas of hospitals and nursing homes, they shall be of such a type so as to be unidentifiable to patients as a fire alarm. The lowest part of all alarm-sounding devices, except trouble bell, shall be located at least 8 feet above the floor.

(Prior code § 91-108; Amend. Coun. J. 9-8-86, p. 33588)

**15-16-1290 Visual alarms.**

Visual alarm devices may be used to supplement the sounding alarm devices but shall not be installed as substitutes for sounding alarm devices in a building for the deaf; visual alarm devices shall be required in addition to sounding alarm devices. All visual alarm devices shall operate when an alarm is sounded.

(Prior code § 91-109)

**15-16-1300 Manual alarm-sending stations.**

Manual alarm-sending stations shall be so located that from any part of the building not more than 100 feet will have to be traversed to reach an alarm-sending station. There shall be at least one such alarm-sending station on each floor and in each basement.

(Prior code § 91-110)

**15-16-1310 Manual alarm-sending stations – Penal institutions.**

In penal institutions, manual alarm-sending stations may be located solely at designated guard stations, provided that:

- a. The building is sprinklered in accordance with provisions of this chapter
- b. Smoke detectors are installed within the return air duct of the ventilation systems serving all occupied areas that automatically activate the pre-signal alarm and shut down the air-handling units
- c. Guards are on duty 24 hours a day with one guard present at the designated guard stations at all times
- d. Two guard stations are present on every level of the building
- e. The maximum travel distance from any point in the building to a guard station or a building exit does not exceed 250 feet

(Prior code § 91-110.1; Added Coun. J. 3-20-85; p. 14411)

Alarm sending stations shall be located in the natural path of exit in a readily accessible location except in schools where the alarm-sending station may be located inside classrooms provided a sign with 6 inch high letters is mounted in the corridor above the door of the classroom indicating the location of the sending station, and the classroom door has a breakaway glass panel with dimensions not less than 12 inches on a side so located that the classroom door can be unlocked without a key.

(Prior code § 91-111)

**15-16-1330            Instructions.**

The manner of operation of alarm-sending stations shall be standardized throughout each system and shall be clearly described in instructions which shall be permanently attached to each alarm-sending station. Every alarm-sending station shall be so installed and equipped that it can be tested without sounding a general alarm.

**15-16-1340            Key-operated alarm-sending stations.**

In a mental or penal institution, alarm-sending stations may, with the approval of the deputy commissioner in charge of fire prevention, be of the type requiring a key to activate the station; provided, however, the corridor of the area served by such a station has an automatic fire detection system. Such stations shall be limited to those areas of these occupancies which are accessible to unattended residents.

(Prior code § 91-113)

**15-16-1350            Type III schools.**

Alarm-sending stations shall be required on fire alarm systems serving only a Type III school in a building not otherwise requiring a system within the space occupied by the Type III school.

(Prior code § 91-113.1; Amend Coun. J. 6-27.90, p. 17610)

**15-16-1360            Tests.**

Each alarm-sending station shall be tested at least once each month. Every standard fire alarm system shall be tested at least once a year. This test shall include the operation of all alarm-sounding devices and connections to city fire alarm boxes where such a connection is required by this Code.

(Prior code § 91-114)

**15-16-1370            Connecting fire-detection devices to system.**

Where automatic fire detectors are required by this Code in occupancies also required to have a standard fire alarm system, activation of either the automatic fire detectors or the manual alarm-sending station shall cause a general alarm to be sounded, except that smoke detectors in the dwelling units of dormitories, installed in accordance with Section 15-16-140, are not required to be connected to the standard fire alarm system nor are they required to sound a general alarm.

(Prior code § 91-115; Amend Coun. J. 8-4-93, p. 36644)

**15-16-1380                    Zoned systems.**

A zoned-type fire alarm system, with zones not exceeding 20,000 square feet or serving more than one floor, shall be required under any one of the following conditions:

- (a)     When the building exceeds four stories in height
- (b)     When any side of the building is 200 feet or more in length
- (c)     When the system has more than eight manual alarm-sending stations
- (d)     When more than ten automatic detectors are connected to the standard fire alarm system, unless the alarm system serves only a Type III school occupying only the first floor of a building;
- (e)             When the ground floor area of the building exceeds 20,000 square feet

(Prior code § 91-116; Amend Coun. J. 3-15-91, p.31145)

**15-16-1390                    Annunciators-When required.**

An annunciator shall be required on any system having more than one zone.

(Prior code § 91-117)

**15-16-1400                    Location of annunciators.**

An annunciator, where required by this code, shall be placed in a conspicuous location either inside or outside of and within 20 feet of the main entrance to the building. The annunciator shall indicate the zone from which an alarm has originated by means of a translucent rectangle, which is electrically illuminated from behind when an alarm is received from the zone. The zone shall be identified by opaque lettering on the rectangular indicator, which describes the location of the zone within the building. The lettering shall not be less than 1/4 inch in height. Provided however, that the annunciator may indicate by means of a diagram of the building with the zone identified by a light on the diagram corresponding to the area served by the zone. The diagram used must meet with the approval of the deputy commissioner in charge of the bureau of fire prevention.

A separate indicator shall be provided for each zone. When a sprinkler system is also installed in a building requiring a fire alarm annunciator, sprinkler waterflow alarms shall be provided with an indicator on the annunciator separate from other zones. Indication on the annunciator shall be continuous until manually reset.

(Prior code § 91-118)

**15-16-1410                    Exit instructions posted for coded systems.**

Instruction cards describing in detail the code employed and specifying the exit or exits to be used in any emergency shall be posted in conspicuous locations in buildings equipped with a Class II standard fire alarm system as follows:

- (a)             In Institutional Buildings. At each sending station, at the head nurse's desk on each floor, at the telephone switchboard, in the general office, engine room, and in rooms where attendants work or assemble

(b) In Schools. At each sending station, in the auditorium, engine room, and general office

(c) In Hotels and Dormitories. At each sending station, at the switchboard, in the office, the engine room, workrooms, and in public assembly rooms.

(Prior code § 91-119)

**15-16-1420            Trouble signal.**

The supervising signal shall be provided with a trouble bell arranged to ring continuously in case of energy failure, an open circuit or a ground in the fire alarm circuit. The trouble bell shall be located so that, in the opinion of the deputy commissioner in charge of fire prevention, it will be within audible range of some responsible person in the building. The trouble bell circuit shall be provided with a silencing switch in such a manner that the act of silencing the bell by operation of the switch automatically and positively transfers the trouble bell to a red lamp near the trouble bell. Immediately adjoining each trouble bell, there shall be a sign clearly identifying it as a trouble bell.

Where a standard fire alarm system has more than one trouble bell, each identification sign required by this section shall also indicate the portion of the system connected to each bell.

(Prior code § 91-120)

**15-16-1430            City fire alarm box, where required.**

Except as provided otherwise in Section 15-16-1460, a city fire alarm box shall be located within a distance of 100 feet from the principal entrance of every institutional building or theater and every assembly unit other than a theater having a capacity of more than 1,000 persons, any day care center operating between the hours of 9:00 p.m. and 6:00 a.m., every Type III school having a capacity of 100 children, every Type I school operating as or containing a day care center Class I, and every existing or pre-ordinance building and every building thereafter erected, two stories or more in height, used in whole or in part as a Type I school with 100 or more occupants or used in whole as a Type II school. The fire alarm systems required for such building under this Code shall be directly connected to the city fire alarm box or to a central station service as provided in Section 15-16-1460. However, the requirements of this section shall not apply to a Type III school if not in operation between the hours of 9:00 p.m. and 6:00 a.m., or a Type I school operating as or containing a day care center Class I if not in operation between the hours of 9:00 p.m. and 6:00 a.m., where all rooms occupied by the day care facilities and programs have a direct exterior exit.

(Prior code § 91-121; Amend Coun. J. 6-27-90, p. 17610; Amend Coun. J. 11-19-97, p. 57850)

**15-16-1440            Connection to city fire alarm box-Where required.**

Only those standard fire alarm systems in occupancies listed in Section 15-16-1430 shall be directly connected to a city fire alarm box except that the height and population limits need not apply.

(Prior code § 91-122)

**15-16-1450 Multiple system connection prohibited.**

The standard fire alarm system of not more than one building shall be directly connected to any one, city fire alarm box. This requirement shall not apply to any building, which was permitted to be connected to a common city fire alarm box prior to July 1, 1971.

(Prior code § 91-123)

**15-16-1460 Central station service.**

In lieu of providing a city fire alarm box with a direct connection from the building fire alarm system to the city fire alarm box, as required in Section 15-16-1430, an Underwriters'

Laboratories listed central station supervisory service may be connected to the building fire alarm system. Where such a service is used, the deputy commissioner shall be furnished with a current certificate of contract for the central station service and be notified within 24 hours of discontinuance of the service.

(Prior code § 91-124)

**15-16-1461 Fire alarms require by Section 13-96-1100.**

The fire alarm systems required by Section 36-96-1100 shall be connected either to a central station service as provided in Section 15-16-1480 or to a city fire alarm box.

(Added Coun. J. 11-2-94, p. 58476)

**15-16-1470 Telephone intercom system required in theaters.**

There shall be installed and maintained in every theater inter-communicating systems of telephones with stations on each floor of public space, on each side of the stage, in the engine room and boiler room, in the manager's office, and in the projection room.

(Prior code § 91-125)

**15-16-1480 Alarm summons.**

It shall be the duty of every owner, manager, or person in control of any church, school, theater, hospital, hotel, department store, public assembly unit, institutional building, or building used for a nursery, hospital, infirmary, asylum, or home for the aged, blind, insane or dependent persons, to summon the Chicago Fire Department immediately upon the discovery of fire in any such building.

(Prior code § 91-126)

**15-16-1490 Repairs.**

Any fire alarm system, which fails to function properly shall be repaired and placed in good operating condition within 24 hours.

(Prior code § 91-127)

**15-16-1500**                    **False alarms.**

If within any 48-hour period the operation of any fire detector causes two or more false alarms on a fire alarm system directly connected to a city fire alarm box, the property owner or tenant shall be required to have the system adjusted, repaired, or replaced within 24 hours.

(Prior code § 91-128)

**15-16-1510**                    **Approval of plans.**

Before any work is started on the installation, alteration, or extension of any fire alarm system, required by Article I of Chapter 15-16 of this code, complete plans and specifications of the proposed installation shall be submitted to the bureau of fire prevention and to the department of construction and permits for examination and approval. All installations, alterations or extensions of such fire alarms shall comply with all of the provisions of Sections 14-60-260 and 14-60-270 of this Code. The provisions of Section 15-16-1200 to 15-16-1510, both inclusive, shall apply to existing buildings including pre-ordinance buildings and buildings hereafter constructed.

(Prior code § 91-129; Amend Coun. J. 9-13-89, p.4604; Amend Coun. J. 6-14-95, p. 2841;  
Amend Coun. J. 3-5-03, p. 104990, § 44)

### **13-78-030 Mixed-occupancy high-rise buildings.**

With respect to a high-rise building that has both residential and non-residential occupancy, the residential portion(s) of such building shall be governed by those provisions of this chapter applicable to residential high-rise buildings, and the non-residential portion(s) of such building shall be governed by those provisions of this chapter applicable to non-residential high-rise buildings.

(Added Coun. J. 10-31-01, p. 71184, § I)

### **13-78-040 Creation and filing of plan.**

- (a) Every high-rise building shall have a plan in place. The owner shall be responsible for creating, implementing, maintaining and updating a plan for that building. The owner shall review the plan annually and as a result of such annual review, shall amend or update the plan as necessary to ensure that it is accurate and complete. The plan shall be made available upon request to personnel of the department of buildings, the office of emergency management and communications, the fire department, and the department of police. Upon any change of ownership or management of a high-rise building, the previous owner shall provide all copies of the plan required by this chapter to the new owner.
- (b) The owner of each Category 1 and Category 2 building, and the owner of each Category 3 and Category 4 building which is also of occupancy classification C (assembly) or D (open air assembly unit), shall be responsible for filing a copy of that building's Plan with the city's office of emergency management and communications. The owner of each Category 3 and Category 4 building which is also of occupancy classification A (residential), E (business), F (mercantile), or G (industrial) is encouraged, but not required, to file a copy of that building's plan with the city's office of emergency management and communications. Any plan filed with the city's office of emergency management and communications shall be in such form(s) and format(s) as that office requires.
- (c) For all high-rise buildings with a plan on file with the city's office of emergency management and communications, in the event the plan is amended or updated as a result of an annual review or more frequently on an owner's initiative, a copy of the amended or updated plan must be filed with the city's office of emergency management and communications.
- (d) Consistent with applicable law, the city shall treat all plans submitted as confidential, and shall provide the owner with a copy of any appeal, received by the office of emergency management and communications, of the office of emergency management and communications notice of denial provided to a third party seeking inspection and copies of that owner's plan.
- (e) If a high-rise building has two or more owners, the owners may create, implement, maintain and amend and update a single plan for that building on a collective basis or

(Added Coun. J. 10-31-01, p. 71184, § 1)

**13-78-080 Minimum plan requirement.**

The provisions of this section reflect minimum requirements which are not intended to restrict owners from implementing such additional measures as warranted.

- (a) Each plan shall contain a description of the actions all occupants should take in an emergency evacuation or drill during the regular business hours of the building and during non regular business hours of the building. Each plan shall set out a procedure for an evacuation of five floors below and two floors above any emergency resulting from a fire on a certain floor, and shall also set out a procedure for a full evacuation of the building.
- (b) Each plan shall specify in detail the evacuation role and duties of the designated personnel required by section 13-78-050, and shall state the name and in-house and wireless telephone and pager numbers for the F.S.D., deputies F.S.D., and building evacuation supervisor.
- (c) Each plan shall require the creation and posting in all elevator lobbies, of the high-rise building's core floor plan, showing floor-by-floor corridors, stairways, evacuation routes, areas of rescue assistance and elevator lobbies. With respect to residential high-rise building, the core floor plan also shall be made available to each residential unit for posting inside the residential unit.
- (d) Each plan shall establish a fire command station in the building lobby or entrance level for operations management in an emergency by the F.S.D., deputy F.S.D., or, for Category 4 buildings that have not designated an F.S.D. or deputy F.S.D., other appropriate person.
- (e) Each plan shall list the name and normal floor location of each regular occupant who has voluntarily self-identified that they need assistance and the type of assistance required to swiftly exit the high rise building in case of an emergency. Each plan shall designate and describe the location of one or more places of refuge or rescue, if any, for all such occupants in an emergency. As to each occupant, the plan shall provide for an individual who is one of the personnel designated pursuant to section 13-78-050 to assist such occupant during an evacuation or safety drill.
- (f) Each plan shall be filed; (1) in the office of the high-rise building; (2) at the security desk; and (3) in the vicinity of the fireman's elevator recall key or life safety panel or, as to residential buildings, in an identifiable location in the fire pump room. The plan shall be made readily available to building staff and to the designated personnel required by Section 13-78-050 at all time.

(Added Coun. J. 10-31-01, p. 71184, § 1)

### **13-78-090 Safety drills.**

- (a) As to Category 1 high-rise buildings and all high-rise buildings which are of occupancy classification C (assembly), or D (open air assembly unit), each plan shall require safety drills to be carried out under the direction of the F.S.D., not less frequently than twice a year. With regard to non-residential buildings, all employees, tenants and other occupants shall participate in such safety drills. With regard to residential buildings, all employees shall participate, and all residents shall be encouraged to participate. Drills may occur on a floor-by-floor basis, and a drill may conclude when all participating occupants have fully entered and have begun using designated stairwells. On an annual basis, the owner shall file with the fire commissioner an affidavit certifying that at least two safety drills have taken place on all occupied floors during the past year.
- (b) As to Category 2 high-rise buildings which are not of occupancy classification C or D, the requirements of subsection (a) shall apply, except that safety drills shall be carried out no less frequently than once a year.
- (c) As to Category 3 and Category 4 high-rise buildings which are not of occupancy classification C or D, safety drills, occurring with such frequency as will fully educate building occupants as to proper emergency evacuation procedure, are encouraged but not required.

(Added Coun. J. 10-31-01, p. 71184, § 1)

### **13-78-100 Distribution of information.**

- (a) *Non-residential high-rise buildings.* The plan shall be distributed to all tenants of the building, who shall be responsible for distributing it or making it available to their employees, including, upon request, in alternative formats (e.g., Braille, large print and audio tape). Each plan shall require creation of a clear written description of the actions that building occupants should take in an emergency. A copy of this description shall be provided to every new tenant when that tenant moves into the high-rise building, and shall be further provided annually to every tenant. The tenant shall be responsible for distributing this description to all that tenant's employees.
- (b) *Residential high-rise buildings.* Each plan shall require creation of a clear written description of the actions that building occupants should take in an emergency. A copy of this description shall be provided to every new resident when that resident moves into the high-rise building, and shall be further provided annually to every residential unit. This description shall be available in alternative formats upon request (e.g., Braille, large print and audio tape).

(Added Coun. J. 10-31-01, p. 71184, § 1)

1. Fire is defined as a chemical chain reaction which takes place with the evolution of heat and light. The base of the pyramid represents the chemical chain reaction that occurs when the three other elements: heat, fuel, and oxygen are present in appropriate proportions. Vapor gases are released during the burning process and are carried into the flame. The heat from the flame drives the chemical reaction. Once the fire is started, the temperature is determined by the amount of heat produced by the fuel.
2. There are three characteristics needed in order for a fire to burn (the picture demonstrates what the three are) this is referred to as the Fire Triangle

## FIRE TRIANGLE



**Fuel:** Gases, liquids, and solids are three forms of fuel.

**Gases:** Natural Gas, Propane, CO, Butane, and Hydrogen are good examples  
**Liquids:** Gasoline, Kerosene, Turpentine, Alcohol, Paint, Varnish and Olive oil  
**Solids:** Coal, Wood, Paper, Cloth, Wax, Grease, Leather, and Plastic

3. A really good example is a "match"

The red tip of a match is covered in some special products, such as phosphorus, sulfur, and powdered glass. The rough strip on the matchbox is made with special products too, such as more powdered glass. When the tip of a match is struck against this special surface, the friction between the two creates heat that ignites the match tip, which then in turn passes its heat and fire along the wood of the matchstick. When the matchstick has no more fuel (wood) it burns out, but if the matchstick is placed on wood, paper, or liquid, the chain reaction will continue.



Appendix A



**Life Safety Data Sheet**  
**For buildings exceeding 80 feet in height above grade.**  
**(For compliance with City of Chicago Municipal Code Section 13-196-203)**

Building Address \_\_\_\_\_

Building Owner \_\_\_\_\_

Office Phone  Cell/Alternate Phone

Building Manager \_\_\_\_\_

Office Phone  Cell/Alternate Phone

Height of Building  feet  stories

<p><b>Occupancy/Use(s) of Building</b> (Check all that apply)</p> <input type="checkbox"/> Residential <input type="checkbox"/> Institutional <input type="checkbox"/> Assembly <input type="checkbox"/> Mercantile <input type="checkbox"/> Business <input type="checkbox"/> Garage <input type="checkbox"/> Storage <input type="checkbox"/> Industrial	<p align="center"><b>Sprinkler System</b></p> Complete <input type="checkbox"/> Partial <input type="checkbox"/> What floors or areas are sprinklered? _____ _____ _____	<p align="center"><b>Standpipe System</b></p> Number of standpipes <input type="text"/> Location of standpipes _____ _____ _____
	<p align="center"><b>Stairwells</b></p> Number of Stairwells in building <input type="text"/> How many smoke-proof towers? None <input type="checkbox"/> One <input type="checkbox"/> Two <input type="checkbox"/> Are the doors to the stairwells locked from the stairwell side? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, is there an unlocking system? Yes <input type="checkbox"/> No <input type="checkbox"/> Is there a fire alarm system in the building? Yes <input type="checkbox"/> No <input type="checkbox"/>	

If residential or mixed use,  
 total number of dwelling units

**Pressurized Stairwells**

Does the building have any pressurized stairwells? Yes  No

If yes, which stairwells are pressurized? \_\_\_\_\_

Additional Information \_\_\_\_\_

**Fire Pumps**

Number of fire pumps in building

Size of pump(s)

1st pump	<input type="text"/>	gals/min	<input type="text"/>	lbs/sq in
2nd pump	<input type="text"/>	gals/min	<input type="text"/>	lbs/sq in
3rd pump	<input type="text"/>	gals/min	<input type="text"/>	lbs/sq in

I certify that to the best of my knowledge, all the above information is accurate.

Prepared by/ Name \_\_\_\_\_ Title \_\_\_\_\_ Daytime Phone Number



CHICAGO FIRE DEPARTMENT
Bureau of Fire Prevention

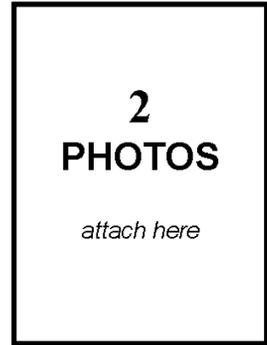
Emergency Preparedness Certificate

APPLICATION FORM

Certificate # \_\_\_\_\_
ID # \_\_\_\_\_
Official Use Only

This blank form must be correctly filled out and all questions must be answered. Answers must be in ink, and the affidavit below must be sworn to correctly. A false affidavit shall result in denial or revocation of certificate, and subject affiant to prosecution.

Applicants shall be at least 21 years of age.



A STATEMENT OF APPLICANT

- 1. Full name: Last First Middle Initial
2. Date of birth Month Day Year
3. Home Phone No. Area code Fax #: Area code E-mail address:
4. Current Address Number Street City State Zip Code

If you answer yes to any of the following questions (5-8), please explain on a separate sheet of paper.

- 5. Do you have difficulty reading and understanding the English language?
6. Do you have any disabilities that prevent you from acting as a FSD or DFSD?
7. Are you addicted to the use of intoxicating beverages or narcotics?
8. Have you ever been convicted of a crime (other than a minor traffic accident)?

\*\*\*\*\*

B EMPLOYMENT INFORMATION

- 9. Name of Employer:
10. Address:
11. Work Phone #: Area code Length of Employment:
13. Building Address where serving as FSD/DFSD, if applicable:

\*\*\*\*\*

C AFFIDAVIT

being first duly sworn, states under penalty of perjury, that he/she fully understands the questions above, and that the answers thereto are correctly stated in his/her own handwriting and are true in all respects.

Subscribed and sworn to before me, this day of A.D. 20 Signature of Applicant Date
Notary Public

Appendix C



**AFFIDAVIT**

**High Rise Safety Drill**

DATE: \_\_\_\_\_

BUILDING CATEGORY: \_\_\_\_\_

By signing below, I certify, under penalty of perjury, that during the past 12 months, covering the period from \_\_\_\_\_, 20\_\_ to \_\_\_\_\_, 20\_\_, \_\_\_\_\_ safety drill(s) have been conducted on all occupied floors as required by Section 13-78-090 of the Municipal Code of Chicago.

Building Name: \_\_\_\_\_

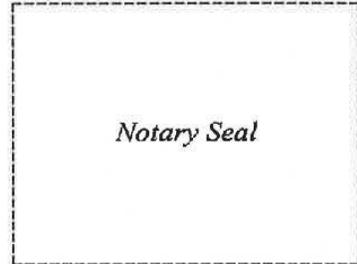
Address: \_\_\_\_\_

Submitted by:

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title (print)



\*\*\*\*\*  
*Mail this affidavit to:*

**CHICAGO FIRE DEPARTMENT  
BUREAU OF FIRE PREVENTION  
444 NORTH DEARBORN, 2<sup>ND</sup> FLOOR  
CHICAGO, IL 60610-4304**

ADDRESS	<i>Exact address of the building.</i>
STORIES	<i>Height of the building in stories. If the building is of various height, list the highest part and give details in the "additional information" section.</i>
CONSTRUCTION	<i>The construction <u>type</u>. ( I, II, III, IV, V) Do not use the numerical indicator, write out the type's name.(i.e. "Ordinary"). If the building is of more than one type, list the type with the least fire resistance, and make a note in "additional information".</i>
WIDTH & DEPTH	<i>Does not have to be exact.</i>
LOBBY PHONE#	<i>Main phone number on the <u>premises</u>.</i>
BEST ACCESS TO BUILDING	<i>Usually, but not always the main entrance. What is the best way for the fire department to enter the building?</i>
BARRIERS TO ACCESS	<i>Long, narrow drives. Low canopies over the main entrance. Gates locked at night. Guard shacks and gates. Dead end streets and cul de sacs.</i>
<b>KEY BUILDING HAZARDS</b>	
TRUSSES – TRUSS TYPE	<i>If you are not <u>sure</u> that there are no trusses, write NK (not known)</i>
LOADS/ANTENNAS ON ROOF	<i>Air conditioners and air handling units. Signs or structures to hold signs. Anything that sits on the roof deck. If there are antennas on the roof, try to find out what kind. If not certain about type, mark "Yes".</i>
HAZMAT ON PREMISES MSDS/PRINCIPLE HAZARDS	<i>HAZMAT = Hazardous Materials. MSDS = Material Safety Data Sheets MSDS give detailed information on the type, quantity and location of hazardous materials stored on the premises. They are required by law if there are bulk quantities of hazardous materials stored on the premises. They should be readily accessible by first responders.</i>
<b>FIRE PROTECTION SYSTEMS</b>	
SPRINKLER SYSTEM DETAILS	<i>Determine if the building is fully or partially sprinklered. Dry pipe systems are found on loading docks, parking garages and other unheated areas. Determine if the system is divided into zones. If it is, determine the location of the zone shut off valves.</i>
STANDPIPE SYSTEM DETAILS	<i>Most standpipe connections are located in the stairwells. Some are located in the halls. A few buildings have them in both locations.</i>
SIAMESE DETAILS	<i>Identify the location of each fire department connection. Be sure to include them on your sketch.</i>
CHEMICAL SUPP.SYS. DETAILS	<i>Chemical suppression systems are found in computer rooms and other locations where is a lot of electrical or electronic gear.</i>

FIRE CONTROL PANEL, ETC.	
STAIRWELL PONES / LOCK RELEASE	<i>Many high rise buildings are required to have emergency phones in the stairwells. Indicate if they are present. When required, they must be on every fifth floor. Some buildings begin from the top, others from the bottom. See instructor for details.</i>
EMERGENCY PLANS / LISTS	<i>Ask to see the buildings emergency plan book. Gather the appropriate details.</i>
PHONE NUMBERS AND KEYS	<i>What keys will be available to first responders 24/7? The 24/7 phone numbers should be in the emergency plan book. List them here whether there is a plan book or not.</i>
ELEVATORS	<i>Gather the appropriate information about the buildings elevators. If you need an explanation of "fire service" and/or "independent service" see the instructor.</i>
STAIRWELLS	<i>The stairwells should be labeled on the inside. There is no universal identification convention.  The current code requires that stairwell doors in high rises remain unlocked or unlock automatically when the fire alarm activates. There are exceptions. Determine which method is being used. Some high rise buildings have stairwells that are designed with smoke towers. -See instructor. Determine which, if any stairwells exit to the roof. See instructor about scissor stairs and privacy stairs. If the building has fire escapes, indicate their location here and on the site plan.</i>
HVAC	<i>HVAC = Heating, Ventilation, Air Conditioning.  You will need to talk to the building engineer to get this information. Get answers to each of the items on the sheet.</i>
UTILITIES	<i>Determine if the utilities can be shut down from within the building or on site.</i>
ADDITIONAL INFORMATION	<i>List any additional information and/or explanations and details from the categories above.</i>
SITE PLAN	<i>An aerial view of the building and surrounding area. Include visual indicators from the information above where appropriate. Include adjacent structures if they are significant exposure hazards. <b>Pictures would be a <u>big plus</u>.</b></i>

ADDRESS:				
STORIES:	CONSTRUCTION:	WIDTH:	DEPTH:	LOBBY PHONE #: ( )
BEST ACCESS TO BUILDING:	___ AT GIVEN ADDRESS			
	___ OTHER:			
BARRIERS TO ACCESS:				
<b>KEY BUILDING HAZARDS:</b>				
TRUSS:	___ ROOF	___ FLOORS	TRUSS TYPE:	
CENTER CORE CONSTRUCTION:	___ YES ___ NO			
LOADS ON ROOF:	___ YES ___ NO	MICROWAVE/VHF ANTENNAS ON ROOF:	___ YES ___ NO	
HAZMAT ON PREMISES	___ YES ___ NO			
▶ MSDS LOCATION:				
▶ PRINCIPLE HAZARDS:				
___ SEE ADDITIONAL ON PAGE 3				
<b>FIRE PROTECTION SYSTEMS</b>				
___ FULLY SPRINKLERED		___ PARTIALLY SPRINKLERED		
▶ IF PARTIAL SPRINKLER, GIVE LOCATION:				
___ DRY PIPE SPRINKLER/STANDPIPE				
▶ DRY PIPE SYSTEM LOCATION:				
SPRINKLER SHUT OFF VALVE LOC:	___ EVERY FLOOR	___ EVERY [ ] FLOOR, STARING AT:		
▶ OTHER SHUT OFF VALVE LOC:				
STANDPIPE CONNECTIONS:	___ STAIRWELLS	___ HALLWAYS		
SIAMESE IN SECTOR(S):	___ MULTIPLE ZONES – DESCRIPTION:			
OBSTRUCTIONS TO SIAMESE:				
FIRE PUMP LOCATION:				
CHEMICAL SUPPRESSION SYSTEM: ___ YES ___ NO LOCATION:				
<b>FIRE CONTROL PANEL / EMERGENCY PLAN / OCCUPANT CONTROL</b>				
MONITORED ALARM SYSTEM: ___ YES ___ NO				
ANNUNCIATOR PANEL LOCATION:				
STAIRWELL PHONES: ___ YES ___ NO	ON FLOORS ENDING IN: ___ and ___			
STAIRWELL DOOR LOCK OVER RIDE:	___ SWITCH	___ KEYED SWITCH		
EMERGENCY PLAN BOOK: ___ YES ___ NO	FLOOR PLANS: ___ YES ___ NO			
EMERGENCY PLAN BOOK LOCATION:				
LIST OF OCCUPANTS NEEDING ASSISTANCE: ___ YES ___ NO			LOCATION:	
SAFE REFUGE AREAS: ___ YES ___ NO			LOCATION:	

## BUILDING DATA WORKSHEET

### STAIRWELLS

TOTAL STAIRWELLS: \_\_\_\_\_ STAIRWELL I.D. CONVENTION: ( 1,2,3,4, - N,S,E,W, etc. ) \_\_\_\_\_

RE-ENTRY DOORS:

\_\_\_ NORMALLY LOCKED \_\_\_ NORMALLY UNLOCKED \_\_\_ PERMANENTLY UNLOCKED EVERY 5th FLOOR ENDING IN: \_\_\_ and \_\_\_

SMOKE TOWER I.D. NUMBER: ( 1,2,3,4, - N,S,E,W, etc. ) \_\_\_\_\_ STAIRWELL(S), [ \_\_\_\_\_ ], OPENS TO ROOF

\_\_\_ SCISSOR STAIRS: \_\_\_ INTERIOR/PRIVACY STAIRS    PRIVACY STAIRS LOCATION:

\_\_\_ FIRE ESCAPES    IN SECTOR(S):

### HVAC

\_\_\_ CAN BE SHUT DOWN 24/7    \_\_\_ CAN BE SHUT DOWN BY ZONES    NUMBER OF ZONES: \_\_\_\_\_

\_\_\_ EXHAUSTS FIRE FLOOR    \_\_\_ PRESSURIZES OTHER FLOORS    \_\_\_ AUTO SHUT DOWN WHEN ALARM ACTIVATES

HVAC CONTROL ROOM LOCATION:

### UTILITIES

GAS SHUT OFF LOCATION:

ELECTRIC:

WATER:

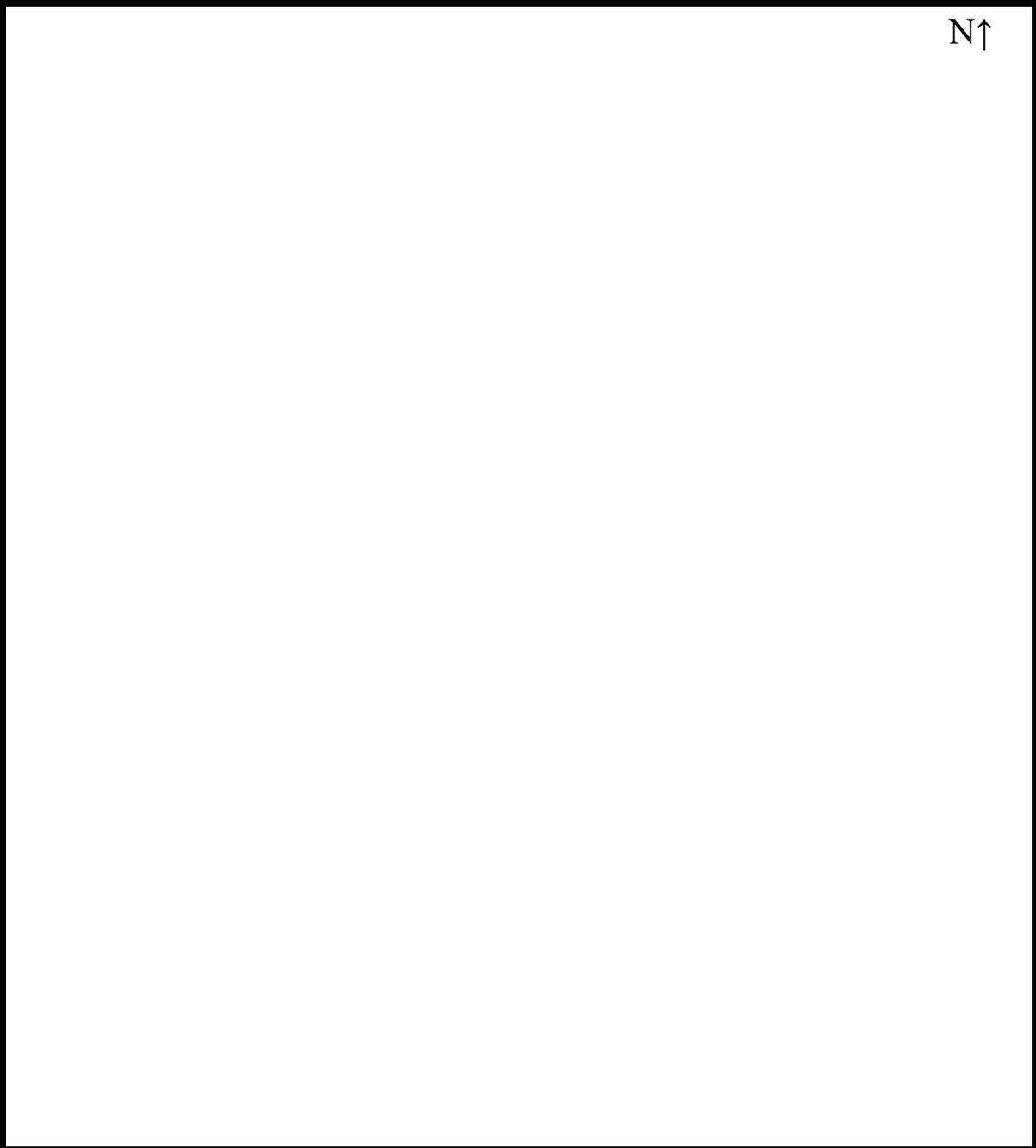
\_\_\_ BACK -UP GENERATOR    \_\_\_ UNINTERRUPTIBLE POWER SUPPLY:

GENERATOR LOCATION:

ADDITIONAL INFORMATION:

BUILDING DATA WORKSHEET

SITE PLAN



## Monthly Testing of Phase I and II Fire Service

### PHASE I

Insert key into fire recall switch typically located on the main access floor. Turn to the “ON” position. Elevator(s) should return to the landing where the key switch is located and open doors. This is “Phase I”

### PHASE II

Remove key from hall and insert key into fire service key switch inside elevator.

Turn to the “HOLD” position. Try to push alternate floor button. Button should NOT light.

Turn key to the “ON” position. Try and push alternate floor button. Button should now light and then push upper floor car call.

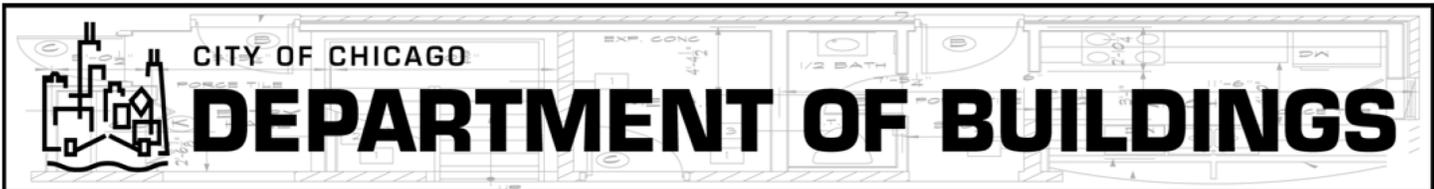
Push and hold the “DOOR CLOSE” button, door should close. When doors are about halfway closed release “DOOR CLOSE” button and doors should reverse direction and start to open. Then before the doors reach fully open position, push and hold the “DOOR CLOSE” button again and doors should reverse and continue to close again. **Hold button until doors are completely closed.** Release “DOOR CLOSE” button and door should remain closed. Push car call for upper floor again if car does not move. When car starts in motion, push "call cancel" button. Call button should go out and car should stop at next available floor.

Push and hold the “DOOR OPEN” button and doors should start to open. When doors are about halfway open, release the “DOOR OPEN” button and the doors should reverse direction and close. Push and hold the “DOOR OPEN” button again. **Hold button until the doors reaches fully open position.** Release the button and doors should stay in the open position.

Turn the key to the “OFF” position in the elevator. Elevator should close doors and return to main landing depending on code year. If not, close doors and push main landing call button. If the latter is the case, once at main landing push open button until doors are fully open and then turn key to off. Remove key and insert into a hall key .

Turn key to the “Reset or Bypass:” position then back to the “OFF” position. The elevator(s) should now be back in normal service.

Fill out monthly recording sheet.



CITY OF CHICAGO

# DEPARTMENT OF BUILDINGS

## Monthly Fire Service Test Log

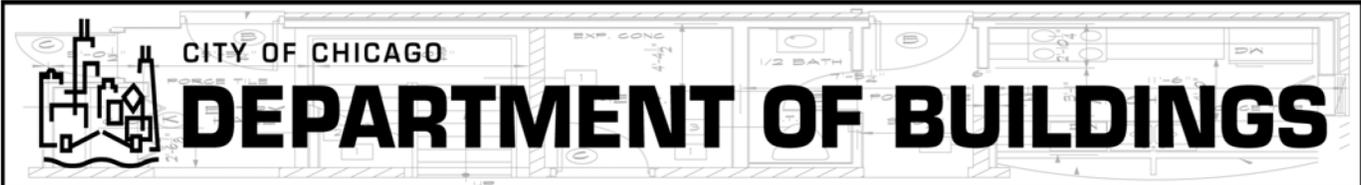
The building owner or his/her designee shall provide for a monthly test of Phase I recall by use of the key switch and a minimum of one-floor operation on Phase II firefighters' emergency service operation. Each elevator shall be tested in conformance with the provisions of ASME A 17.1 requirement 8.6. 11.1.

A record of findings shall be available to elevator personnel and the Chicago Department of Buildings (DOB) in the form of a log. This log shall remain in the elevator machine room. Deficiencies shall be corrected promptly. DOB shall be notified of any deficiencies not corrected relating to the firefighters' service operation.

<b>Building Name</b>	<b>Unit Identification</b>
<b>Address</b>	
	<b>Chicago, IL</b>

Month	Date Tested	Phase I Pass/Fall	Phase II (Pass/Fall)	Tested by (Initials)	Reason for Failure	Date Repaired	Initials
JAN							
FEB							
MAR							
APR							
MAY							
JUN							
JUL							
AUG							
SEPT							
OCT							
NOV							
DEC							

<b>Responsible Party</b>	<b>Address</b>
<b>Owner / Building Management</b>	
<b>Phone Number</b>	
<b>Elevator Service Company</b>	
<b>Phone Number</b>	



CITY OF CHICAGO

# DEPARTMENT OF BUILDINGS

## Elevator Stoppage Report

This report is to be filed with the Chicago Department of Buildings within forty-eight (48) hours of when an elevator stalls or malfunctions with one or more passengers being detained in excess of 30 minutes. If an elevator stalls or malfunctions on a weekend or a holiday, this report should be filed on the next business day or within 48 hours of the occurrence.

Failure to comply with this filing requirement of Section 13-156-065 of the Municipal Code of Chicago may result in a fine of not less than \$25.00 and not more than \$200.00. Each day such violation continues shall constitute a separate and distinct offence. With the proper filing of this report, however, no person shall be deemed to have committed a violation of this section of the Municipal Code of Chicago.

Please provide the information requested and submit the form via facsimile to 312 743-7434 or mail to:

**Chief of Elevator Inspections  
Department of Buildings 120  
N. Racine Ave.  
Chicago, IL 60607**

Street Address: \_\_\_\_\_

Date of Service Interruption: \_\_\_\_\_ Day: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Elevator Identification Number: \_\_\_\_\_

Time of Day Person(S) Became Detained: \_\_\_\_\_

Time of Day Person(S) Were Released: \_\_\_\_\_

Total Time Person(S) Were Detained: \_\_\_\_\_

Number of Persons Detained: \_\_\_\_\_

Injuries Reported: \_\_\_\_\_

Were Police/Fire Departments Notified? Police: \_\_\_\_\_ Fire: \_\_\_\_\_

Cause of Service Interruption: \_\_\_\_\_

Name of Elevator Company Responding: \_\_\_\_\_

Name of Building Personnel Responding: \_\_\_\_\_

Signature: \_\_\_\_\_



## PERSONAL EMERGENCY EVACUATION PLANNING CHECKLIST



Name: \_\_\_\_\_ Primary Location: \_\_\_\_\_

Building (home, office, etc.): \_\_\_\_\_ Primary Phone: \_\_\_\_\_

Address: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

Floor: \_\_\_\_\_ E-mail: \_\_\_\_\_

Service Animal:  Yes  No

### OCCUPANT NOTIFICATION

#### Type of Emergency Method or Device for Notification

Fire: \_\_\_\_\_

Earthquake: \_\_\_\_\_

Flood: \_\_\_\_\_

Storm: \_\_\_\_\_

Attack: \_\_\_\_\_

Other (specify): \_\_\_\_\_

	YES	NO	N/A	Comments
Are there emergency notification devices (alarms, etc.) appropriate for this person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does this person know the location of each emergency notification device/system and understand its meaning/function?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does this person know how to sound the alert for emergencies (manual pull box alarms, public address systems, radio, telephones)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If telephones are used to report emergencies, are emergency numbers posted near telephones, on employee notice boards, or in other conspicuous locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there a way for a person with a hearing or speech impairment to report an emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the communication system also serves as an alarm system, do all emergency messages have priority over all non-emergency messages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there a unique signal (sound, light, header) to indicate an emergency message?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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## WAY FINDING

	YES	NO	N/A	Comments
Is there a usable way out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Where is it? (List all and indicate nearest.)				
Where is the established outside meeting place?				
Is the usable circulation path clearly marked to show the route to leave the building or to relocate to some other space within the building in an emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If a person exiting a doorway or turning a corner could inadvertently be directed into the path of a moving vehicle, is a safeguarding device with a warning sign in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the stairs in the circulation path lead anywhere but out of the building, are doors, partitions, or other effective means used to show the correct route out of the building?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do doors used to connect any room to a circulation path have proper maneuvering clearances?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Can the doors be easily unlatched?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do exterior circulation paths (balcony, porch, gallery, roof) meet the preceding four requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the exterior circulation path have guardrails to protect open sides of walking surfaces?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the exterior circulation path smooth, solid, and a substantially level travel surface?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the exterior circulation path <i>not</i> branch off and head away from the public way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is each exit marked with a clearly visible sign reading "EXIT" in all forms (visual, tactile, Braille)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is every doorway or passage that might be mistaken for an exit marked "NOT AN EXIT" or with an indication of its actual use in all forms (visual, tactile, Braille)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are signs posted and arranged along circulation paths to adequately show how to get to the nearest exit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the signs clearly indicate the direction of travel in all forms (visual, tactile, Braille)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do brightly lit signs, displays, or objects in or near the line of vision <i>not</i> obstruct or distract attention from exit signs, particularly for people with low vision?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



**USE OF THE WAY**

	YES	NO	N/A	Comments
Are circulation paths always free of obstructions, including furniture and equipment, so everyone can safely exit the building during an emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are people <i>not</i> required to travel through a room that can be locked, such as a restroom?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do all interior doors, other than fire doors, readily open from the inside without keys, tools, or special knowledge and require less than 5 pounds of force to unlatch and set the door in motion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are exit signs <i>not</i> obstructed or concealed in any way, particularly for people with vision impairments who need to find and feel the sign?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are exit doors kept free of items that obscure the visibility of exit signs or that may hide visual, tactile, or Braille signage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the emergency escape path clear of obstacles caused by construction or repair ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the circulation path maintain a clear height of 6 feet 8 inches at all points?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do objects that stick out into the circulation path, such as ceiling fans and wall cabinets, <i>not</i> reduce the minimum height and width of the circulation path?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are usable circulation paths at least 32 inches wide for any segment less than 24 inches in length and 36 inches for all segments 24 inches or longer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is each usable circulation path a permanent part of the facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the circulation path is not substantially level, are occupants provided with appropriate stairs or a ramp?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do building circulation paths lead to a public way, that is:				
Directly outside or to a street or walkway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
To an area of refuge and from there to a public way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
To an open space with access to the outside?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
To streets, walkways, or open spaces large enough to accommodate all building occupants likely to use the exit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**TYPE OF ASSISTANCE NEEDED**

	YES	NO	N/A	Comments
Can the person evacuate himself or herself with a device or aid?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
What is the specific device or aid?				



Where is the device or aid located?			
Does the person need assistance to evacuate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What does the assistant(s) need to do?			
Does the assistant(s) need any training?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the training been completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where will the assistant(s) meet the person requiring assistance?			
When will the person requiring assistance contact the assistant(s)?			

**Number of Assistants Needed**

How many assistants are needed?

How will the assistant(s) be contacted in an emergency?

Name	Phone	Cell Phone	E-mail
Assistant 1			
Assistant 2			
Assistant 3			
Assistant 4			
Assistant 5			
Assistant 6			

**SERVICE ANIMAL**

	YES	NO	Comments
Has the person discussed with emergency management personnel his or her preferences with regard to evacuation and handling of the service animal?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the person thought about under what circumstances a decision may have to be made about leaving the service animal behind?	<input type="checkbox"/>	<input type="checkbox"/>	
What is the best way to assist the service animal if it becomes hesitant or disoriented?			
Do first responders have a copy of the detailed information for the service animal?	<input type="checkbox"/>	<input type="checkbox"/>	
Where are extra food and supplies kept for the service animal?			



**Conventional**



**Upright**



**Pendent**



**Horizontal Sidewall**



**Vertical Sidewall**



**Recessed Pendent**



**Recessed Pendent**



**Concealed Horizontal Sidewall**



**Concealed Pendent**



# TYPICAL SPRINKLER HEAD (SOLDER LINK)

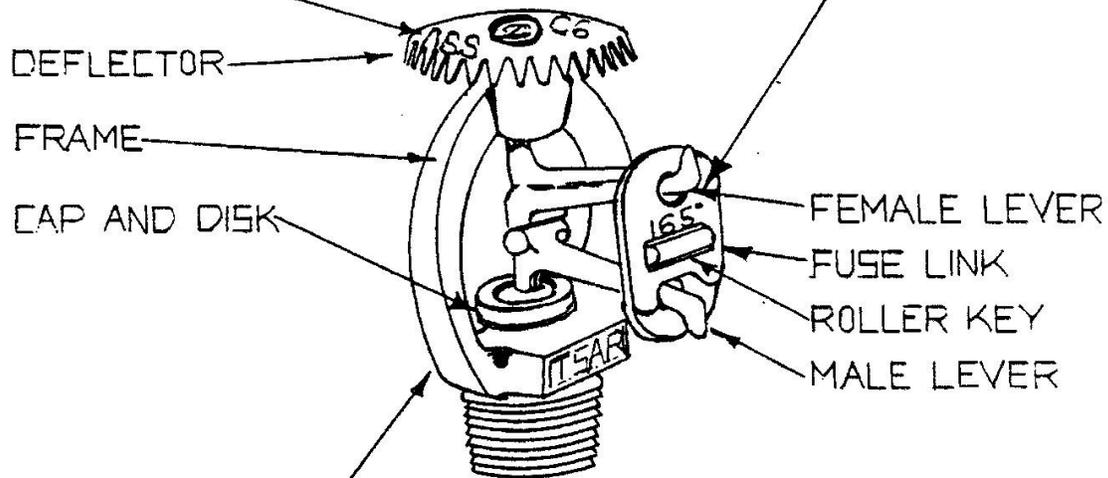
# A38

Arrangement of Stock and stores 1 (15-4-900)

Stocks of all kinds shall be so arranged and maintained as not to obstruct any required means of exit and *shall in no case extend above one level one foot and six inches below the ceiling of any sprinkled space. (18") Viol. # 1886*

TYPE OF HEAD STAMPED  
ON DEDEFLECTOR SUCH AS  
SSU-STANDARD SPRINKLER  
UPRIGHT.

TEMPERATURE STAMPED ON FUSE  
LINK



TEMPERATURE COLOR CODE ON FRAME	
ORDINARY 135°-150°-160°-165°	UNCOLORED
INTERMEDIATE 175°-212°	WHITE
HIGH 250°-280°-286°	BLUE
EXTRA HIGH 325°-340°-350°-360°	RED
VERY EXTRA HIGH 400°-415°	GREEN
VERY EXTRA HIGH 450°	ORANGE
VERY EXTRA HIGH 500°	ORANGE

RECOMMENDED EMERGENCY HEAD STORAGE FOR SYSTEMS  
WITH NOT OVER:

300 SPRINKLER HEADS	6 HEADS
300 TO 1000 SPRINKLER HEADS	12 HEADS
OVER 1000 SPRINKLER HEADS	24 HEADS

SOURCE NFPA

CAC  
26

# OUTSIDE INSPECTION

F.D. MOTOR  
GONG  
DOES IT WORK  
OR IS THERE A  
BIRDS NEST  
INSIDE ?



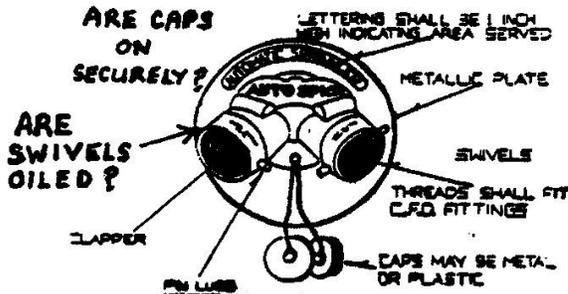
CITY TIE BOX  
IS IT LOOSE ON  
PEDESTAL, IS GUM  
IN KEY HOLE, IS  
CAST BASE COVER  
MISSING, EXPOSING  
WIRES ?

EXIT DOORS  
ARE THEY  
LOCKED,  
BLOCKED,  
DAMAGED ?

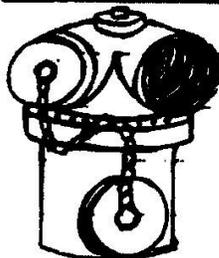
SIAMESE CONNECTION

11-0-410, 13-10-300, 13-10-310, 13-10-1000, 13-10-1020, 13-10-1040

SIAMESE SHALL BE NO LESS THAN 18"  
NOR MORE THAN 5'0" ABOVE GRADE



ARE EXITWAYS  
AND SIDEWALKS -  
CLEAR OF ICE AND SNOW



FIRE HYDRANT

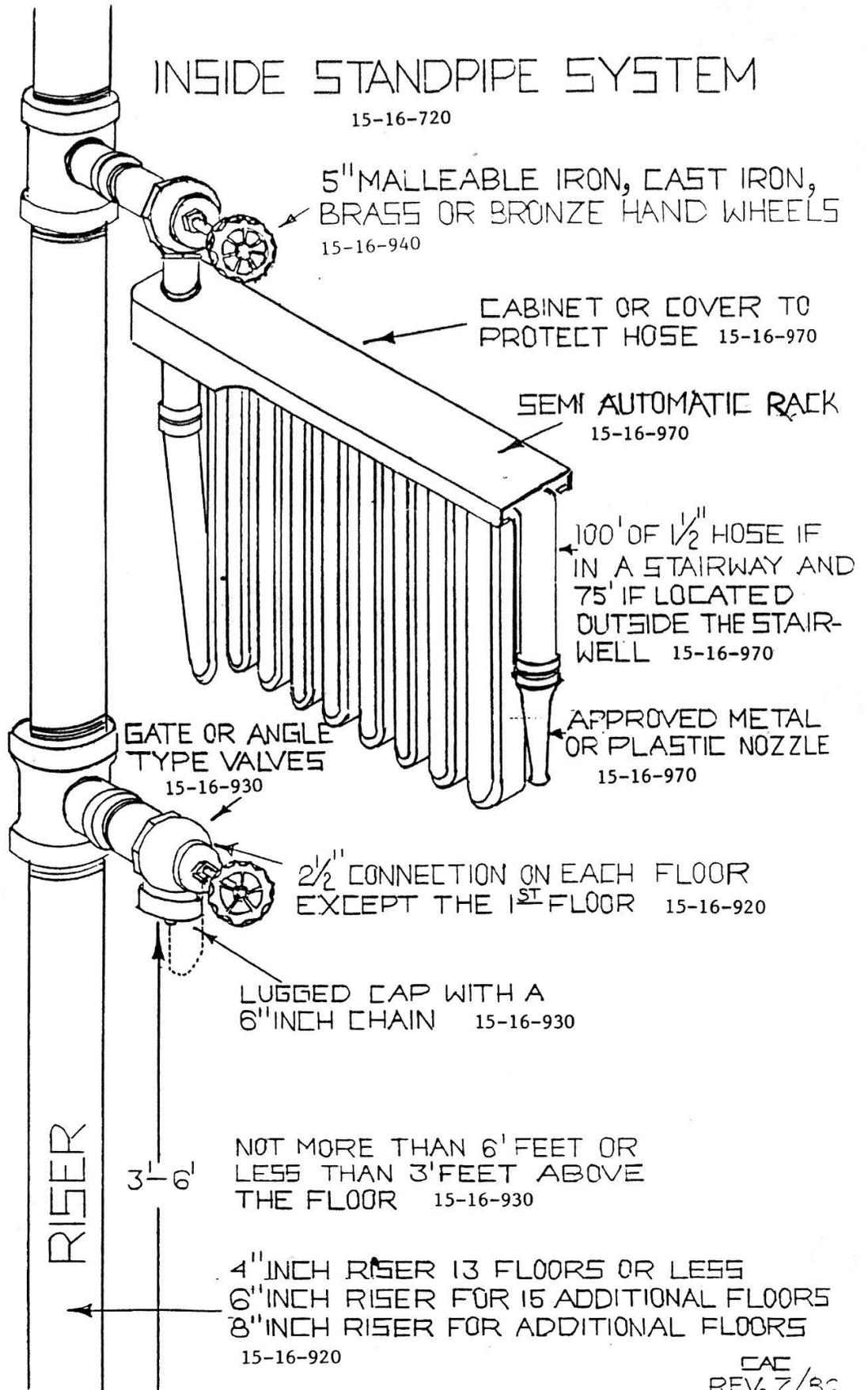
IS IT BLOCKED ?  
ARE CAPS ON SECURELY ?  
IS RUBBISH STUFFED IN  
PORTS ? REMEMBER THIS  
IS YOUR WATER SUPPLY IN  
CASE OF FIRE !

← NO PARKING →

← NO PARKING →

# INSIDE STANDPIPE SYSTEM

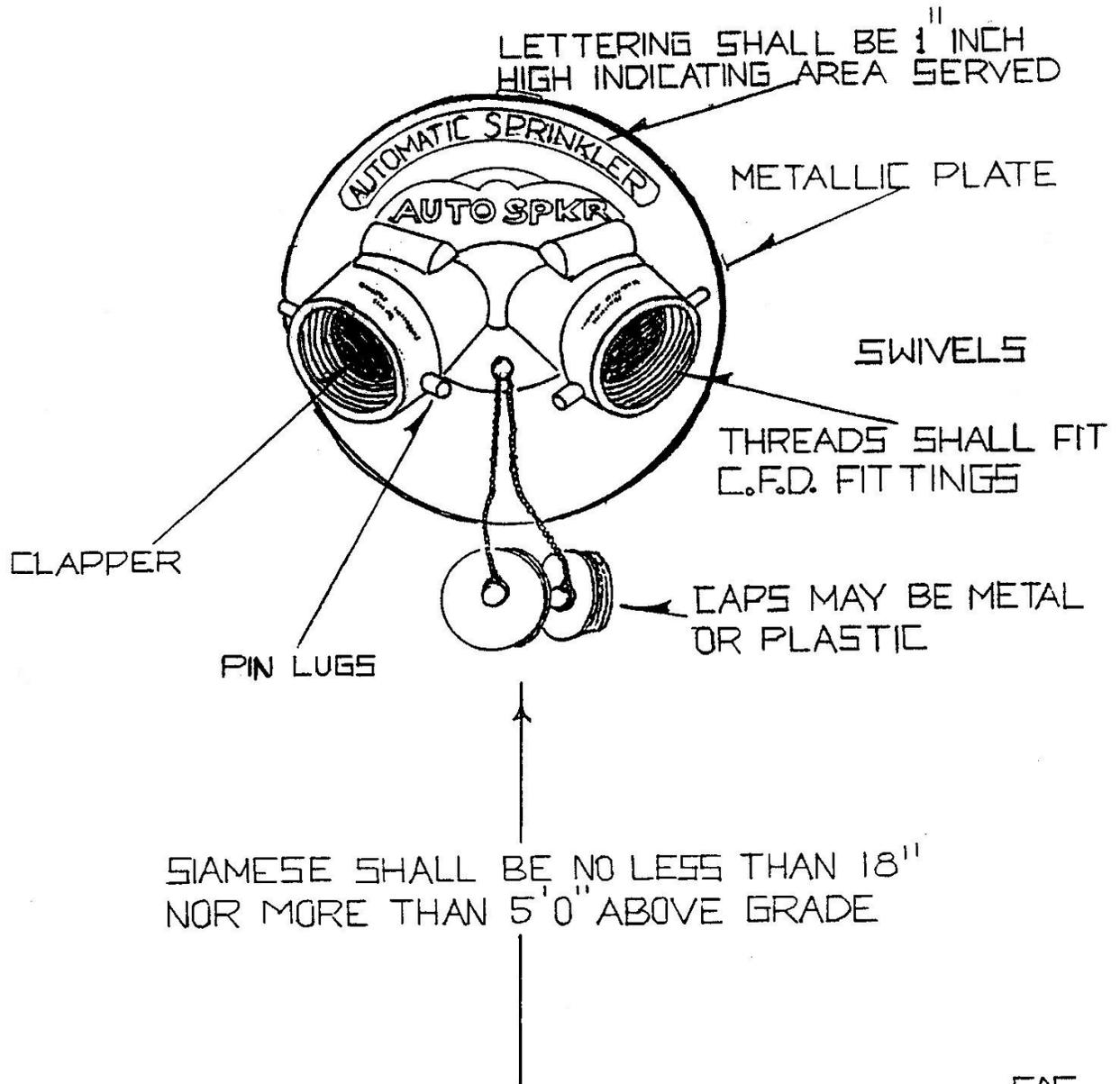
15-16-720



CAC  
REV. 7/85

# SIAMESE CONNECTION

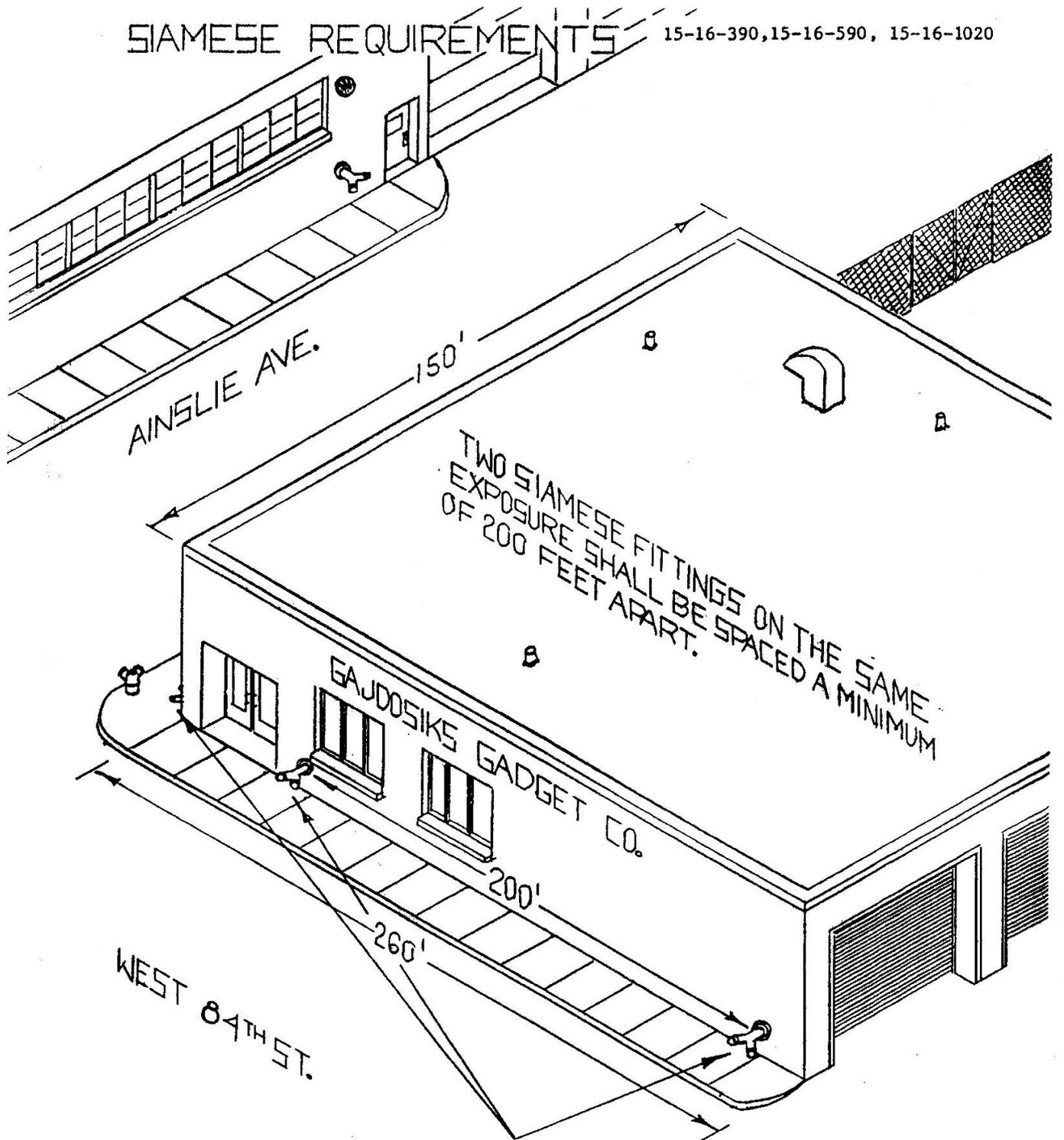
11-8-410, 15-16-390, 15-16-590, 15-16-1020, 15-16-1030, 15-16-1040



CAC  
REV. 6-86

# SIAMESE REQUIREMENTS

15-16-390, 15-16-590, 15-16-1020



A BUILDING WITH TWO STREET EXPOSURES THAT HAS A COMBINED LENGTH GREATER THAN 250 FEET AND ALSO HAS ONE EXPOSURE GREATER THAN 250 FEET SHALL REQUIRE THREE SIAMESE CONNECTIONS.

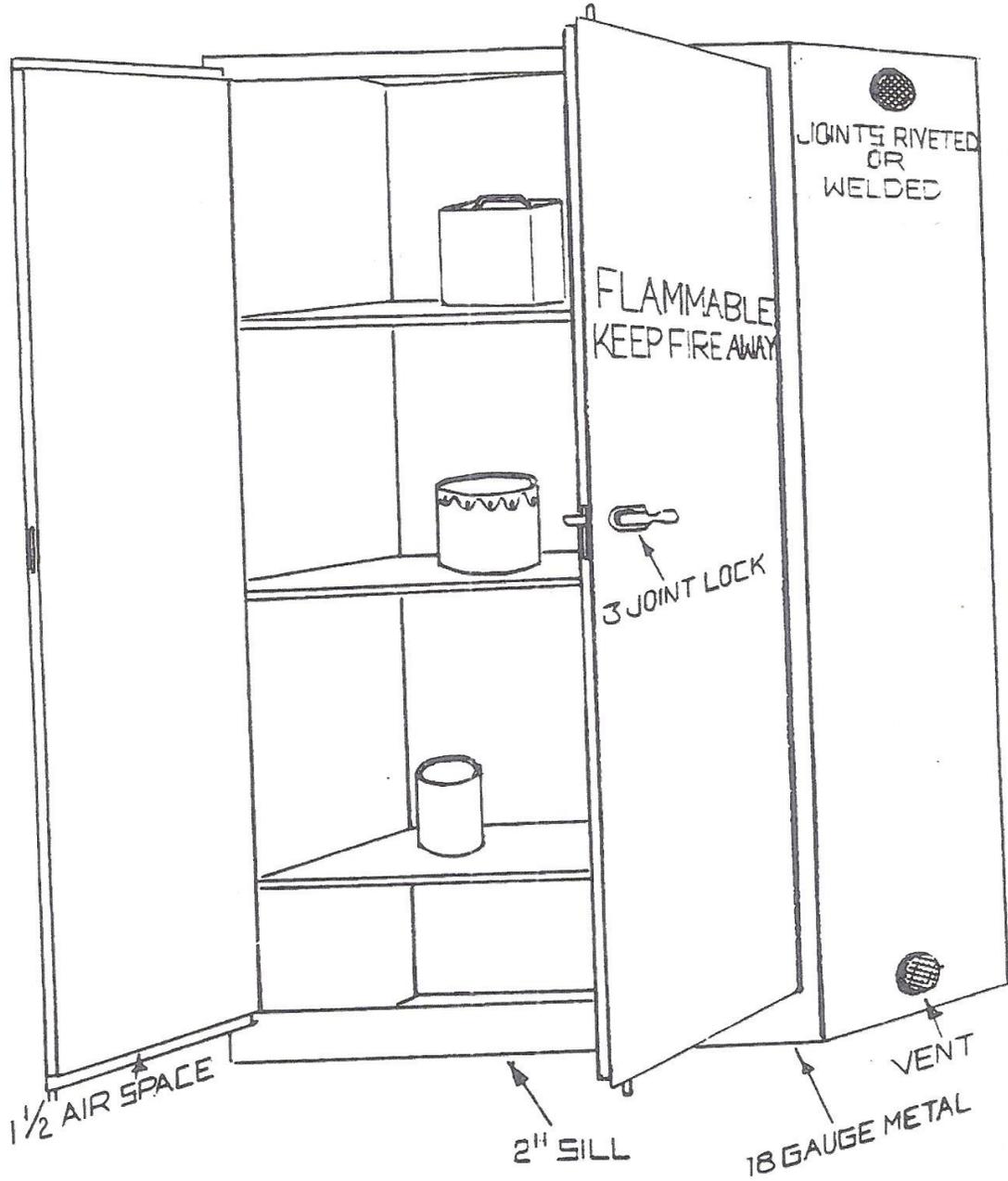
CAC  
REV. 8/86

# FLAMMABLE LIQUID CABINET

15-24-310

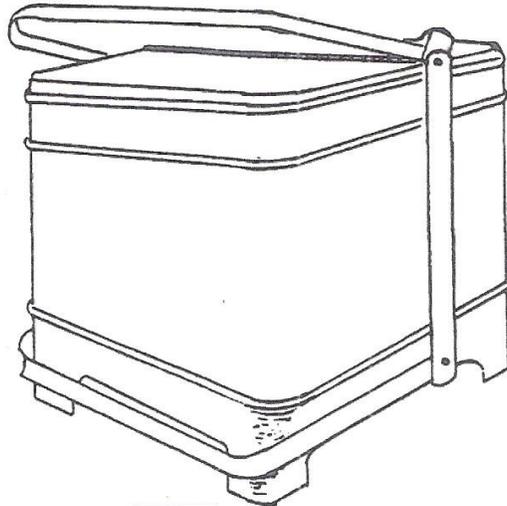
50 GALLON CAPACITY

# A



DOUBLE WALL CONSTRUCTION THROUGHOUT

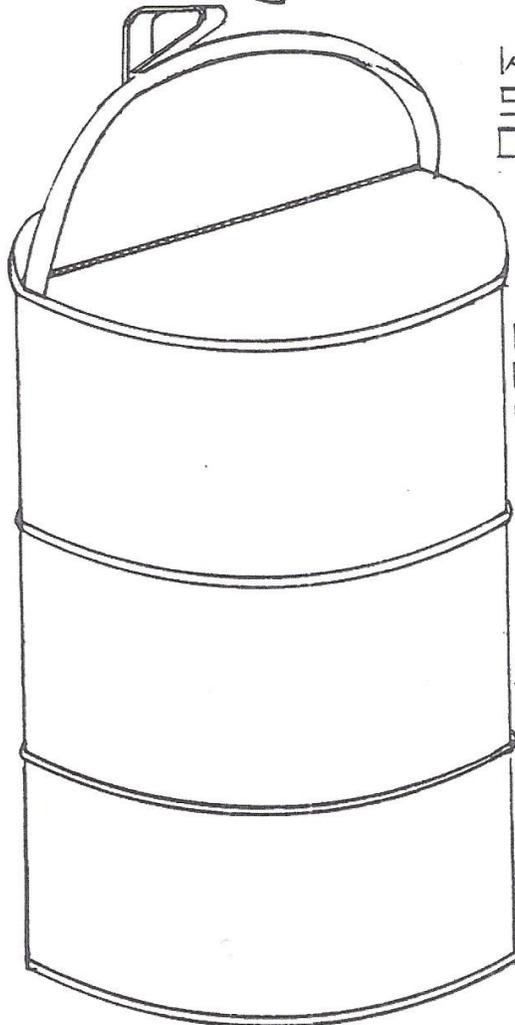
# TYPICAL SAFETY CANS



FOR OILY RAG ONLY

15-24-100, 15-4-960

4-100-100, 4-208-290



WASTE OIL SHALL BE  
STORED IN METAL  
CONTAINERS ONLY.

4-100-100, 4-208-290

FOR COMBUSTIBLE  
RUBBISH ONLY.

15-4-970, 15-8-170

NITROCELLULOSE  
AND FILM SCRAP  
SHALL BE STORED  
IN SEPARATE WATER  
FILLED CONTAINERS.

15-28-920, 4-200-300

# EXTINGUISHER REQUIREMENTS

EXTINGUISHERS SHALL BE MAINTAINED ANNUALLY 15-16-670

EXTINGUISHERS SHALL BE SERVICED BY LICENSED PERSONS 15-4-450

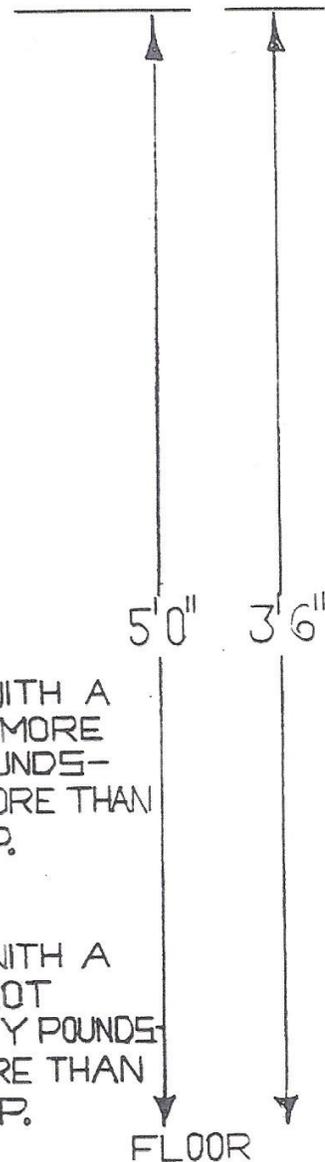
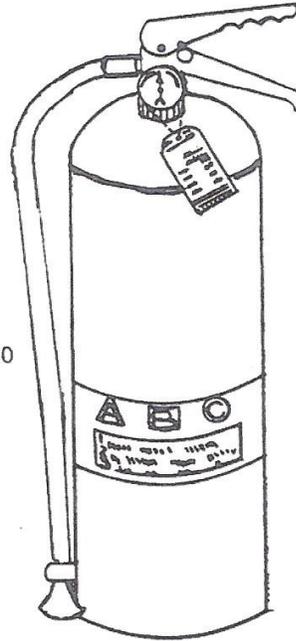
EXTINGUISHER SHALL BE VISIBLE AT 50 FEET 15-16-660

TRAVEL DISTANCE TO AN EXTINGUISHER SHALL BE NO MORE THAN 75 FEET  
NFPA 10



HYDROSTATICALLY TESTED BY												
YEAR	1991	1992	1993									
MONTH	1	2	3	4	5	6	7	8	9	10	11	12
PRESSURE P.S.I.	200	300	400	500	600	700	800					

HYDROSTATIC TEST TAG 15-16-680



DO NOT REMOVE FOR CITY, STATE AND FIRE INSURANCE INSPECTION

ACME FIRE EQUIPMENT CO.  
5630 N. MEDZIE AVE.  
744-4762

MEMBER UNITED FIRE ASST

SERVICED BY \_\_\_\_\_  
LICENSE NO. \_\_\_\_\_

FOAM	SODA ACID
WATER C.T.G.	WATER PRES.
PUMP	STD. DRY CHEM.
NON FREEZE	A.B.C.
LOADED STREAM	PURPLE K
MONNEX	SUPER K
SYSTEM	HALON

1993 CO2

INVALID ONE YEAR FROM MO. PUNCHED

SERVICE | NEW | RECHARGED

DEL	NOV	OCT	SEPT	AUG	JULY	JUNE	MAY	APR	MAR	FEB	JAN
-----	-----	-----	------	-----	------	------	-----	-----	-----	-----	-----

TYPICAL SERVICE TAG 15-16-680

EXTINGUISHERS WITH A GROSS WEIGHT OF MORE THAN FORTY POUNDS—HANG AT NOT MORE THAN 3'6" TO THE TOP.

EXTINGUISHERS WITH A GROSS WEIGHT NOT EXCEEDING FORTY POUNDS—HANG AT NOT MORE THAN 5'0" TO THE TOP.

NFPA 10

# TYPICAL STAIRS

WIDTH OF STAIRS - MORE THAN  
40 PERSONS PER FLOOR - 44 INCHES

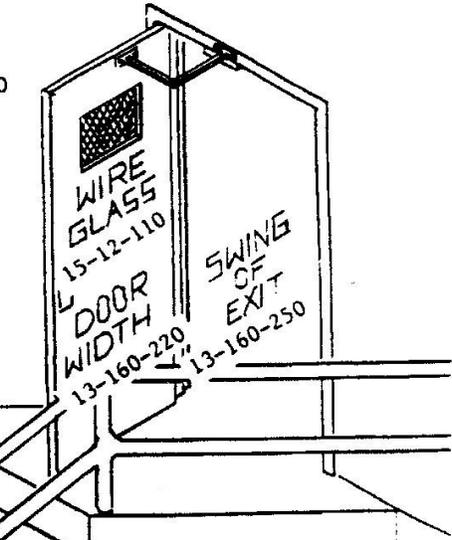
SELF CLOSING CLASS B  
DOOR - 15-8-180

40 PERSONS OR LESS PER FLOOR  
36 INCHES 13-160-210

HEADROOM 13-160-350

RAILS SHALL NOT PROJECT  
MORE THAN 4 INCHES INTO  
STAIRS 13-160-200

WALL RAILS - STAIRS LESS  
THAN 44 INCHES WIDE,  
1 WALL RAIL. MORE  
THAN 44 INCHES WIDE,  
2 WALL RAILS.  
13-160-320



WHEN THE DOOR  
OPENS ONTO A  
PLATFORM IT SHALL  
LEAVE 75% OF THE WIDTH  
OPEN 13-160-200

MAXIMUM RISER HEIGHT  
8 INCHES  
MINIMUM WIDTH OF A TREAD  
9 INCHES 13-160-300

SOLID RISERS AND TREADS EXCEPT  
IN BOILER ROOMS AND MECHANICAL  
ROOMS 13-160-330

PLATFORM SHALL BE NOT  
LESS THAN THE WIDTH OF  
THE STAIR BUT DOES NOT  
HAVE TO EXCEED 4  
FEET 13-160-260

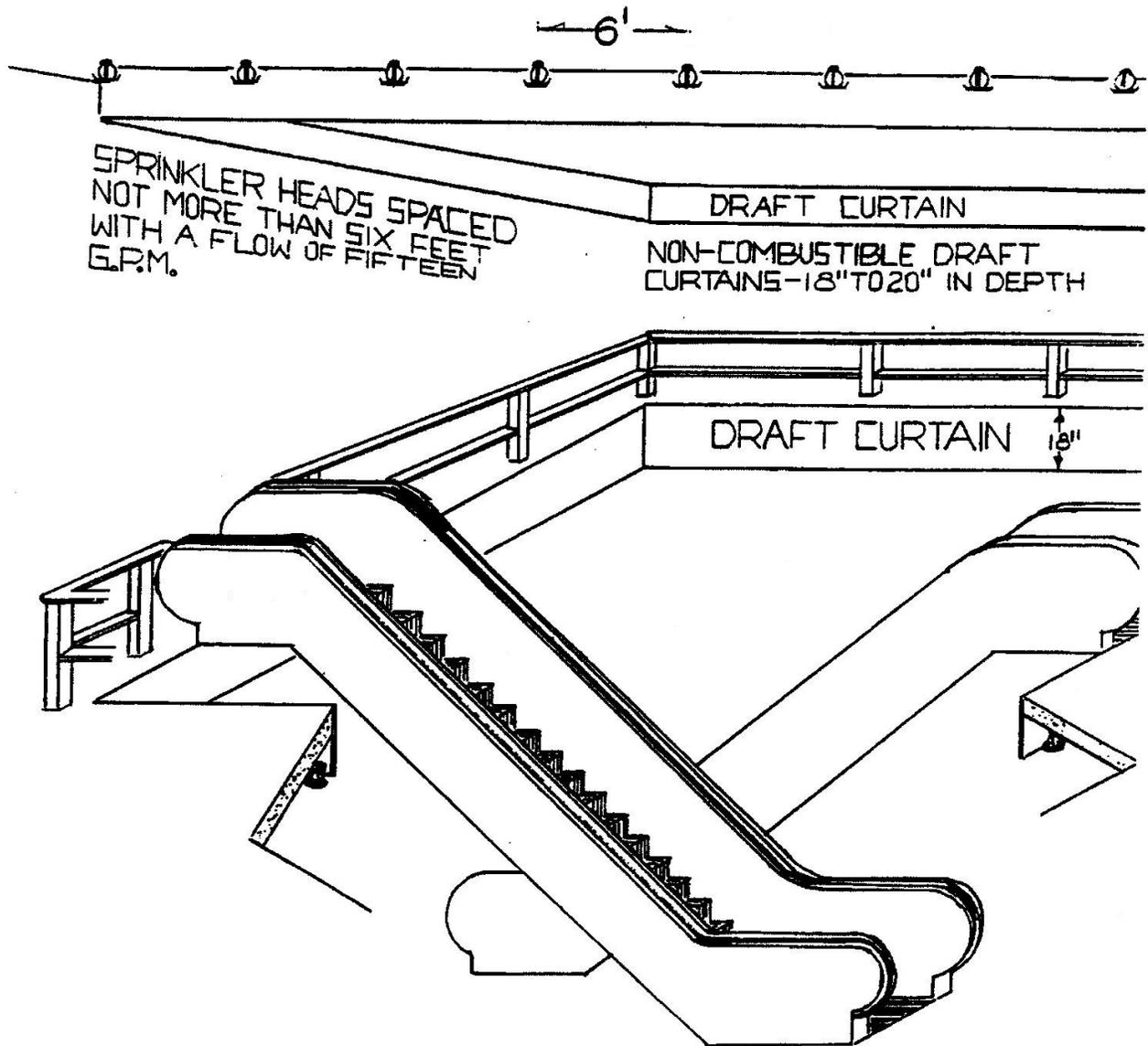
NO STORAGE UNDER  
STAIRS 13-160-330

STAIR CONSTRUCTION  
SHALL BE NON-  
COMBUSTIBLE IN  
BUILDINGS OF TYPE  
I, II, III, OR IV  
CONSTRUCTION  
13-160-330

ENCLOSURE - 3 FLOORS  
OR LESS, 1 HOUR  
EXCEEDING 3 FLOORS  
2 HOURS 15-8-140

CAC  
86

# NON-EXIT



SPRINKLER HEADS SPACED  
NOT MORE THAN SIX FEET  
WITH A FLOW OF FIFTEEN  
G.P.M.

DRAFT CURTAIN

NON-COMBUSTIBLE DRAFT  
CURTAINS-18" TO 20" IN DEPTH

DRAFT CURTAIN

18"

"NOTE" AN ESCALATOR MAY  
BE USED IN LIEU OF ONE  
OF THREE REQUIRED INTERIOR  
STAIRS. 13-160-040

ESCALATORS REQUIRED AS A  
MEANS OF EGRESS SHALL BE  
ENCLOSED AS FOLLOWS:

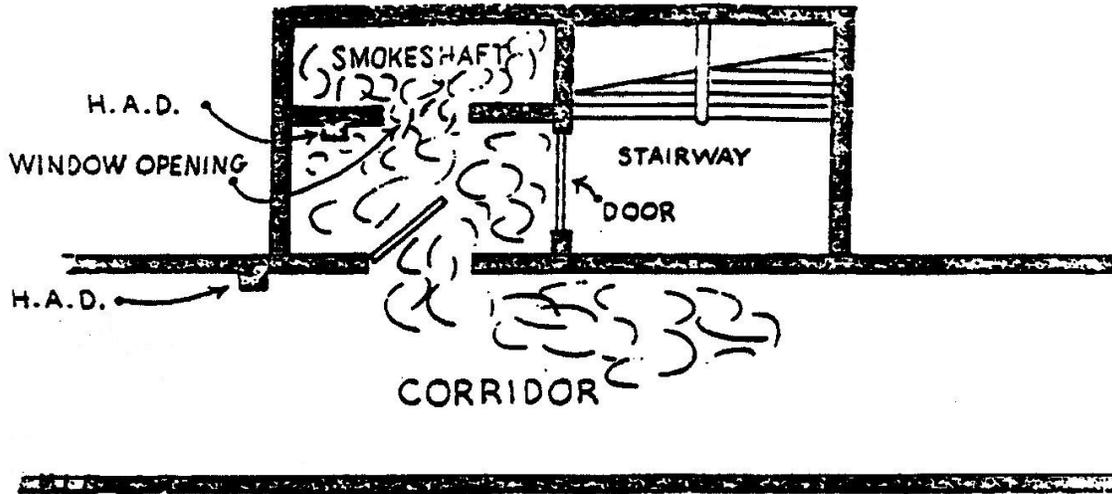
BUILDINGS NOT EXCEEDING THREE  
STORIES- ONE HOUR ENCLOSURE.

BUILDINGS EXCEEDING THREE  
STORIES- TWO HOUR ENCLOSURE

DOORS REQUIRED-CLASS B

15-8-140, 15-8-180

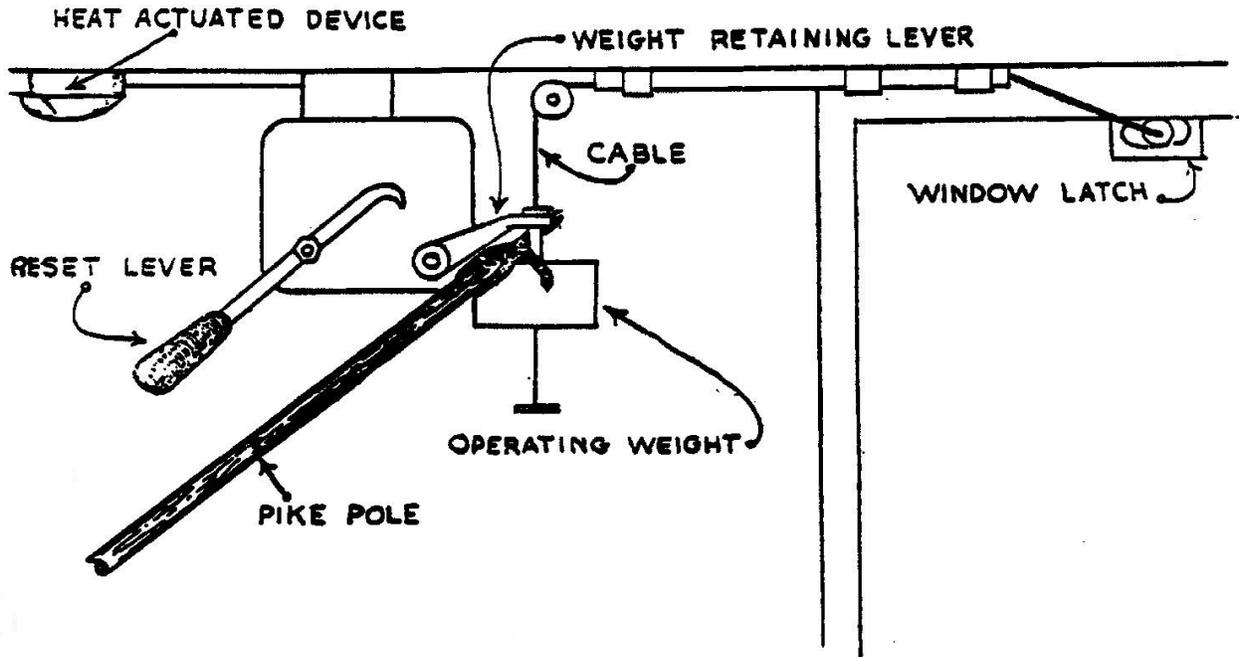
CAC84



**SMOKEPROOF TOWER IN OPERATION**

**FIGURE No. 2**

**MANUAL OPERATION OF TRIPPING DEVICES BY THE FIRE DEPARTMENT**



**AUTOMATIC RELEASING DEVICE**

**FIGURE No. 3**



## Chicago Fire Department Division of Training



# THE CLASSIFICATIONS OF FIRE DOORS

Fire doors protect the door openings in walls that are required to be rated as firewalls. These doors can stop the spread of fire, as well as, contain the fire to a limited area thereby making our job that much easier.

## IDENTIFICATION OF FIRE DOORS

Read the label on the hinge side of the door to identify hours of fire resistance.

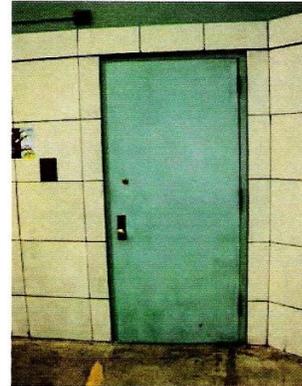


## OPERATION OF FIRE DOORS

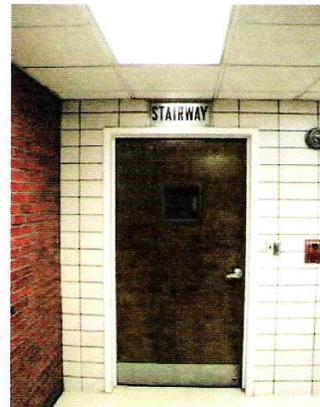
There are two standard means by which fire doors operate: self-closing and automatic closing. When the self-closing type door is opened, it returns to the close position on its own. Automatic closing type doors, which normally remain open, close when the hold open device releases the door activation of either a local smoke detector or a fire alarm system. A precautionary measure a firefighter should take when passing through an opening, protected by a fire door is to block the door open to prevent its closing, and trapping firefighters. Fire doors have also been known to close behind firefighters and cut off water supply in a hoseline.

## INTERIOR FIRE DOORS

**Class A** doors have a 3 hour rating. They are used for the protection of openings in firewalls. These doors will be solid with no observation glass permitted.



**Class B** doors have a 1½-hour rating. They are used for the protection of openings in vertical shafts. One hundred square inches of wired glass is allowed for an observation panel with one side no higher than 12 inches within a class B door.



**Class C** doors have a ¾ hour rating. They are used for the protection of openings between rooms and corridors. Class C doors may have panels of standard wired glass. Exposed area of individual glass shall not exceed 1296 square inches of wire glass.



ACADEMY NOTES – SPRING 2004

## EXTERIOR FIRE DOORS

**Class D** doors have a 1½-hour rating. They are used for the protection of opening in exterior walls with no observation panels permitted.



**Class E** doors have a ¾ hour rating. They are used for the protection of openings in exterior walls. 720 square inches of wire glass is allowed for an observation panel.



## COMMON FIRE DOOR VIOLATIONS

- Violation #1248 - Discontinue propping, wedging, and tying fire doors.  
(Especially in boiler rooms and stairway doors)
- Violation #1246 – Repair self closing device (Door does not Close or closes but does not latch.)
- Violation #1250 – Remove fusible links from old boiler room or stairway doors. They are not allowed and must be self-closing.)
- Violation #1394 – Provide wire glass for B and C door. (Usually broken glass has been replaced, but not with wire glass.)
- Violation #1244 or 1524 – Provide self-closing device.
- Violation #1380 – Replace fusible link (sometimes you will find them painted over.)
- Violation #1378 – Repair fire door.
- Violation #1248 – Blocked fire door by obstruction such as stock, etc

ACADEMY NOTES – SPRING 2004

City of Chicago  
**High Rise Emergency Evacuation Ordinance**  
**Summary of Requirements for Residential Buildings**

<b>Ordinance Requirements (Section 13-78 of the Municipal code of Chicago)</b>	<b>Category 1 (over 780 feet)</b>	<b>Category 2 (541 – 780 feet)</b>	<b>Category 3 276 – 540 feet)</b>	<b>Category 4 (80 – 275 feet)</b>	<b>All Other Buildings (exceeding 3 stories)</b>
<b>Evacuation Plan</b> (required by February 25, 2002)	YES	YES	YES	YES	NO
<b>Plan Filed with Office of Emergency Communications</b>	YES	YES	NO	NO	NO
<b>Plan Available for Examination on Request</b>	YES	YES	YES	YES	NO
<b>Designated Fire Safety Director (FSD) &amp; Deputy Fire Safety Director (DFSD)</b>	YES (Employee)	YES (Employee)	YES (Employee or Resident)	NO (Recommended)	NO
<b>Designated Building Evacuation Supervisor (BES)</b>	YES (Employee or Resident)	YES (Employee or Resident)	NO	NO	NO
<b>Designated Fire Wardens</b>		NO	NO	NO	NO
<b>Designated Emergency Evacuation Teams</b>	YES (Employee or Resident)	YES (Employee or Resident)	NO (Recommended)	NO (Recommended)	NO
<b>Required hours for On-Site Designees</b>	<b>FSD &amp; DFSD</b> (7:00pm – 7:00am) <b>BES</b> (7:00 am – 7:00 pm if no FSD or DFSD)	<b>FSD &amp; DFSD</b> (7:00pm – 7:00am) <b>BES</b> (7:00 am – 7:00 pm if no FSD or DFSD)	<b>FSD &amp; DFSD</b> (7:00 pm – 7:00 am)	NO (Recommended)	NO
<b>Conduct Safety Drills</b> (Initial drill must be conducted by May 26, 2002)	YES (for employees twice a year under direction of the FSD)	YES (for employees twice a year under direction of the FSD)	NO (Recommended)	NO (Recommended)	NO
<b>Annual Distribution of Information to Tenants and Residence</b>	YES	YES	YES	YES	NO
<b>Stairwell and “Area of Assistance” Identification</b> (Required by May 26, 2002)	YES	YES	YES	YES	YES
<b>Elevator Identification</b> (Required by May 26, 2002)	YES	YES	YES	YES	NO

All buildings 80 feet in height and taller must adapt to plan by Feb. 25, 2002. Plans for Cat. 1 & 2 must be filed with OEMC by same date. FSD & DFSD must obtain certification through the Fire Prevention Bureau. Please refer to section 13-78 of the Municipal Code of Chicago to ensure proper compliance with this ordinance.

## **THE CHICAGO FIRE DEPARTMENT - HIGH-RISE ANNOUNCEMENT CARD**

### **Section #1 to be read as soon as possible, upon arrival and start of investigation**

**Your attention please! Your attention please! This is the Chicago Fire Department.  
This is not a drill!**

**We are investigating an incident in this building. We ask that you remain in your office  
or apartment. No evacuation is required at this time.**

**If you feel you may be in danger, call 911 and notify them of your condition. We will  
have more information shortly.**

**Repeat every minute until new information is available**

## **THE CHICAGO FIRE DEPARTMENT - HIGH-RISE ANNOUNCEMENT CARD**

### **Section #2 to be read when fire has been discovered and/or evacuation is needed**

**Your attention please! Your attention please! This is the Chicago Fire Department.  
This is not a drill!**

**We have a fire on floor \_\_\_\_\_. We are asking you to evacuate floor \_\_\_\_\_ through  
\_\_\_\_\_ only. Please use stairway \_\_\_\_\_ and exit at floor \_\_\_\_\_.**

**If you are not on a floor that is to be evacuated, please remain in your office or  
apartment. If you feel you are in danger, call 911 and notify them of your condition.**

**Repeat at the discretion of the Incident Commander**

## **THE CHICAGO FIRE DEPARTMENT - HIGH-RISE ANNOUNCEMENT CARD**

### **Section #3 Final announcement – All clear**

**Your attention please! Your attention please! This is the Chicago Fire Department.**

**The fire in this building has been extinguished. The fire in this building has been  
extinguished.**

**The fire department will be turning over control of this building to building  
management shortly.**

**Please wait for further instructions before moving around in the building.**

**Repeat at the discretion of the Incident Commander**



## STRATEGIES FOR CREATING EVACUATION MESSAGES

- Background
- What we do now
- The future of evacuation messaging
- React, Evaluate, Decide (RED)
- Evaluating information

### **Background**

The view on what NFPA says about building evacuation measures during emergency events is going to be scrutinized no matter what we say or how we say it. While it is important to continue to stress the messages and concepts based on what we know about building evacuation during a fire or similar emergency, the public may be reluctant to adhere to that message. In some cases, family members who have dealt with a loss of life are going to be resentful of hearing the traditional message of "stay where you are".

In terms of the delivery of this approach, we have to gently stress that 'we know what we know about the normal or typical fire in a building, but we don't know all about the atypical event that we must now educate the public for.' There is a classic thought that in some cases, good decisions can still have bad outcomes. We have to determine how to convey an idea that is at best a paradox and if we are not careful, it will send a mixed, confusing and garbled message to the public.

Since the first fire investigation of a high-rise building fire (Triangle Shirtwaist, 1911), NFPA has utilized the lessons learned including the need to have multiple, readily available exit stairs from buildings, get the occupants moving who are, or may be in imminent danger, educate the public about the importance of drills, and plan to tighten up the design elements associated with taller buildings. As tall building construction was typified in New York, Chicago and San Francisco, the necessary means to adequately protect the occupants was an enormous challenge.

Widespread use of "fire proof" construction including substantial compartmentation on each floor provided a serious redundancy to the other features of the building -- exits, well-marked corridors, and control of interior finish materials. Collectively, these elements worked together to provide a safe and secure environment in most high-rise buildings. The life loss record in these buildings in the U.S. is in reality good overall, but it is far from perfect.

While the Uniform Building Code began to mandate automatic sprinkler protection in some high-rise buildings in the 1970s, the watershed fire that placed all code-writing bodies on notice was the 1980 MGM Hotel fire in Las Vegas. This fire clearly showed the vulnerability that high-rise buildings had in spite of having careful control of construction material including almost one hundred percent use of fire resistive construction. The vast majority of the MGM fire fatalities occurred many floors away from the ground floor where the fire originated. A number of factors contributed to this loss of life including a delay in activation of the building fire alarm. Additionally, some people stayed on the upper floors even after hearing the alarm.

In December 1998, four civilian fatalities occurred at the West 60th Street Towers in Manhattan. The four occupants who died were found in one of the buildings stairwells. All four were attempting to exit the building as a result of a fire that originated on the twelfth floor. The occupants all came from levels well above the floor of origin.

In both the case of the MGM fire and the West 60th Towers, diametrically opposed outcomes were likely for most (all of the Manhattan fire victims) if different decisions had been made. In MGM, perhaps more occupants would have survived had they heeded the sound from the delayed alarm and evacuated the building. In New York, all four occupants were better off had they stayed in their dwelling units. These two fires introduce the complex process that is normally associated with crafting a public education message about emergency procedures in a high-rise building environment.

### **What we do now**

Nearly every city with high-rise buildings has embraced the staged evacuation or staged relocation concept when it comes to high-rise buildings. In other parlance, this is a version of the defend in place strategy. In this model, occupants on the fire floor (or floor where an alarm has originated) are notified of the problem. Generally, occupants on the adjacent floors, immediately above and immediately below, are also notified. These groups are then generally directed to move down the stairs to a refuge floor, or in some cases, they may be instructed to leave the building. The concept of staged evacuation is drawn out of a number of elements. Among these are the extremely conservative design features that are associated with high-rise buildings. This includes extensive use of fire resistive and non-combustible construction, automatic sprinkler systems (including retro-fit of many high-rise buildings in the U.S. following MGM Grand), building wide fire alarm systems, most of which incorporate a voice message component, and for the most part, great predictability on expected fire growth rates and fire behavior.

While exit stairs in tall buildings are indeed designed to accommodate total building evacuation, there are practical matters associated with always having to empty the total building population. Some of these items include:

**Time to evacuate:** Total building evacuation in certain structures may easily take one hour or more. During this time, occupants in a well-designed, but still crowded exit stair may be injured, or may simply feel that so much time was completely unnecessary for a small, manageable and quickly contained fire -the 'typical' fire that occurs in the tall building environment.

**Time to re-enter the building:** Tall buildings are not designed to have the total building population show up at exactly the same time. Elevators are designed based upon the total number of floors and total number of expected occupants. They are not designed to deliver all occupants to all floors at the same time. Populating the building at the same time, assuming most occupants would utilize the elevators, may be a two-hour process depending on the size of the building.

**Historical experience:** The collective experience in high-rise and tall buildings in the U.S. has shown that the defend in place concept works. The fire departments in the large metropolitan cities in the U.S. embrace this idea, as does NFPA.

Another by-product of this approach is also the need to minimize or reduce business interruption or productivity. Although not a primary consideration in the staged evacuation concept, it is nonetheless a fourth or fifth level consideration in this idea.

### **The future of evacuation messaging**

In 1997, an in-house NFPA Task Group (with two outside participants) worked on the issue of public response to emergencies in high-rise buildings. The message is a complex one and may be difficult to whittle it down to a simplified expression or easy to recall process but we have to try.

1. We need to couch the information that we know about right now and somehow reassure the general public that this protocol works for the types of emergency events that buildings are currently designed to handle.
2. We need to emphasize that ultimately every individual is responsible for his or her own safety. Building codes, fire codes, those who enforce such codes, and building owners all work in harmony to help provide a safe environment, but these collective pieces have inherent boundaries that they are designed for. This even extends to those with severe mobility impairments. This segment of society is already dependent on the defend in place strategies that we utilize in all environments.

One of our Frequently Asked Questions relates to the decision to tell occupants of the World Trade Center's Tower 2 to stay in the building on September 11, 2001. The argument for doing this may be that the only know fact early on was that there was a significant amount of debris reigning down for Tower 1. Occupants who left either tower via the street level plaza were likely to have been severely injured or killed by falling glass, aluminum, marble, steel, concrete or nearly any other construction material. The decision that was made for Tower 2 created a dilemma that was not fully known until some time after the first impact.

3. We need to remind the public to be prepared to take action for any building emergency. While a fire is the most likely emergency scenario they are likely to encounter, other perils that may require total or partial building evacuation exist including tornadoes, bomb threats and even extended power outages.

Our traditional messages and statements by and large support these three actions. Self-preservation measures, however, become incredibly complex when the extreme event takes place. Even in the short term, there is likely to be a change in public attitude when a building emergency takes place. Total building evacuation may be the norm until some sense of comfort is brought back into the picture.

### **React, Evaluate, Decide (RED)**

The NFPA task group had resolved that the action of staying or going was an extremely dynamic action and decision. It is never the same for two buildings, and even within the same building, it is unlikely that any two events will give the exact same outcome. After several meetings, the task group settled on the acronym RED that is a universal symbol for danger. In our context, RED is an easy to remember expression for React, Evaluate, Decide. Although the task group agreed that this was a relatively clear expression of what a building occupant should do in the event of an emergency, it was ultimately decided that trying to codify, explain or otherwise convey this message was overly complicating the message for the public.

We now know that indeed building occupants have to be prepared for actual, rather theoretical complex evacuation procedures. The RED model thus may be appropriate. While the public at large has generally come to expect that all buildings are safe all the time, or that the building owner and fire department will manage buildings with some dangerous situation. the public has to be feeling rather vulnerable at this particular point in time. The principles of the RED model are:

**React:** Take any indication of smoke, fire or other potentially threatening situation seriously.  
Activation of

building fire alarms, smell of smoke, visual indication of flames, warning from other occupants, arrival of the fire department are some of the attributes that may signal an imminently dangerous situation.

**Evaluate:** You must judge the level of threat. This includes confirming evidence or presence of smoke or fire; judging the conditions in your immediate area; self-judgment of your physical ability to relocate or evacuate; evaluation of the needs and abilities of others who may need assistance; consider additional information being received.

**Decide:** There are only two, but difficult choices:

1. Follow your plan and immediately leave the building.

**OR**

2. Follow your plan and stay where you are, or descend to the designated level below the fire floor and be prepared to take protective/defensive action. In this case, anticipated action may include alerting the fire department of your location, seal doors, windows and vents that lead into your space. Do not break out the windows. Be prepared to wait for a considerable time period (at least one hour) if you contemplate rescue by the fire department.

This process is iterative. It is not only done at the first hint of a dangerous situation. It is a process that the individual must manage and it needs to be repeated until the danger has passed or, if total building evacuation is in order, when that action is completed.

In this process, information is key. Too much, too little, or inaccurate information can lead to hasty decisions or decisions with poor outcomes. A large part of the reaction to the danger will center on what you know and when you know it. Information is available via building voice communication systems, cell phones, radio, live TV and word of mouth from other building occupants.

### **Evaluating information**

Evaluation of the information must be done as quickly as possible. The essence of this feature is to determine if you are in immediate danger, or if the evidence of peril suggests otherwise. A difficult part of this process involves your own capabilities as well as the capabilities of others. Can you negotiate 50 flights of stairs? Have you been assigned as a buddy to a mobility-impaired co-worker?

Given the response to the items that you evaluate, your initial decision is now ready to be made. Even given the ability to drill, review building procedures and study the building exits, you are still ultimately responsible for this last part.

In this, or any similar response to building emergencies, some difficult questions arise as to the need to defend the mobility-impaired occupants. At present, modern building codes either provide areas of refuge on each floor, or in the case of buildings with automatic sprinkler protection, provide access to at least two compartments on each floor. In typical fires, these protection features are more than adequate. These design elements provide a safe environment while occupants await rescue.

Use of elevators by the disabled, or controlled stairwell descent devices are simply not practical in actual buildings during emergency events. Elevator use is difficult to control. It is unlikely that able-bodied persons could be kept off of elevators if they thought it would get them to the ground floor more quickly. There is simply no mechanism that can restrict the elevator use to those who need it most.

The descent devices raise another moral dilemma in that stairs are simply not designed to accommodate such devices and the necessary egress width for individuals who descend the stairs under their own power. This dilemma engages a 'fairness' debate on if one person can potentially slow the progress of what could be many hundreds.

In gross terms, keeping on message with current educational and didactic treatment of building evacuation is correct, although it must be done with the utmost of sensitivity. The idea of enhancing these messages with the somewhat more complex RED approach may be appropriate at this time. Building evacuation and defend in place concepts just became much more complex, and we need to begin to expand our discussion on such items.

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# INTRODUCING “NORA”



**NORA REDDING**

## ■ IF SECURITY ASSISTANCE IS REQUIRED FOR UNWELCOME VISITOR:

- Inform person that you are not able to handle the request and that you will ask **NORA** to come.
- Call the Security Desk: 312-621-8572
- Example: “Hello, This is Mary from Riverview Realty Partners; can you please send NORA to the 21<sup>st</sup> floor?”
- If you would like Security to dial 9-1-1, say, please send **NORA REDDING** (indicates “red alert.”). Security will wait for police to arrive and escort to suite.



## Emergency Plans

When are they required, and what should they include?

The general requirements for emergency plans and when such plans are required have changed over the last few code cycles. The general requirements for an emergency plan are contained in Section 4.8 of NFPA 101®, Life Safety Code®, which states that an emergency plan is necessary when required by Chapters 11 through 42 or "where required by action of the authority having jurisdiction."

The second statement leaves it open for the local authority having jurisdiction to implement requirements for when an emergency plan is required. Some jurisdictions also require that the fire plans be reviewed and approved by the local authority.

But let's review when Chapters 11 through 42 require an emergency plan. The requirements will be found in the X.7 Section, "Operating Features," of each occupancy chapter and in Chapter 11 where specified for special structures. All occupancies, except those listed below, require an emergency plan in accordance with Section 4.8 of the Life Safety Code.

Chapters 18 and 19 on new and existing health care occupancies, Chapters 20 and 21 on new and existing ambulatory health care occupancies, Chapters 22 and 23 on new and existing detention and correctional occupancies, and Chapters 32 and 33 on new and existing

board and care occupancies all require emergency plans. However, these occupancies do not reference Section 4.8; rather, they provide information on what must be contained in the emergency plan. Of course, the items listed in Section 4.8 can be included in the plan.

Chapters 28 and 29, which address hotels and dormitories, also require an emergency plan, in accordance with Section 4.8. In addition, they require that emergency instructions be posted for guests. Emergency plans for new and existing mercantile occupancies are only required in high-rise buildings.

Chapters 40 and 42, which address industrial and storage occupancies, do not require an emergency plan. Nor do one- and two-family dwellings. But we know that public education promoting escape plans with meeting places is an important part of fire safety for residents of homes. Chapter 26 on lodging and rooming houses does not require an emergency plan, either. As these occupancies are often similar to one- and two-family dwellings, however, an escape plan is important.

When a plan is required, what should it include?

According to Section 4.8, it should include procedures for reporting of emergencies; a description of occupant and staff response to emergencies; evacuation procedures appropriate to the building, its occupancy, and potential emergencies; appropriateness of the use of elevators; the design and conduct of fire drills; the type and coverage of building fire protection systems; and other items required by the authority having jurisdiction.

In addition, Section 4.8.2.2 requires emergency plans to be submitted to the authority having jurisdiction for review, and Section 4.8.2.3 requires that emergency plans be reviewed and updated as required by the authority having jurisdiction.

Emergency plans are important documents, and they should not just be filed away. The plans must be active, living documents that everyone understands and is trained to follow and implement as appropriate should an emergency occur.



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## The Way Out

The *Life Safety Code* and building a better evacuation diagram

**H**ow many times have you seen evacuation diagrams posted on walls, with a route marked “primary egress route”? Think about it: What is a primary egress route? How does someone making a plan predict the type of emergency and where that emergency condition is going to be located? Is there really such thing as a “primary” egress route?

The short answer is no—NFPA 101®, *Life Safety Code*®, does not

**ABOVE ALL, evacuation diagrams should be simple—remember, these are tools designed to help people get out of buildings as quickly as possible.**

address a “primary” egress route. All egress routes are primary routes, and occupants should know where all of the exits are located.

The code generally requires two exits remote from each other in buildings; if one is blocked by fire or for some other reason, occupants still have another way out of the building. Section 4.7 requires that egress and relocation drills be varied to simulate an actual emergency. If occupants are instructed that there is a primary egress route and the drill is conducted the same way every time using that route, they may not be aware of the other egress routes and options available in an emergency.

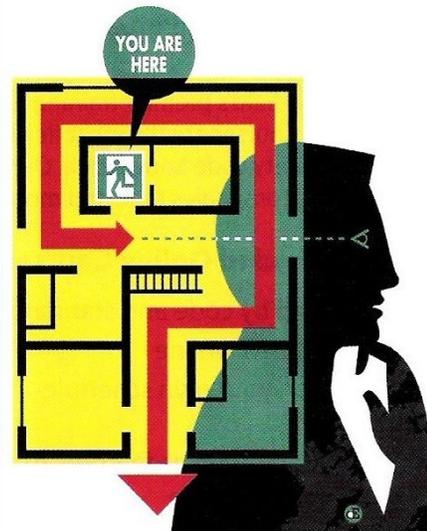
Evacuation diagrams can be of great value, and there are several important features they should include. Above all, evacuation diagrams should be simple—remember,

these are tools designed to help people get out of buildings as quickly as possible, not plans to show the location of all building features. The plans should include major features of the building, such as elevators, to help people orient themselves. But the location of sprinkler valves, smoke control equipment, or other fire protection equipment is not important to the occupants who only want to know where the exits are located.

Some people can get their bearings with just a quick look at a map, while others may have difficulty, which is why the plans should include a “you are here” indicator to help people quickly orient themselves. The plans may include assembly points so occupants know where they should go after they have left the building. Major landmarks outside the building, such as street intersections, can further help occupants orient themselves.

In the *Life Safety Code*, the requirements for where an evacuation diagram is required are located in the “Marking of Means of Egress” section within each occupancy chapter. Only assembly occupancies require a posted evacuation plan. Hotels require a “floor diagram reflecting the actual floor arrangement, exit locations, and room identification” to be posted on the back of or adjacent to the guest room door. That requirement is located in the “Operating Features” section of Chapters 28 and 29.

The *Life Safety Code* says that, where a posted evacuation diagram is required, the diagram should



include certain features. (Note that this requirement is located in the section that addresses egress marking in Chapter 7.) Those features include a floor diagram that reflects the actual floor arrangement, including exit locations. The diagram should correspond with the perspective of the person viewing it. How many times have you been confused by a posted floor diagram until you finally figured out that you would need to be standing on your head for the diagram to be correct?

Evacuation diagrams are certainly a good idea, provided they clearly and simply show occupants *all* of the choices available for evacuation. In an emergency, the primary egress is the one that gets you out of the building quickly and safely. ♦

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Illustration: Dave Ember



## What Do I Test?

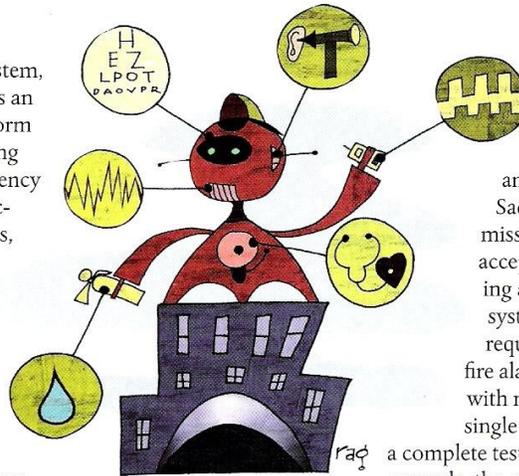
For new fire alarm systems, the answer is easy

The testing of a fire alarm system, or any emergency system, is an important function to perform at the end of an installation. Testing helps ensure the fire alarm/emergency systems and all the fire safety functions, including interfaced systems, will operate as specified and as required by the code. This is so important that NFPA 72®, *National Fire Alarm and Signaling Code*®, devotes an entire chapter to the requirements and expected performance of an installed fire alarm system.

Unfortunately, many contractors and authorities having jurisdiction (AHJs) do not seem to have a clear understanding of the intent and extent of testing, as required by Chapter 14 of the code. The chapter states that these requirements apply to both new and existing systems, but in this column, I'll focus on new systems.

The code begins with the mandate that "all new systems shall be inspected and tested in accordance with the requirements of Chapter 14" and that "the authority having jurisdiction shall be notified before the initial acceptance test. Before testing of the system can begin, however, the contractor must comply with the documentation requirements of the code, which includes "the record of completion and any information required by Section 10.18 regarding the system and system alterations, including specifications, wiring diagrams, and floor plans." This documentation must also include "the current revisions of all fire alarm software and the revisions of software of any systems with which the fire alarm software interfaces."

Because the fire alarm and emergency system may interface with a suppression system, the code requires that the suppression systems "be secured from inadvertent actuation, including disconnection of releasing solenoids or electric actuators, closing of valves, other actions, or combinations thereof, for the specific system, for the duration of the fire alarm system testing." The tests must also verify that "the



releasing circuits and components energized or actuated by the fire alarm system are electrically monitored for integrity and operate as intended on alarm."

Sadly, contractors and AHJs often miss a key requirement: for both acceptance testing and ongoing testing and maintenance, *all* interfaced systems and safety functions are required to be tested as part of the fire alarm tests. What seems to happen with most new installations is that no single entity takes responsibility for

a complete test as required by the code. For example, the contractor who installs the fire alarm will test all fire alarm devices and appliances he has installed. But that same contractor may fail to ensure the proper operation of processes interfaced with, or operated by, the fire alarm system, such as elevator recall, sprinkler/special hazard suppression systems, or HVAC control. The fire alarm contractor will argue that he or she did not install these other systems and did not include the cost in his contract of coordinating the other trades to ensure the fire alarm system interfaces correctly.

In response to these kinds of issues, NFPA has taken two steps to improve the complete testing or commissioning of fire alarm systems. The NFPA 72 Technical Correlating Committee initiated a "Test & Inspection Summit" to address the needs of improving Chapter 14. In addition, a new Recommended Practice entitled "Commissioning and Integrated Testing of Fire Protection and Life Safety Systems" is being developed to address the fact that all interfaced systems that are designed as a group to provide fire safety must be commissioned as "one" system.

So, the answer to "What do I test?" is relatively simple: you test everything that is interconnected to the fire alarm system that provides building occupant life safety or property protection. ♦

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## Back to School

The importance of planning for fires in educational occupancies

Major fires in educational occupancies are rare—accounting for fewer than 1 percent of all U.S. fires—but fires occurring during school hours present a serious threat to life safety. Nearly every fire district includes one or more educational occupancies, and the potential for a large loss-of-life fire necessitates pre-incident planning with an emphasis on life safety tactics.

Adequate planning for a school involves more than providing a set of drawings with a brief description of the property. Schools are occupied at times other than normal school hours, for example, and it is essential that plans include the time and location of extracurricular and after-hours activities. The 1923 Cleveland School fire in Beulah, South Carolina, killed 77 people at a commencement play held in the evening. As part of this planning, fire department members should regularly observe and evaluate fire drills, noting the efficiency of the evacuation and accountability process. Observing a school fire drill provides invaluable training for firefighters who should know the prearranged locations for evacuated students and the school contact person, who should also be part of the plan.

An evaluation of the evacuation plan should include determining if the evacuation is consistent with fire department operations, since some evacuation plans may inadvertently call for students to be placed in areas that hinder fire department response or operations. The school contact person should meet the fire department in a pre-determined safe location along the route of normal fire apparatus access to the property. The accountability process used during school fire drills should provide the incident commander with the evacuation status, as well as the possible location of people who are missing when a fire occurs during school hours. Life safety is the number-one priority at every fire, and when a school fire occurs during periods of maximum occupancy, it is critically important to account for everyone.

An adequate plan will also help determine the best search-and-rescue method, since building design can vary greatly. Many modern schools are single-story structures with direct access to the outside from every room, while older schools are often multi-story with limited egress. Some school districts use trailers as temporary classrooms. Each of these buildings requires a different



search-and-rescue approach, and probable tactics can and should be known in advance.

Planning should include calculating rate of flow. Classrooms typically have average fire loading and are limited in size; most will be within the capabilities of the fire department's standard, pre-connected hose lines. Rate of flow should be calculated for any large undivided areas such as larger classrooms, gymnasiums, auditoriums, and libraries. A common problem in school buildings is improper storage under stairwells and in corridors, which can greatly increase the fuel load and the threat to life safety. Knowledge of this kind of storage can help a fire department calculate the proper rate of flow. It can also help a fire department work with a school to minimize such hazards.

Large loss-of-life fires are not representative of all school fires—in the history of the United States, four school fires have killed 50 or more people, and in the last 40 years, three school fires have killed three or more people—but they often serve to highlight potential problems present in many schools. The investigation of the 1958 fire at Our Lady of Angels School in Chicago, which killed 92 students and three nuns, found open stairwells, blocked doors, combustible floor and ceiling materials, a fire alarm system that was not connected to the fire department, and no automatic sprinkler system.

Do any or all of these defects exist in the schools your fire department protects? 🚒

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*This column is adapted from the authors' book Structural Fire Fighting, available at [www.nfpa.org](http://www.nfpa.org) or (800) 344-3555.*



# FIRE ALARM SYSTEMS

The primary purpose of automatic fire alarms system is the early detection of fire and the immediate call for fire suppression from local departments. Generally structures required to install these alarm systems present a significant occupant life hazard and/ or an extended reflex time for the responding departments. The Municipal Code of Chicago relating to Fire Prevention, divides all fire alarms systems into two classes, Class I systems and Class II systems. The type of alarm installed within a given building is based on the building's occupancy

classification, age and height. Class I and Class II alarm systems are found in large commercial or high-rise type buildings. The following is a basic introduction into the general classifications of alarms and components commonly installed in most commercially manufactured fire alarm detection systems and an introduction to the high rise fire alarm control panel.

**Municipal Code Section 9(15-16-1250) Class I Systems** - *A Class I standard fire alarm system shall be a non-coded closed circuit fire alarm system which shall be so installed and arranged that the operation of an alarm sending station will automatically actuate **all signaling devices** and sound a continuous general alarm throughout the building until the alarm-sending station has been restored to its original condition.*

## **Class I - General System Overview**

- General Alarm
- Automatic Evacuation
- Auxiliary Valve Supervisory
- Auxiliary Duct Detection
- City Tie Box
- Trouble Bell
- Back-lit Annunciator
- Typically School and Daycare Occupancies

**Municipal Code Section 9(15-16-1260) Class II Systems** - *A Class II standard fire alarm system shall be a coded, closed circuit, pre-signal fire alarm system which shall be so installed and arranged that the initial operation of an alarm sending station will sound, at least four times, the code of the alarm sending station on the **pre-signal alarm-sounding devices only**. Pre-signaling alarm-sounding devices shall be installed not to alert the occupants of the building but to notify those of authority and certain occupants that a fire or emergency exists in the building. Such pre-signaling alarm sounding devices shall be located at the telephone switchboard, in the engine room, general offices and in other such places in the building where members of the Fire Brigade, employees or attendants work or assemble. Every alarm sending station of a Class II standard fire alarm system shall be equipped so that a coded general alarm can be sounded by the use of keys, plugs or similar devices which shall, at all times, be available to persons with authority to sound a general alarm. In every building where a Class II Standard fire alarm system is installed there shall be on duty two adults charged with the responsibility of sounding a general alarm.*

#### **Class II - General System Overview**

- Automatic Pre-Signal Coded Alarms
- Auxiliary Valve Supervisory CP
- Auxiliary Duct Detection CP
- City Tie Box
- Trouble Bell
- Back-lit Alarm Annunciator
- Typically High Rise, Hospital, Nursing Home and Jail Occupancies

In buildings protected by a Class II system, a pre-signal alarm will be transmitted to the Fire Alarm Control Panel (F ACP) before sending a general alarm throughout the building. This enables the responsible parties (Building engineers, security guards, etc.) at the occupancy to verify the alarm and determine whether additional alarms or evacuation is warranted. When a pre-signal alarm is activated, the FACP will also notify the alarm monitoring company who notify the OEMC, who in turn send an Automatic Alarms response.

## Building Fire Alarm Zones

Fire alarm systems in larger buildings are divided into zones, these zones make it easier to locate where the alarm is originating from. Zones are usually made by dividing a building, or floor area into different sections or floors. The municipal code of Chicago requires that a zoned type fire alarm system, with zones not exceeding 20,000 square feet or serving more than one floor, shall be required under any one of the following conditions:

- When a building exceeds four stories in height
- When any side of the building is 200 feet or more in length
- When the system has more than eight manual alarm-sending stations
- When more than ten automatic detectors are connected to a standard fire alarm system, unless the alarm system serves only a Type III school occupying only the first floor of the building
- When the ground floor area of the building exceeds 20,000 square feet.

## Components of the Fire Alarm System

A fire alarm system is composed of components which can be classified into three categories; alarm initiating devices, the fire alarm control panel (FACP) and alarm notification appliances.

### Initiating Devices

Initiating Devices - these devices either sense the effects of a fire, or are manually activated by personnel, resulting in a signal to the FACP. The following are common initiating devices found on fire alarm systems:

Manual pull stations/manual call points - Devices to allow people to manually activate the fire alarm. Usually located near exits. Also called "manual pull boxes" (Photo 1).



Photo 1

Double-Action Pull Station - Manual pull stations that are protected to deter malicious false alarms are known as Double-Action Pull Stations. Double action pull stations require the user to lift up the protective cover prior to activating the pull station (Photo 2).



Photo 2

Smoke detectors - A device used for fire detection which is triggered by smoke. The two main types of smoke detectors are photoelectric and ionization. Hard wired smoke detectors that have adequate power will display an intermittently blinking light. Activated smoke detectors will sound an alarm and will display a solid light on the unit when triggered, indicating the location of the device that triggered the alarm (Photo 3).

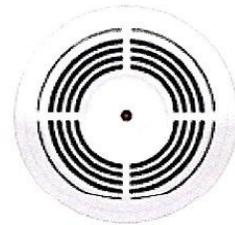


Photo 3

Heat detectors - A device that detects either abnormally high temperatures or rate of temperature rise or both.

- Fixed Temperature Heat detectors alarm at preset fixed temperatures.
- Rate of Rise detectors react to a sudden change or rise in ambient temperature from a normal baseline condition respectively. Any sudden temperature increase that matches the predetermined alarm criteria will cause an alarm. This type of heat detector can react to a lower threshold condition than would be possible if the threshold were fixed. A typical alarm may sound when the rate of temperature rise exceeds 12° to 15°F per minute.

Water Flow Detector - consists of a moveable paddle or vane of thin metal or plastic that is inserted into a circular opening cut into the wall of a sprinkler/ standpipe supply pipe. The vane or paddle extends into the water way of the pipe detecting any movement of water. The motion of the vane or paddle operates an alarm actuating electric switch sending a signal to the FACP (Photo 4).



Photo 4

Air Duct Detectors – Detectors installed to prevent the distribution of smoke through the supply air duct system. General area smoke detectors are the preferred means of controlling smoke spread since duct smoke detectors can only detect smoke when smoke laden air is circulating in the ductwork.

Fans may not be running at all times, such as during cyclical operation or during temporary power failure. These detectors can be configured to immediately provide an alarm or they can also be configured to be monitored on a supervisory setting providing a trouble alarm (Photo 5).



Photo 5

## Notification Appliances

Notification Appliances alert occupants of an emergency and/or provide information, i.e. bell, siren, horn, speaker, light, or text display that provides audible, tactile, or visible outputs. Many appliances now offer a combined audible and visual strobe alarm. These appliances ensure that all buildings occupants, inclusive of those covered under the Americans with Disabilities Act, are aware of the alarm (Photo 6).



Photo 6

# The High Rise Fire Alarm Control Panel

Fire Alarm Control Panel (FACP) - is the central brain of the overall system. The FACP may have some or all of the following components: the fire command panel, the voice communication system, the fire alarm system of the control panel, HVAC system fan status indicators and an elevator supervisory panel.



## 1. Fire Command Panel

- Backlit LCD (Liquid Crystal Display)- Documents event history for detection, alarm and suppression components of system. Scrolling arrows allow for review and selection of event history from panel display.
- Power Status Indicating Lights
- Exit Stairwell Door Unlocking System
- HVAC System Fan Status Indicators
- Alarm Acknowledgement
- Audible Alarm Silence
- Supervisory Acknowledgment
- Trouble Acknowledgement
- Reset system controls

## 2. Voice Communication System

- One way public address- Operated by keyed microphone.
- Two-way Emergency Firefighter Telephone - Operated by push to talk feature on handle or by picking up phone to talk.

## 3. Fire Alarm System of the Fire Control Panel

- Visual indicators of alarms received from input devices, i.e. smoke detectors, heat detectors, sprinkler control valve sensors, water flow detectors and in some cases HV AC systems status.

## 4. Elevator Supervisory Panel

- Monitors elevator locations and activity of all the elevators in a group.
- Panel may also have recall functions for elevators as well.

# Alarm Components of the High Rise Fire Alarm Control Panel

The alarm system of the FACP receives information from initiation devices (smoke detectors, heat detectors, water flowing through a suppression system, etc.), processes the information, and triggers a notification device (audio or visual alarm) within a building. Even though some modern fire alarm systems may be extremely complex, their main purpose remains the same--to warn occupants of danger and request a fire department response. Many of today's fire alarm systems go beyond the objective of warning occupants by audible or visual alarms. They can automatically control ventilation for smoke control, pressurize stairwells; override elevators for fire department use; activate fire suppression components; and notify fire suppression forces to respond. Listed below are some of the FACP's most common features.

**Fire Alarm/Alarm (Red Light)** - When this indicator is lit, an alarm will sound on the panel near the piezoelectric indicator light. This light will be steady or flashing meaning that an Alarm condition exists in the system, initiated by smoke detectors, heat detectors, sprinkler flow switches, manual pull stations, manual call points, or otherwise. Class I and Class II systems may also have panel components that are backlit.



Fire Alarm

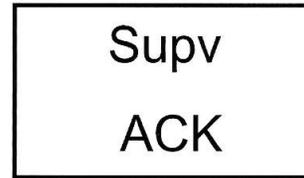
**Trouble/Fault (Amber Light)** - When this indicator is lit, an alarm will sound on the panel near the piezoelectric indicator light. This light will be steady or flashing meaning that a Trouble condition exists on the panel. Trouble conditions are often activated by a contaminated smoke detector or an electrical problem within the system. Sometimes specific components of the fire alarm system are disconnected which could prevent the fire alarm or fire suppression system from functioning as intended. An example is a disconnected wire at a heat or smoke detector. Trouble conditions are also activated by a zone being disabled (disconnected from the system), a circuit being disabled, low power on the backup battery, the disabling of a notification appliance, the ground faults, or short or open circuits. Usually the FACP pre-alarm will sound if a trouble condition exists. In a trouble condition, the FACP displays the zone or devices causing the condition. The Trouble indicator goes out automatically when the situation causing the trouble condition is rectified; this should then cause the panel to reset.



Trouble  
ACK

Trouble indicator goes out automatically when the situation causing the trouble condition is rectified; this should then cause the panel to reset.

***Supervisory (Amber Light)*** – When this indicator is lit, an alarm will sound on the panel near the piezoelectric indicator light. This light will be steady or flashing meaning that a portion of the building's fire protection system has been disabled (such as a fire sprinkler control valve being closed and consequentially, a sprinkler tamper switch being activated). The "Supervisory" indicator may go out automatically when the condition has cleared, but usually requires a "Reset" to clear.



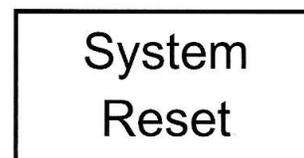
**Fire Alarm Acknowledge** - This button, also abbreviated as "ACK", is used to acknowledge a fire signal from an initiating device. The Acknowledge function tells the panel that building personnel or arriving firefighters are aware of the alarm. This type of function may not be found on a Type I system.



**Alarm Silence** - This button will only silence the warning alarm at the FACP. Audible silence allows for easier communication amongst emergency responders while responding to an alarm. While the alarm is silenced, other functions in an alarm condition continue to operate, such as emergency service for elevators, stairway pressurization, and ventilation functions. If a new alarm is sent from an initiating device while the alarm is silenced, it will take the F ACP out of Audible Silence and reactivate the alarm on the panel.



**System Reset** - This resets the panel after an alarm condition. All initiating devices are reset, and the panel is cleared of any alarm conditions. If an initiating device is still in alarm after the system is reset, such as a smoke detector continuing to sense smoke, or a manual pull station still in an activated position, another alarm will be initiated. A system reset does not usually clear trouble conditions. Most trouble conditions will clear automatically when conditions are returned to normal.



**AC power (Green Light)** - Also known as "Normal". When this indicator is lit, power is being provided to the system from the building's electrical system, and not from the backup battery or secondary power supply. When an AC power condition changes, the Trouble light comes on and the AC power indicator goes off and the screen alerts building personnel of a power failure. If the AC power indicator is lit green without any other indicators also lit, then the system is in a normal condition. If no LEDs are lit, there is no power source feeding the panel.

**DC Power (Green Light)** - This is used to tell the operator that DC power (batteries) is being charged.

**DC power (Red Light)** - This LED is red when the system is being operated on DC power alone.

## **Exit Stairwell Door Unlocking System**

This system prevents people from becoming trapped in a stairwell during a fire or other emergency. Buildings that are five (5) or more stories in height that have stairwell locking systems that would prevent reentry on a floor must have stairwell enclosure doors that are equipped with a fail-safe electronic lock release system that is activated both manually by a single switch located on the FACP or automatically, either by approved smoke detectors or sprinkler water flow devices, connected to the FACP. The exit stair unlocking system will also activate upon loss of the buildings electrical power.

**Door Status Switch** - This switch ensures that evacuation stairwell door locking system is unlocked on all stairwell tower doors to allow unrestricted access of the evacuation stairwells (Photo 8).



Photo 8

## Communication Systems

The voice communication system of the FACP controls the communications features of the panel. Most of the communication on the fireground will be internal fire department communication between various companies by radio. However, a very important part of fireground communication, specifically at high-rise buildings will be the communication between the fire department and the occupants of the building. This is a very important aspect of the fire departments overall operation and can save countless lives by giving instructions to building occupants.

Voice communication systems are found in large facilities such as high-rises where a general evacuation is considered impracticable or undesirable. The voice communication system includes one-way and two-way communications which allows firefighters to notify the occupants of a need for action by:

- Providing periodic predetermined Chicago Fire Department message announcements concerning the investigation of fire or other emergency conditions
- Guidance on what specific floors to evacuate
- Directing occupants to the evacuation stairwell
- Emphasize to the occupants of the building that they should exit using the evacuation stairwell only and avoid the designated fire attack stairwell

The one way system can also be used to contact companies who cannot be contacted by the fire department radio and ask the companies to re-establish communications (Photo 9). PA systems can provide one way communication between the FACP at the following locations:

- Elevators
- Elevator lobbies
- In each required stairwell every fifth floor
- Office areas exceeding 5000 square feet
- In corridors at a minimum of every 75 feet and at the exit stair doors



Photo 9

The one way system can be used to make a general announcement to the whole building by pushing the "All Call" button. Firefighters can also make announcements to specific floors by pushing the button for the designated floor. Firefighters must keep in mind that an emergency tone will sound for several seconds when the microphone is keyed. This emergency tone alerts the building occupants of a pending message. Announcements can only be made after the initial tone has finished, only then will the microphone control the address system and transmit the intended message. Firefighters should also be aware that when the microphone key is released, the microphone will still transmit for several seconds.

A second part of the communication system is the Two-Way Stairway Fire Department Communication phones (Photo 10). These phones can provide communication between the stairways and the FACP. Two way fire department communication phones are required in each stairwell and can be found in buildings with three or more floors located on floors that fall on multiples of five, e.g. 5/10/15/20 and at the FACP. Phones located within stairwells can be activated in one of two ways: Phones that have a push to talk button can be activated by pressing the push to talk button and phones without this feature are activated when the phone is removed from the cradle.



Photo 10

Activated phones in the stairwell will sound a tone and an indicator light will illuminate on the FACP indicating a call is coming from that particular phone. The operator of the FACP can also talk to several fire department communication phones at the same time by pushing the buttons of each of those phones on the FACP.

Modern fire alarms systems can provide critical information during the initial minutes of an emergency operation and greatly improve the life safety of both the building occupants and the responding firefighters. In order to ensure that we maximize the potential of these alarm systems, firefighters and company officers must become aware of and utilize the different functions provided by the systems located within the buildings of their response districts.

The timely arrival of a fully equipped and prepared fire company, proficient in the operation of these building fire protection and alarm systems is the first critical step in a successful and safe fire ground operation within these complex structures.

*The R.J. Quinn Fire Academy Staff and the Office of Research and Development would like to thank B.C. William Vogt, B.C. Kevin Ryan, Chief Fire Prevention Engineer John Javorka, Fire Prevention Capt. Michael Norris, Fire Prevention Instructor Lt. Eddie Banks for their contributions to this article and Special Thanks to Public Education Officer Lavelle D. Hands for revising this book.*

**CHICAGO FIRE DEPARTMENT  
FIRE SAFETY DIRECTOR STUDY  
GUIDE**



*The City of Chicago Fire Department  
Public Education High-Rise Unit  
1010 South Clinton Street  
Chicago Illinois, 60617*













## Fire Safety Inspection Report

<b>Name of Occupant</b>						<b>Occupancy</b>																	
<b>Building Address</b>						<b>Inspection Date</b>																	
<b>Inspector(s)</b>																							
<b>Instructions:</b> Indicate with a check mark in the appropriate column. R/A – Requires Attention N/A – Not Applicable						Yes	No	R/A	N/A	<b>Instructions:</b> Indicate with a check mark in the appropriate column. R/A – Requires Attention N/A – Not Applicable						Yes	No	R/A	N/A				
<b>A</b>	<b>EXTERIOR</b>											<b>D</b>	<b>HOUSEKEEPING</b>										
1	Fire department access is kept clear of obstructions.											1	Combustible waste material is <b>not</b> permitted to accumulate.										
2	Private fire hydrants are serviced and kept clear of obstructions.											2	Combustible materials have <b>not</b> accumulated in basements, storage rooms, service rooms or stairwells.										
3	Fire department connections are visible and free of obstructions.											3	Combustible materials such as artwork and teaching materials, which are attached to walls, <b>do not</b> exceed 20% of each walls area.										
4	Path of travel and exits are clear of obstructions.											4	As required, approved non-combustible waste receptacles are in use.										
5	The gas service is protected from damage.											5	Waste receptacles in daycares and nursery schools shall be non-combustible.										
6	Fire escapes are in good repair.											6	Exhaust ventilation systems shall be suitably maintained.										
7	Chimneys are visibly in good condition.											<b>E</b>	<b>SMOKING</b>										
<b>B</b>	<b>Mechanical Service Spaces</b>											1	Smoking materials are properly disposed of.										
1	Heating systems are inspected annually.											<b>F</b>	<b>HAZARDOUS GOODS</b>										
2	Clearances from combustible construction are maintained.											1	Hazardous goods are stored in approved containers or cabinets.										
3	Integrity of fire separations is maintained.											2	Storage areas are properly identified.										
4	Combustibles have <b>not</b> accumulated in service rooms.											<b>G</b>	<b>SUPPRESSION EQUIPMENT</b>										
5	Doors to service rooms are kept closed.											1	Portable fire extinguishers are installed.										
6	Service room doors have operational closure devices.											2	Portable fire extinguishers have had annual inspection.										
<b>C</b>	<b>EARLY WARNING EQUIPMENT</b>											3	Sprinkler system has had annual inspection / testing.										
1	An acceptable fire alarm system is installed.											4	Standpipe system has had annual inspection / testing.										
2	Fire alarm system is operational.											5	Fixed suppression system equipment has had semi-annual inspection / testing.										
3	Fire alarm system is checked monthly and is operational.											<b>H</b>	<b>OCCUPANT SAFETY</b>										
4	Fire alarm system is inspected / tested annually.											1	Fire doors are <b>not</b> blocked or wedged open.										
5	Smoke alarms are installed and are operational.																						
6	Smoke detectors and/or heat detectors are inspected/tested annually.																						

